



CZECH REPUBLIC
DEVELOPMENT COOPERATION

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*In its capacity of contractor within the official framework of
the Czech Republic Development Cooperation with Ethiopia*

EFFECTIVE IRRIGATION FOR SUSTAINABLE AGRICULTURAL PRODUCTION

Cooperative analysis

Angacha and Kacha Birra Woreda

Kembata Tembaro Zone

SNNPR

Ethiopia

Mendel
University
in Brno



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1. Abstract

Purpose of this study is to analyze effectiveness and business potential of targeted cooperatives. The cooperatives have been established by the project, officially in 2017 and as such members and leadership is taking more time to adopt cooperative principles, ownership and effective governance. Nevertheless, the cooperatives managed to organize farmers, taking more and more responsibilities over the irrigation systems as well as starting joint selling of produced vegetables. Potential of those cooperatives definitely lies in cooperation on marketing and trading their individual products with help of cooperative transport and contacts.

2. Project description

Name: Effective Irrigation For Sustainable Agricultural Production, 2014 – 2017

Place: Kacha Birra and Angacha woredas in the zone of Kembata Tembaro

Funder: Czech Development Agency

Implementer: Mendel University

Partners: Bureau of Finance and Economic Development, Bureau of Agriculture: Nat. resources and small-scale irrigation process owner, Water and Irrigation development Bureau, Bureau of Agriculture and Natural Resources, Bureau of Administration, Cooperative office

Overall Objective

To help maintain the landscape's potential in light of the current emphasis on agricultural production.

Outcomes

- providing more effective utilization of water for intensive and sustainable agricultural production in the target area
- reducing the landscape's vulnerability to erosion,
- increase in agricultural productivity, while simultaneously decreasing the size of actively cultivated land in the target areas.

3. Cooperative system of Ethiopia

There are four types of cooperatives, firstly, primary cooperatives with main role in providing channel through which farmers access public services such as the supply of credit for agricultural production and they are means of collective management of natural resources such as land and water.

Primary cooperatives can join cooperative unions that creates cooperative federation and cooperative confederation. The Southern Nations, Nationalities and Peoples Region (SNNPR) of

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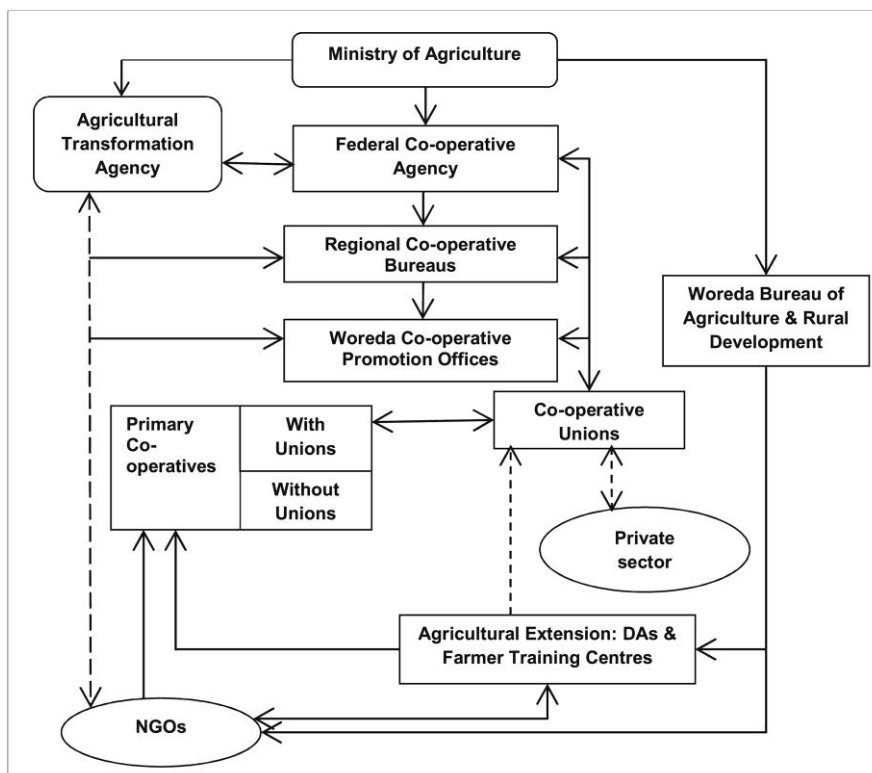
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Ethiopia established the Regional Farmers' Cooperatives Federation in Ethiopia in early 2009. Throughout the structure cooperatives can share experiences, got access to knowledge transfer, capacity building and even some agricultural inputs.

There are about 15 thousand primary cooperatives in Ethiopia (data from 2014), about 4000 of those are multipurpose and around 2000 are fruit and vegetables primary cooperatives. Co-operative promotion is at the woreda level responsibility of two agencies are supporting co-operatives: the Woreda Bureau of Agriculture and the Woreda Co-operative Promotion Office. As part of its rural development assignment, the Woreda Bureau of Agriculture provides agricultural extension. Throughout the country, extension activities on crop production, livestock husbandry and natural resource management are carried out by Development Agents (DAs). Respondents suggested that while DAs are mainly targeting individual farmers, they also provide technical support to primary co-operatives and co-operative unions. The other key structure at district level is the Woreda Co-operative Promotion Office, which has the assignment of directly promoting primary co-operatives and co-operative unions. According to woreda experts, the co-operative promotion office is responsible for the provision of co-operative education to farmers.



Cooperative promotion structure, Tefera , 2016



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Through co-operatives, smallholders may obtain inputs, adopt new agricultural technologies and access technical assistance. Co-operatives can also provide credit services to member farmers which ease production constraints. This all has led to the claim that co-operatives have a positive impact on farm incomes in particular and on food security in general (e.g. Shiferaw *et al.*, 2011). Nevertheless, there are several challenges that cooperatives in Ethiopia are suffering from.

Firstly, there is a lack of awareness about the role of cooperatives in economic and social development, and lack of awareness regarding cooperative law among community members or even some governmental officers and general public, which has made it difficult for integrated promotion of cooperatives in all sectors.

The functionality of cooperatives is constrained by shortages in skilled human resources (especially in cooperative business development) at directly related governmental offices (woreda agricultural bureau and cooperative bureau), due to high staff turnover and repeated structural adjustment of the cooperative promotion agencies. This has resulted in transfer of experienced cooperative experts to other economic sectors.

The functionality of cooperatives is also constrained by shortage of influenced by inadequate skills among the leadership of cooperatives. An effective and sustainable cooperative movement requires strengthening capacities of administrators and management staff associated with cooperatives. This capacity building should aim at empowering cooperatives so that they can make key decisions with minimum or no external support.

Last, but not least, cooperatives find limitations in their access to capital and financial resources. Farmers might receive inputs from government through the cooperatives, but without financial inputs (income) of the cooperatives they are not able to distribute them properly.

4. Targeted cooperatives' structure and management

The areas selected for the project irrigation interventions were adequate for development of new cooperatives as they supposed to play an important role as interfaces between farmers and the various woreda level offices and services, they serve as facilitators that bring communities into productive relationships with cooperative unions, private agricultural and agro-processing concerns, and private traders and brokers. In both areas there was a need to organize communities in such way so they can access all profits from cooperative establishment. Both communities and individual farmers were selected based on geographical area (proximity of the new irrigation systems) and motivation of farmer to participate on project activities as well as on management of irrigation systems.

Both cooperatives were established under the umbrella of fruit and vegetable cooperatives, in Angacha Woreda it is "Lemlem Fruit and Vegetable Producer Cooperative" and in Kacha – Birra Woreda it is "Borkosha Development Fruit and Vegetable Producer Cooperative".



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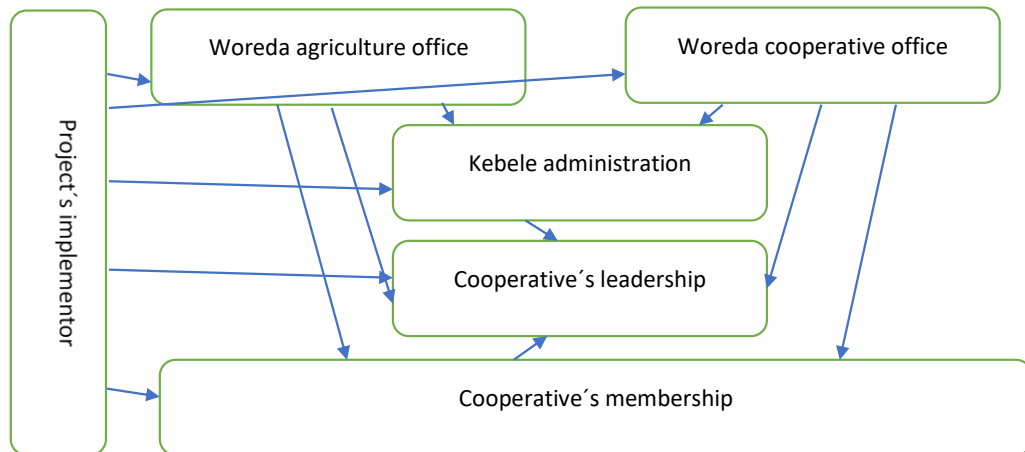
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In May 2017 both cooperatives fulfilled all requirements for temporary certification, which was delivered to them. According the Ethiopian law and practices, after 1 year of functioning, the cooperative office will issue permanent certificate (planned for Kacha Birra – in May 2018, for Angacha – July 2018). After final certification these primary cooperatives could join cooperative union (zonal level) to access benefits from sharing experiences and possibly inputs.

Structure of the cooperatives:



Each cooperative has own elected leadership, a board that consists of 5-7 people elected by the members. Elections are usually organized with support of Woreda cooperative office. In both targeted cooperatives first elected board has not been very productive as elected members often did it with hesitation or with some hidden intentions. With cooperative offices there were new board members elected in 2016 or in 2017. The second boards tends to be more active and responsible, understand more their roles and responsibilities. The board is responsible for good governance of the cooperative – financial management, organization of meeting, keeping records, communicate with all partners.

Cooperative membership is on voluntary basis, each member need to pay registration fee in amount decided by the whole cooperative (vary from 20 – 100 Birr). Members suppose to play active role in irrigation systems maintenance, participate on cooperative decision and request from the board a transparent governance.

Woreda cooperative offices, woreda agriculture office are very closely attached to the cooperatives, supporting them when some challenges occur. They are the main institution which suppose to make sure the cooperatives are functioning and playing targeted roles.

5. Evaluation of the cooperatives' management potential

Quality of management

Current situation in both cases the cooperatives:

- ✓ Established and clearly defined their mission and vision

Effective irrigation for sustainable agricultural production



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- ✓ Developed governing by-laws and formal registrations
- ✓ Each member of the cooperatives paid their share/registration fee according to their bylaws
- ✓ Opened saving book account at the nearby commercial bank of Ethiopia according the rules and regulations
- ✓ Constructed meeting and demonstration areas, small office and store through the support of the project
- ✓ Available necessary working materials, donkey with cart and reservoir (fiberic-rotos)
- ✓ Management, business plans developed
- ✓ They have a regular meeting schedule (twice a month)

The biggest challenges of the cooperatives for sustainable functioning:

- capacities of the management

Project trained cooperative management in various topics to build up their capacities in management, finances, accountancy and business-related issues. Unfortunately, the leadership of the cooperatives is not acting independently as the membership is not actively demanding decisions from them and governmental offices are afraid of any mismanagement.

- capacities of the membership

Project's interventions and trainings have built awareness of cooperatives members on cooperative principles, advantage and disadvantage of working together/in a cooperative, roles and responsibilities of management members to increase the knowledge and build trust among themselves. Nevertheless, the cooperative members are not fully active in demanding the proper management from their leaderships. This is partly due to traditional structures in the area, most cooperatives are used to wait to their respective kebele and woreda cooperative officers to tell them „what to do“, and how to proceed“ and the governmental structures in many cases won't allow the cooperatives makes independent decisions without their „presence“ (mostly coming from experience of mishandling the rules and bylaws).

In Angacha the permanent certification of the cooperative and the land usage has not been finalized due to political disagreement between woreda and kebele levels. Need to be worked on in 2018.

Although the cooperative both in Angecha and Kacha-birra, have a regular meeting plan (two times a month), they do not have a scheduled agenda for their meetings and for what, when, where and how to handle vegetable production yet. That limits them to achieve their vision through regular monitoring their schedule and/or plans to produce and get more return collectively or individually.

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6. Effectivity of irrigation systems' utilization

6.1. Angacha

The introduction of the irrigation system has resulted in the following positive changes in the farmer's management in the project site:

- Irrigations cover an area of over 625 m² of land for training activities and demonstration.
- The co-operative for the irrigation system can train watering and new plants planting.
- Improved cooperation with the local authorities. Communication has also improved among farmers.
- Irrigation has contributed to improving the living standards of the local population.

The Innovative Rainwater Irrigation System is an unusual system in Ethiopia that has the potential to improve the ability of farmers to store rainwater for their fields and to mitigate the negative effects of surface-draining water on their fields and causing erosion. This exemplary system, however, faces many complications from unclear property relations in terms of land, despite the small incentive for farmers to maintain a relatively small field of irrigation due to the small benefit of irrigation. The system is also relatively expensive to local circumstances. This system would be appropriate to replicate in locations where water accumulation and its transfer to reservoirs will be easier technically and financially with a shorter water pipe that will not intersect the fields of different farmers who do not want water line in their fields.

Since 2014, farmers' output has been monitored and evaluated for the purpose of assessing the production potential of vegetables in the Kembata Tembaro areas of interest. The average results were incorporated into the tables presented.

The final evaluation made in 2017 shows that the overwhelming majority of farmers in the area of interest are men aged 42 years. Compared to the start of the project, after three years of running the project, younger farmers also took part, reducing the average age to 39 years. All respondents say that farming is their only income. At the end of the project, the number of members in families of farmers and dependents increased slightly. Very positive is that farmers have been able to use the newly-acquired knowledge of intensive agriculture and the area of their cultivated fields has increased by 0.23 hectares. A key point in improving production is to reduce the distance to access water by a total of 1.7 kilometers.

<i>Year of Evaluation</i>	<i>Gender</i>	<i>Age</i>	<i>Main Source of Income for Household</i>	<i>No. of HH members</i>	<i>No. of dependents</i>	<i>Size of cultivated area (ha)</i>	<i>Current access to water (m)</i>
2014	M	42	Agriculture	6	3	0,45	2434
2017	M	39	Agriculture	8	5	0,68	641

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6.2. Kacha Birra

The introduction of the irrigation system has resulted in the following positive changes in the farmer's management in the project site:

- Irrigations cover an area of over 44 hectares of land, which has significantly increased agricultural production.
- Due to the availability of irrigation in the dry season, the production of new crop species requiring more water (sugar cane, etc.) was started due to availability of water. It also helps to support the channel. It is not mainstream crop, only starting to be popular in the area.
- The co-operative for the irrigation system is better motivated and co-ordinated.
- Improved cooperation with the local authorities. Communication has also improved among farmers.
- Irrigation has contributed to improving the living standards of the local population.

The irrigation system is common technology in Ethiopia that positively affects the management of large agricultural land, helping farmers to use their natural resources more efficiently. This type of irrigation systems is supported by the Ethiopian government. In case there is no misalignment of the water from the natural source of water (rivers, etc.), it is advisable to replicate this method of irrigation in other localities.

KACHABIRA

<i>Year of Evaluation</i>	<i>Gender</i>	<i>Age</i>	<i>Main Source of Income for Household</i>	<i>No. of HH members</i>	<i>No. of dependents</i>	<i>Size of cultivated area (ha)</i>	<i>Current access to water (m)</i>
2014	M	42	Agriculture	6	3	0,32	445
2017	M	39	Agriculture	6	5	0,37	421

Kacha Bira has the same effect of engaging younger farmers and the average age of farmers in the area involved in the project has declined by 3 years on average. Even in Kacha Bira, farmers are the only source of agricultural income. The number of members involved remained unchanged, but the number of dependent persons increased on income from agricultural activity. There was a slight increase in the area under cultivation of 0.05 ha. Now, after the introduction of the irrigation system, the distance to available water was reduced to an average of 421 meters.



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7. Potential for vegetable production

7.1. Vegetable production

Angacha

<i>Cultivated crops (kg)</i>									
Year of Evaluation	Maize	Wheat	Teff	Cabbage	Sorgum	Endive	Tomato	Onion	
2014	810	563	492	364	167				
2017	1210	752	530	399	181	110	118	213	

Kacha Birra

<i>Cultivated crops (kg)</i>									
Year of Evaluation	Maize	Wheat	Teff	Sorgum	Haricot bean	Tomato	Onion	Carrot	Endive
2014	692	565	456	167	153	580			
2017	850	689	548	181	220	732	213	437	110

A closer estimate of the average vegetable production is apparent. At the last periods of the project, farmers began to devote themselves to growing new crops with which they learned about field training. Newly established crops include Endive, Tomato, Onion, Beetroot. Farmers now have to travel 18 km to get the vegetables produced on the market. After the workshops were completed, the production of the 250kg compost was increased to one farmer.

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In the course of the project, the potential production of cultivated crops increased. Very interesting from a production point of view are beans. From freshly grown celery, carrots begin to appear.

7.2. Production planning

On the basis of intensive monitoring of price developments on nearby markets a table was compiled. The table shows the optimum month for vegetable sowing in view of observed price developments in the monitored markets. By using the recommended data, crop harvesting can be planned to be based on the optimal price level of the vegetable to be able to sell it on the markets for better price.

RECOMMENDATIONS FOR SOWING SYNCHRONIZATION WITH CULMINATION OF THE MARKET PRICE OF VEGETABLES

VEGETABLE	DATE OF SOWING WHEN ADDED IRRIGATION IS USED	SOWING DATE WITHOUT IRRIGATION
TOMATOES	February	March/April/May
ONION	December	March/April/May
CABBAGE	November	March/April/May
CARROT	February	August
GARLIC	January	September
CHILLI PEPPER	December	February
GREEN PEPPER	December	February

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8. SWOT analysis

8.1. Angacha

SWOT analysis	Positives	Negatives
Internal factors	Strengths <ul style="list-style-type: none"> - developed community - existing bylaws and rules - irrigation system for community purposes 	Weaknesses <ul style="list-style-type: none"> - capacities of members - capacities of leadership - less activity to act according the rules and regulations - irrigation system
External factors	Opportunities <ul style="list-style-type: none"> - vegetable market potential 	Threats <ul style="list-style-type: none"> - political situation in zone/Ethiopia - irrigation system not for individual production

8.2. Kacha Birra

SWOT analysis	Positives	Negatives
Internal factors	Strengths <ul style="list-style-type: none"> - developed community - existing bylaws and rules - functional irrigation system for individuals 	Weaknesses <ul style="list-style-type: none"> - capacities of members - capacities of leadership - less activity to act according the rules and regulations
External factors	Opportunities <ul style="list-style-type: none"> - support from governmental offices - vegetable market potential 	Threats <ul style="list-style-type: none"> - political situation in zone/Ethiopia



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9. Recommendations for sustainability of the cooperatives

Based on information above there are several recommendation that would increase sustainability of the cooperatives:

Building the capacity of the cooperative and/or members needs to be developed. The areas of intervention as pointed out by the government partners and members of the cooperative management members, and also our observation during the visits are indicated hereunder but not limited to:

- ✓ Reorganization of cooperative management members especially in Borkosha development Irrigation cooperative: Conducting a thorough assess and reorganize the existing cooperative management members in the way that it can benefit the members following the cooperative principles and the existing government rules and regulations; provision of training for re organized management members on cooperative management, documentation and financial transactions are required.
- ✓ Provision of refreshment training for members on cooperative principles, advantage and disadvantage of working together/in a cooperative, roles and responsibilities of management members to increase the knowledge and build trust among themselves.
- ✓ Organizing and conducting lessons and experience learning visit program among similar cooperative which are found within the zone is also another area of intervention to be considered for the members of the cooperatives to improve their practical knowledge.

Focus less on one-time asset transfers to cooperatives (as the project did in early stage of development) and rather on long-term engagements with a cooperative that focus on individual and organizational capacity strengthening that is more suitable for current stage of cooperative development

Cooperatives should be engaged within the wider landscape of organizations and institutions involved in improving the economic and social welfare of smallholders and contributing more widely to agricultural development, economic growth, and poverty reduction - public administrative and extension services, civil society organizations, private companies, traditional governance institutions, and informal credit systems.

Focus on inclusiveness (although limited) of cooperatives - membership is defined by geography, i.e., possession of landholdings in the irrigation scheme's catchment area. A potential outcome of this reality is that cooperatives may not be inclusive of the poorest households in a community, e.g., households that reside on less-favorable land that is not part of the irrigation catchment area, households that are incapable of producing marketable crop surpluses. The spillover effects occur in a number of instances, for example, where the cooperative supplies inputs (seed and fertilizer) to both members and non-members, or where nonmembers are able to access services through a family member who is also a cooperative member.