



NEXTFOOD

Educating the next generation of professionals in the agrifood system

NEXTFOOD will contribute to a transition to more learner-centric, participatory, action-based and action-oriented education and learning in agrifood systems, which are becoming increasingly complex and require an increasing range of “hard” and “soft” skills. The objectives are to

- (01) identify the skills needed for a transition to more sustainable farming and food systems,
- (02) develop and test relevant curricula and training methods,
- (03) assess existing policy instruments for the training and education sector,
- (04) develop tools for evaluating quality of the training and education sector,
- (05) develop a platform for knowledge sharing.

NEXTFOOD will employ case-based action research to

- (I) develop relevant and effective education and training programmes for a transition to more sustainable agrifood systems,
- (II) generate new knowledge needed for similar achievements beyond the specific case.

The *case development (I)* will rest on a cyclic, iterative, participatory process consisting of

- (1) observation and description of the current situation in each case,
- (2) visioning of a desired future state,
- (3) analysis to identify key issues, solutions, supporting and hindering forces etc.,
- (4) elaboration and discussion of action plans,
- (5) implementation of plans,
- (6) iteration of steps (1–5) in a cyclical manner throughout the course of the project.

Simultaneously, *research (II)* will be done on qualitative and quantitative data generated during the case development process and analysed to answer research questions that are relevant beyond the specific case. This will produce new knowledge needed to drive the transition to the learning strategies required to educate and train professionals that can meet the very complex future demands in the agrifood sector.

The main research questions of NEXTFOOD are:

1. How can participatory and action-oriented learning strategies focusing on competences required to foster more sustainable agrifood systems, be designed and implemented?
2. What are supporting and hindering forces for such alternatives to establish and develop successfully?

Case name and name of contact person/leader**Learning from Farmers Training Centers (FTCs): Multi stakeholder action learning platform****Mohammed Tilahun**

Mekelle University, Tigray Ethiopia

Brief description of the case

Ethiopia has over 92 million human populations with 80% of this population employed in the agriculture sector (CSA, 2016). The agriculture sector contributes to over 45% of the GDP and 90% of the exportable commodities (Belay 2008). The government of Ethiopia has expanded education coverage and as a result there are currently more than 176 undergraduate and 300 postgraduate academic higher education programs in agriculture (Shibru 2016). Despite the huge resource allocation and potential for change, the agriculture sector in the country is still underdeveloped. It was suggested that one possible reason could be the weak national level progress to encourage and use innovation in the agriculture sector (David et al 2012). In addition, the connection between farmers, development organizations, and research and extension offices with the higher education institutions is weak (Belay 2008; David et al 2012).

The government of Ethiopia designed agricultural transformation strategy to help accelerate the growth and transformation of Ethiopia's agriculture sector (<https://www.ata.gov.et>). To support this strategy the government designed a new field level extension approach (Farmers Training Centers) since 2002. As a result about 8489 Farmer Training Centers (FTC) established and out of these about 2500 are currently fully functional. They have infrastructures, human resources and participating community (IFPRI 2010).

FTCs are stationed at each *Kebelle* (the second smallest administrative unit with up to 5000 people). FTCs are administered by management committee with 7-10 members composed

of extension agents and farmers chaired by head of *Kebelle* administration office. The management committee gathers every month and discusses about their plan, evaluate their performance in the training, demonstration and preparation of demonstration fields. The FTCs involve farmers, students, researchers and development workers to work together for a common goal.

In Tigray FTCs provide holistic services such as, farmer training (improved farming, HIV/AIDS, security issues, family planning) extension service, availing commodity market information, public animal health service, private artificial insemination service, renting water pumps, selling products, demonstrating new technologies for farmers, validation research sites etc. In FTCs extension service is provided by farmer-to-farmer approach and subject matter specialists (SMSs). Innovative model farmers also organize farmers' field day to demonstrate their achievements which creates a learning platform for all.

As an outcome of such FTC activities new innovations and technology adoptions increased. For example the degraded hillside area of Abraha Atsebha has been restored which resulted in more ground water recharge in the farm fields that created an opportunity for poor farmers to grow fruits and vegetables through irrigation agriculture. The village has been awarded for such achievements in 2012 at Rio +20 UNDP Equator Award (<https://www.wfp.org/stories/ethiopian-village-recognized-rio20-innovative-hunger-solution>). Other examples in Tigray are hillside farming, massive soil water conservation campaigns, reduced tillage practices etc can be mentioned as some of the prominent outcomes from the FTCs which has also received international "Best Policy" Gold Award from the World Future Council and United Nations Convention to Combat Desertification in 2017 (<https://www.worldfuturecouncil.org/de/p/2017-desertifikation/>). FTCs also helped farmers to link with institutions that can support the agricultural and community development.

Mekelle University has also established knowledge center in one of the FTCs, Abrha Atsbha to make knowledge accessible to the community and use the center as one of the learning platforms to the students and researchers. Mekelle University in collaboration with NMBU, SLU, and Uganda's Marty's University has opened a new MSc program in Agroecology and sustainable Development that uses these centers as case examples.

Despite the huge potential of FTCs as learning platforms and innovation hubs such potential has not been utilized to the extent that it can be used to design new education and training strategy.

How will the case contribute to achievement of the NEXTFOOD objectives by action research as the main strategy?

- (1) through facilitating FTC services to be more action research based trainings help to identify competencies needed for agricultural education institutions
- (2) develop skills of action research within stakeholders that will help to sustainably innovate, document new knowledge, analyze policy, training and education approaches in the agrifood system
- (3) Create mutual knowledge sharing platform between farmers, researchers, development workers, trainers and educators that help to design new training and education approaches in Universities and ATVETs.

How will the case study provide evidence to answer the NEXTFOOD research questions?

The case creates opportunity to gather real life competencies in the agrifood system from the FTC action based and participatory trainings that can be used to evaluate trainings and agricultural education in higher institutions. The learning process shall take place among farmers, university students (currently MU), ATVET students, researchers and teachers. In this participatory learning process the learning outputs from all the stakeholder groups will facilitate the effective learning and transition to more sustainable agrifood system. The process will include the planning, implementation and reflection phases as described below.

I. Planning phase

1. FTC selection

In Ethiopia, the agroclimatic zone variation is one of the major driving factors for the variations in the type and timing of conducting different farming activities. There are three

major agroclimatic zones; the lowland, midland and highlands. Two FTCs will be selected from each of the agroclimatic zones considering the functionality of the Centre (one model and one ordinary FTCs will be selected). In every FTC there are four development agents working on all packages of the agriculture sector recommended by the government.

The regular participants of the action research under each FTC will be:

- Four development agents (already assigned by the local government for each FTC to work on all packages of the agriculture sector)
- Two district office subject matter specialists (SMS) (already working at the FTC on regular basis)
- One farmer group: usually has 30 member farmers
- Three researchers (from the regional research center already working on the FTCs to disseminate technology generated through previous research work)

2. FTC level workshop

Separate FTC level workshop meeting is necessary before the general planning workshop is arranged. The reason is the local contexts at each FTC are different and the stakeholders are not used to do such kind of meetings before. All case protocol requirements such as current situation description, future desired vision, supporting and hindering forces will be identified for each case. Thus, this meeting will be a stimulus for the general planning workshop to get more inputs. It also creates the opportunity for an on-farm observation and real life experience of the farming practices for the students.

During this meeting exploration will be made on the current agrifood system situation, the future desired vision of the agrifood system, supporting and hindering forces and planning for the desired change. In this process we assume that the farmers will define the current contribution and future desire of the agricultural professionals to the new envisioned agrifood system. All individuals who are working in demonstrating finished technologies at the FTC will participate. Planning for the desired change will also be made by the farmers individually, in group and during the general plenary reflection session following the protocol. The medium of communication at this level will be local language to actively participate farmers.

Expectation of the FTC level workshop:

- The current situation of the agrifood system and the future desired situation defined
- The current contribution of agricultural education, its weaknesses, strengths, opportunities and threats documented
- Competencies envisioned for the agricultural professionals
- The plan for carrying out action research in their farms and at the FTC and contributing to the improvement of agricultural education developed

3. MSP Planning workshop

The purpose of this meeting is to define the common current situations regarding FTCs, future desired change, supporting or hindering forces and implementation plan. Each of the participants from the FTC level workshop will present what they agreed on the common agenda. Reflections will be made on the presentations and common agenda for all FTCs will be identified. Plan for implantation to reach the desired change will be produced. Plans will be presented and enriched through individual, group and plenary session reflections. This meeting will be held in a convenient place for all participants. The medium of communication at this level will be English and local language to actively participate all stakeholders.

Expectation of the MSP workshop:

- Common and unique cases in the description of current situation of the agrifood system and agricultural education, future desired situation, supporting and hindering forces defined
- Common and case specific plans developed for implementation
- Competencies envisioned for agricultural professionals
- The plan for contributing the improvement of agricultural education developed

II. Implementation phase

The common plan developed from the MSP workshop will be again cascaded and implemented at this phase of the action research process. At this phase all stakeholders

such as farmers, teachers/researchers, students, development agents, subject matter specialists working in the FTCs will have their own role (will be defined more from the MSP meeting). The role of each of the participating stakeholder is described as below.

Farmers: will provide their field (when needed), time and share experience of farming practices to create learning environment for students. Farmers will take part in the evaluation process of what the students have prepared based on the plan. Farmers will closely participate in the process to make them part of the change agent and contribute to the competency identification during the FTC meeting and general assembly meetings. Farmers will exercise action research in their farm field and or FTC to make them learn more from their experience and contribute to the dynamic agrifood system situation. Unless farmers are equipped with the action research skills, their support for the agricultural education in terms of competence identification for the future will not be significant. Development agents and researchers will work together with the farmers as facilitators to sustainably support the transition to more sustainable farming and the agricultural education process.

Teachers/researchers: work as facilitators during the implementation process, document all process, generate data that can be used during the reflection session, work as evaluators for the student case works, prepare and deliver courses based on the students and other stakeholder expectations. This group will be from MU, ATVET and Tigray Agricultural Research Institute (TARI).

Students: carry out all the planned activities as agreed, reflect on the contents and activities of the courses, do case works and assignments, prepare and present reports for the stakeholders at FTCs, in the class room and during workshops. Students are also expected to be lifelong learners and be equipped with action research skills.

Development agents and SMS: facilitate action research conducted by the farmers, create mechanisms to incorporate the output of the farmers action research in the Bureau of Agriculture and Livestock Resources in consultation with responsible administrators.

III. Reflection phase

Reflection workshop will be organized to bring together farmers, researchers, development

workers, the government and students as part of the action research cycle. The result and process of implementation will be evaluated by all stakeholders individually, in group and at the plenary session. At this stage we will also give time for the ministry of education office delegates directly responsible for higher education quality to present the future direction at national level. In addition, the curricula for agricultural education will be evaluated based on the experiences gained from the FTC platform and the ministry plan. Updated plan for the agricultural education program AESD will be prepared based on the previous semester experiences and stakeholders expectations for next semester.

One implementation cycle will be completed in one academic semester since the course work for MSc programs is given only for one year.

IV. Reporting

Reports will be generated from all the activities and participating groups separately for each FTC, at the end of workshop, class room reflection, and student project accomplishment and student thesis completion. Generated new insights from the action research process will be scaled up to the ATVETs in consultation with their office mandate. It will also be shared to all consortium member cases at the available platforms.

When do you plan to run the first cycle (starting and ending dates) of the educational activities (courses, seminars etc.)?

Activities of the case implementation will be during the active production season (for rainfed farming) in the region. Each year, one cycle of main working season will be 9 months from April to December. However the educational activities at the university will be from September-June every year. The schedule presented below shows the combined intervention plan for completing one cycle at the different intervention areas. The description of current situation at the FTCs will start in the second week of September 2018 and the regular academic calendar will start in the first week of October 2018.

Activities	2018				2019				2020			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Planning phase												
Selection of working FTCs												
FTC level workshop												
MSP planning workshop *												
Plan preparation and Report synthesis												
Implementation phase												
Action research by farmers at FTC and or own farm												
Student practical visit												
Student project work development												
Student thesis project preparation												
Reflection phase												
FTC level workshop												
Reflection workshop (MSP)*												
Evaluation report and new plan synthesis												
Reporting												
FTC level												
Case level												

*MSP(Multistakeholder platform): At this workshop all the project protocol components such as description of present situation, visioning of desired future, identification of supporting and

hindering forces, development of implementation plan will be completed.

Q1=January-March; Q2=April-June; Q3=July-September; Q4=October-December

What is the planned (expected) number of learners (students, farmers, etc.)?

The case study will be carried out in six selected FTCs representing the three major agroecological zones (highland, midland and lowland) in the region. In each FTC, there will be 4 extension agents, 2 subject matter specialists (SMS), 30 farmers, 3 researchers, and 3 MSc students. In total, 24 extension agents, 12 subject matter specialists, 180 farmers, 18 researchers and 18 MSc students will directly participate in the case study. In addition, more institutions and individuals will participate during the multi stakeholder platform (MSP) meetings.

What is the level of the course(s)? (BSc, MSc, other)

The case work emphasis will be on both tailor made training and formal education. The tailor made training focus will be at:

- FTC trainings (provided for farmers)
- Agricultural Technical Vocational Trainings (Diploma and BSc level) and,
- The formal education (MSc level)

This will focus on the existing MSc program in Agroecology and Sustainable Development (AESD) at Mekelle University. MSc students will stay one week in the first semester and one week in the second semester working together with the farmers at the FTCs and farmers' fields for the courses; Agricultural Innovation and Practices I & II. This will help students to make farm observation, share experience with farmers' action research plan and develop their own cases for the course evaluation. The students will present their case work in the presence of all FTC stakeholders to facilitate the learning process. Students will also be supported to carry out their thesis work in the identified gaps during their stay in the field. They can evaluate the process of action research in the project. In addition to the Innovation I & II course, all other course that have practical components will be facilitated to be at the FTCs. Detail plan of what has to be done for each course will be developed during the workshops.

ATVET students will be targeted during the scaling up process after we get experiences from the MSc program. However the ATVET teachers can use the experiences gained from the participation in the action research to evaluate their teaching methods. ATVETs are mandated to educate development agents in Ethiopia. That is why they are part of the MSP platform.

Who will be the teachers/learning facilitators?

The following entities are going to play the facilitator role in this case study.

- Model farmers from selected FTCs
- Development agents at each FTC
- Researchers (MU & local research institutes) and trainers (ATVET)
- Students (MSc students facilitated by course instructors and MSc program coordinator)
- Subject matter specialists (SMS) at woreda level from the Bureau of Agriculture and Livestock Resources

A description of the 'learning arenas':

Where will the activities take place, what will be the processes to enable co-learning between teachers, learners (students, farmers, etc.) and research persons in society (farmers and others)?

The activities of the case work will be implemented at the FTC demonstration sites, farmers' individual plot and at the MSP meetings.

The learning process will take place during the MSP reflection meeting, dialogue with farmers at FTC, observation and action research participation at FTC. All the stakeholders including researchers, students, farmers, extension agents, ATVET trainers and SMS groups mutually learn from the case work. MSc students will be evaluated for their course work and research requirement for graduation. The course load on case work development will be evaluated by a joint platform of participants (students, farmers, teachers, researchers, trainers, extension agents) based on agreed evaluation details, taking into account AESD and tailor made training competence. The detail evaluation modality will be outlined during the MSP platform in consultation with university administration. Customized PRA tools can be used to participate farmers in the evaluation process.

The learning model is adopted from Lieblein et al (2012) as follows.

