

# **Smallholders Irrigation Practices and Issues of Community Management: *The Case of two Irrigation Systems in Eastern Oromia, Ethiopia.***

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# What makes the research topic relevant for this study?

- Today, the development of water resources for agricultural purposes is rising rapidly in becoming the primary agenda for many developing countries as a means to combat with the existing problem of drought and famine
- The international donor communities are also in support of these efforts

# Continued

- Currently, the Ethiopian government perceived small-scale farmers as key players in producing the food requirement of the country and achieving food security.
- As a result, many smallholders irrigation schemes developed
- But are these community managed irrigation systems on the right track to achieve the intended result?
- This could make the research important and timely

# Reasons for the selection of the two irrigation systems

- Both are located in drought-prone regions
  - Crop failure due to insufficient and erratic rain fall is a recurrent phenomenon
  - The accessibility of the irrigation systems
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- The background of the slide features several concentric, glowing blue circles that resemble ripples on water, scattered across the lower half of the frame.

# Research Question

- The main research question is “What is the role of small-scale irrigated agriculture in coping with drought and improving the livelihoods of smallholders?”
- **The sub-questions are:**
- How do farmers manage irrigated agriculture?
- What is the contribution of irrigated agriculture to household income?
- What are the problems encountered by the irrigation systems?

# Objective of the Study

- The overall objective of this study is to examine the socio-technical aspects of community based small scale irrigation and its benefits to improve the livelihoods of farm households in Doni Kumbi and Bato Degaga Irrigation systems.
- **The specific objectives of the study are:** To examine the management of small scale irrigation systems,
- To assess the benefits achieved and problems encountered in irrigated agriculture.

# Research Methodology

This research is basically a survey case study focused on two irrigation systems namely:

- Doni Kumbi SSI and
- Bato Degaga SSI

## Data Sources

- Primary Data Sources
- Secondary Data Sources

# Methods of Primary Data Collection


- Interviewing sample Households
- Discussion with key informants

## Procedures of Site Selection and Primary Data Collection

- Visiting many of the irrigation systems and determine the two study sites
- Designing questionnaire
- Sample selection and sampling techniques
- Discussion with key informants



# Limitations of the Study

- Sample Households limited to 60 out of 192 irrigation population may affect the degree of representation
  - Weak recording system of IWUAs, DAs, and extension offices of the two districts
  - Farmers limitations of recalling time series data.
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# Organization of the paper

- Background information of the study
- Research methodology
- Theoretical overview of smallholders irrigation development
- Description of the study area
- Findings and discussions of the study
- Conclusion and policy implications

# The Study Sites

## Doni Kumbi Small-scale Irrigation System

- Located in east shoa zone of Oromia Region on the road to Tibila state farm 47 kms. From Adama town.
- It is the area categorized as one of the drought-prone areas of the

# Source of Irrigation Water

- The source of irrigation water is the Awash River
- It uses diversion method to convey water from the source
- The current irrigable area of the irrigation system is 82 ha.
- There are 72 irrigators organized by IWUA

# Bato Degaga Small-scale irrigation System

- Located in east shoa zone of Oromia Region on the road to Tibila State Farm 7 kms. From Sodere Resort Center
- It is found in the area categorized as one of the drought-prone area of the region
- Insufficiency and erratic rainfall is a common feature

# Source of Irrigation water

- The source of water of the irrigation system is the Awash River
- The method of abstracting water from the source is by using electric motor pumps
- The current irrigable area of the irrigation system is 60 ha.
- There are 120 irrigators organized by IWUA

# Findings

- **How do farmers manage their irrigated farm?**
- There is no much difference in the production and productivity of food grain crops under rainfed and irrigation cultivation since farm management in both cases is weak or traditional.
- The existing cropping pattern is not market oriented.
- 90% of cash crop production is concentrated on one crop item (onion).

# The reasons are

- The local seed is easily obtained (there are seed multipliers)
  - Water application is relatively easier
  - Less perishable
  - Easy to harvest and transport
  - Relatively withstands diseases
- Of the irrigable food grain crops, the production maize is very high.



# Continued

- **The reasons are:**
  - High household demand (staple food)
  - Easy to apply irrigation
  - Appropriate for the climate
- High volume of crop residue for animal feed

# Continued

- Cropping intensity of irrigation cultivation is very low. Only very few farmers rarely produce twice a year otherwise majority of farmers produce only once in a year.
- Some farmers tend to concentrate on dry land farming during the rainy seasons and not paying enough attention to their irrigable plot.
- Some farmers do not cultivate all in all their irrigable plot even under the condition where there is no shortage of irrigation water.

# Continued

## ➤ **The reasons are:**

- Lack of credit facility
- Unreliable market price
- Low level of extension service and technical assistance
- Lack of commitment in the part of farmers

➤ **Inter-cropping is totally non-applicable**

➤ **25% farmers in Doni Kumbi and 15% farmers in Bato Degaga SSI lease out their irrigable plot.**

# Continued

- **The reasons are:**
  - Shortage of finance
  - Farmers risk aversion mentality
  - Relatively high price of irrigable plot
- **Lack of farmers commitment**

# Disadvantages of leasing out of irrigable plots

- Contractors do not take much care for the land and soil
- It brings no change in the livelihoods of farmers
- It gives no opportunity to collect weeds and plant residues for animals
- There are non-members of IWUA in Doni Kumbi SSI that uses irrigation water without any contribution for administration and maintenance cost

# Comparison of Average household income by sources in Doni. (in Birr)

Source of Income	2001		2002		2003	
	Mean Income	Per cent	Mean Income	Per cent	Mean Income	Per cent
Cash crop (Irrigated)	4640.17	59.38	4816.92	63.97	7512.65	70.41
Irrigated grain Crop	766.67	9.8	917.78	12.18	587.5	5.51
Livestock and Livestock products	614.29	7.86	587.74	7.81	470.15	4.41
Non Agricultural Sources	307.5	3.94	593.76	7.89	590.00	5.52
Rain fed Grain crop	1486.07	19.02	613.33	8.15	1510	14.15

# Comparison of Average household income (Birr) by sources in Bato Degaga.

Source of Income	2001		2002		2003	
	Mean Income	Per cent	Mean Income	Per cent	Mean Income	Per cent
Cash crop (Irrigated)	0	0	6245.81	61.65	6320	54.51
Irrigated grain Crop	0	0	1401.74	13.84	862.08	7.44
Livestock and Livestock products	1456.17	29.81	1182.72	11.67	559.13	4.82
Non Agricultural Sources	1736.36	35.55	1301.26	12.84	1270.00	10.95
Rain fed Grain crop	1691.80	34.64	0	0	2583.26	22.28

# Continued

- In addition to irrigation contribution to households' income, the economic linkages created as a result of irrigation are very important
- Four kinds of economic linkages were observed though it is yet in its infant stages of development
- These linkages are prevailed either in the form of forward and backward modality or in one of it.



# Linkages

- Production Linkages
- Consumption Linkages
- Investment Linkages
- Employment Linkages



# What are the problems encountered by the irrigation systems?

## ➤ **Agronomic constraints**

- Cropping intensity of irrigation cultivation is very low
- There is no practice of intercropping
- There is no market oriented cropping pattern
- Use of low yielding local varieties due to absence of improved seeds
- The use of fertilizer is below the rate of recommendation

# Continued

- Plant protection method is traditional and or sufficient amount of pesticides is not applied as a result pests and predators considerably damages the quantity and quality of products
- Lack of irrigation water applications as per the crop watering requirement

# Management Constraints

- Weak Performance of IWUAs
- Lack of proper and timely maintenance of irrigation canals
- Inability to resolve conflicts among members and non-members of  
Weakness of farmers to organize themselves to overcome the adverse effects of input and output marketing
- Legal entity of IWUAs remained nominal

# Institutional Constraints

- Low level of extension service
- Absence of technical assistance such as training
- Limited experts mobility due to severe budget shortage and lack of transportation
- Inconsistency in organizational set-up and its frequent restructuring
- Extension staffs are not motivated

# Continued

- Poor inter-institutional linkages
- Weak integration of livestock with irrigation
- Shortage and/or high cost of farm inputs
- Untimely distribution of fertilizers
- Absence of private or government institution responsible for the multiplication of improved seeds
- Lack of market information system
- Absence of credit system

# Policy Related Constraints

- The agricultural policy of the country/region gives priority to the so called “package farmers” producing under rainfed cultivation
- There is no agricultural products price policy that support smallholders to sell their produce at reasonable price

# Continued

- Lack of irrigation water pricing policy based on water use rights that would introduce incentives for efficient water use and recover at least organization and management costs



# Conclusion and Policy Implications

- The use of irrigation water for agriculture is very useful to mitigate the problem of food insecurity and increase household income.
- This has been proved by the fact that irrigation played a vital role in improving farmers livelihoods in both study areas
- For instance, of the interviewed farmers in Doni Kumbi SSI, 23.3% said that irrigation highly increased their access to basic needs while the rest 76.7% responded that irrigation moderately improved their livelihoods.

# Continued

- In Bato Degaga SSI, the above figure accounts 43.3% and 56.7% respectively.
- The impact of irrigation development in the economic life of people in the study area can not be underestimated.
- However, the vital task of increasing and stabilizing food production in these drought-prone regions require the development of well-managed irrigation systems.



# Continued

- Therefore, the result of this study summarizes that given the limitations posed by institutional, managerial and infrastructural constraints removed or at least minimized, both irrigation systems can be vital economic instruments for farmers and people in the study area.
- **Policy Implications**
- There should be supportive policy that helps farmers sell their produce at reasonable price.

# Continued

- “Package programs” that focuses only on farmers producing under rainfed cultivation should also include smallholders irrigation systems.
- Since livestock is closely integrated with crop activities and provide significant source of livelihoods, the benefits of irrigation should address it as that of crops.

# Continued

- Inter-institutional linkages specially the cooperation between the two irrigation systems and large-scale commercial farms should be established and strengthened.
- The mobility of extension workers should be enhanced by improving the means of transportation.