Innovation Laboratory on Small Scale Irrigation

Report on Focus Group Discussion with participants of Irrigated Fodder farmers at Robit Bata Kebele, Bahirdar Zuria Woreda Amhara Regional State, Ethiopia

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Venue: Robit Bata Kebele

Introduction

It is obvious that the productivity of livestock is low in Ethiopia. There are several factors responsible for the low productivity of livestock in the country at large and in Robit Bata in particular. According to many studies conducted around Ethiopian livestock production and productivity, shortage of feed is the most important constraints to livestock production. Feed constraints both in quantity and quality becomes severe during the dry season, especially when the crop residues (the main feed resources) reduce in quantity. Hence it requires producing green fodder during

dry season in order to supplement the crop residues and also fill feed quantity gaps. Crop –Livestock mixed farmers in the highlands of Ethiopia, especially around Robit Bata have limited farm land and decreasing grazing area for livestock. The current national level government initiative of watershed management also discourages free grazing and farmers are requested to restrict their animals from free grazing and decrease their livestock to manageable size (2-3 cross bred and more productive cattle) than having large number of local animals which are less productive.

Robit Bata is one of the ILSSI project sites in Ethiopia where irrigated fodder could be an option to mitigate feed shortages both in terms of quality and quantity. Around 24 participating (farmers who will be issued irrigation technologies through IWMI) and 12 control farmers volunteered to try irrigated fodder using their local water source at their backyards.

Focused group discussion was made with the farmers in two groups to understand their views and preparedness for the intended fodder intervention.

Methodology

This study has been conducted at Robit Bata kebele, located 20 km away from Bahir Dar town, capital city of Amhara region. This study area was selected purposively. It has a mixed crop-livestock production system. Like other areas, feed is a problem in the area. The proximity of Bahir Dar market creates good opportunity for livestock and livestock product marketing. In addition, there is long experience of irrigation practice.

Farmers were selected by consulting administrative units and key informants. About 36 (24 participating and 12 control) farmers were selected in consultation with local administration, development agents, community representatives and researchers. Those selected farmers are expected to produce feed using irrigation from shallow wells at their individual backyards by using water lifting technologies which will be provided on loan by the project.

Base line data and farmers' need assessment were collected using Focus Group Discussion (FGD). The discussion was conducted in two groups. A total of 22 farmers (5 women and 17 men) with age range of 33- 60 years participated in the discussion.

Brief Summary of the Discussion

The main discussion points consisted mainly of the following:

- **The existing irrigation initiative**
- **Water lifting and conveyance options**
- **Contributions of irrigated crop production to livelihoods and income**
- **Potential of producing irrigated forages**
- **Gender dimensions of irrigation**

History of irrigation and water sources

Currently, almost all households are irrigation users although the intensity of irrigation of individual households varies. The community has over three decades of experience with irrigation though the scale of operation is low at farm level. There is a large scale irrigation operation at Koga dam (40 km far from Bahir Dar). However, irrigation practice is still not well organized. There is no strong institutional set up for managing water utilization. Farmers use collective action for

water distribution but sometimes it may be a source of disturbance in the community particularly to use river water.

The existing sources of water are shallow wells, springs, the river and Lake Tana. Thus anybody within the local community, who is interested in irrigation activities, could access water for irrigation purpose from any of these water sources. In addition, male headed households and female head households have equal chances to participate in irrigation based production. Shallow wells and springs are not reliable since they dry up before the main rainy season starts. Irrigation from the river and Lake Tana is capital intensive (initial cost of water pumps and variable cost- fuel). As a result, farmers use water pumps in common. There are various water lifting options including traditional (local pulley, rope & bucket) and modern (diesel pumps). Water conveyance is done very traditionally by carrying water with jerycans from the source to the field. Farmers irrigate crops using furrow system and/or flooding. There are two irrigation period: October to December and February to May. Water scarcity is serious during the later irrigation calendar.

Crops grown under irrigation and importance of irrigation

Both annual and perennial crops are grown under irrigation. The main horticulture crops grown are tomato, cabbage, potato, onion, and chillies whereas chat, passion fruit, coffee, avocado and mango are the main fruits grown under irrigation. Farmers also occasionally produce teff, barley and wheat with irrigation. A households' decision to produce any of the above crops is made based on soil type and fertility, water access and water requirements of crops, market demand for crops, market expectation and seasonal considerations. Some irrigated produce is completely supplied to the market, such as chat, cabbage, tomato, mango and

avocado. In general, more than 90% of irrigated products are supplied to the market whereas the remaining is for home consumption.

As mentioned above, irrigated crop production especially horticulture is a common practice in the area. Despite the remarkable benefit farmers obtain from irrigated crops through selling of the products, there are often problems with vegetable production due to their perishability especially when the yield is high or many farmers supply to the same market at the same time. This often leads the farmers to losses instead of profits. On the other hand, irrigation (the traditional water lifting and conveyance system) has negative consequences on pregnant women due to laborious water lifting and conveyance methods.

Irrigated fodder development

Farmers envisage dual benefits from irrigated fodder development. They can improve productivity of dairy cows by feeding improved forages and earn income from milk selling. Milk is a high potential marketable and profitable livestock product in the area. Moreover, farmers can earn income from fodder selling to peri - urban dairy producers. However, farmers have little experience on improved forage production. This is because of institutional factors (presence of free grazing), lack of awareness and issues of water accessibility.

Since feed shortage is becoming severe, farmers are planning to allocate land to develop improved forages. Though land is becoming one of the scarce resources, farmers agree to allocate a plot (0.01 up to 0.125 ha) for irrigated fodder. They mentioned the need for quality seed, water lifting and conveyance equipment and technical support for the development of improved forages. Previously introduced improved forages in the study area are oats, vetch, sesbania and napier grass.

Farmers intend to produce Napier grass using irrigation. In addition, farmers are interested to test other improved forage varieties.

Gender and irrigation

The role of males and females varies during decision making for crop selection for irrigation. Males decide on marketable crops while females decide on household consumable crops. In addition, males have control over income from marketable products. Regarding livestock products, men control incomes generated from selling of cattle and large income sources whereas women control income from hens, eggs and milk products and relatively smaller income sources. Irrigated fodder development might decrease the work load of women such as feed searching but their work load might increase due to watering (if they still continue with the traditional system) Feeding and management of animals is mainly handled by women because women are more responsible for feeding and livestock management than men. The labour division of the society indicates that men, women and youths have different responsibilities to implement irrigation activities (see Table 1).

Table 1: Family labour division for irrigation activities

Irrigation Activity	Responsibility				
	Men	Women	Boys	Girls	Hired labor
Hoeing	X	X	X	X	X (for chat only)
Planting	X	X	X	X	
Chemical spraying	X		X		
Staking plants	X		X		
Fertilizer application			X	X	
Water fetching		X	X	X	

Plant watering		X	X	X	
Tillage and land preparation	X		X		
Watering with motor pump	X		X		
Nursery management		X		X	
Harvesting of horticulture	X	X	X	X	
Harvesting of coffee		X	X	X	
Fencing of the farm	X		X		
Chat selling	X		X		
Selling of other crops	X	X	X	X	

Challenges of small scale irrigation

The number of farmers benefiting from small scale irrigation is still not up to the expected level because of issues with inputs, markets, infrastructure and production techniques problems. It is difficult to find quality horticulture crop seed from local private agricultural input supplier organizations. Infrastructure including roads and transport are still poor. Market information is distorted by middlemen and as a result, prices are uncertain and transaction costs are high reducing the profitability of irrigated produce. Moreover, farmers lack technological knowledge on modern irrigation systems.

Annex 1: Details of the discussion questions and answers with the two groups of farmers

Theme: Irrigated Fodder Development

Date; 23/12/2014

Group 1participants: Farmers registered for Rope and Washer pumps

No	Name	Sex	Age	Educational status
1	SilenatMelak	Female	35	Illiterate
2	YitayewGobeze	Female	55	Illiterate
3	Tsehay Alemu	Female	48	Illiterate
4	AlamirewGizachew	Male	40	Grade 12 complete
5	Lema Mekonen	Male	40	Adult education
6	GeteTakele	Male	55	Adult education
7	Tilahun Baye	Male	48	Adult education

Discussion points:

The existing irrigation initiative

1. **Is there currently any irrigation practice in the area and for how long has it been in place?**

    - There is an irrigation practice in the areafor about for 28 years

2. **What are the current sources of water for irrigation? What are the other *possible sources* of irrigation water available in the kebele?**

- The current water sources for irrigation are shallow wells, rivers and Lake Tana.

3. **Is there any irrigation scheme in kebele? If so, how is it managed?**

- There is no well organized irrigation scheme in the kebele

4. **Who, within the kebele, has access to the different water sources? Who makes decisions on water usage/management – for the collective scheme?**

- Anybody who is interested has access to different water sources. Those who have water pumps can use the water without any restrictions
- A single motor pump is shared among several farmers. Community bylaws are in place to monitor the use of water from rivers

5. **What proportion of households in the kebele practice irrigation?**

- 35% of the households in the kebele practice irrigation.

6. **What are the main crops grown under irrigation?**

- Tomato, chilly/green pepper / and cabbage are the main vegetable crops grown under irrigation.
- Khat ,coffee ,avocado ,and mango are the main perennial crops grown under irrigation.

7. **How do you decide which crops to favor for irrigation? Who is involved in decision making?**

- Crop decisions are made based on soil fertility level, crop water intake, water accessibility, demand of market for crops , market expectations and seasonal situation.
    - Both male and female are involved in decision making.

8. **Among the households growing irrigated crops, what proportion of the irrigated crop is used for family food and for market on average?**

- Among irrigated crops 85-90% is used for market and 10-15% is used for family food.

Water lifting and conveyance options

9. What **are the water lifting options used for irrigation?**

- Hand lifting (bucket & rope), motor pump , local pulley

10. **What are the water distribution (conveyance) systems used for irrigation?**

- Carrying with plastic water container or used inner tubes of tyres and distributing within the plots using hand carried watering hose

Contributions of irrigated crop production to livelihoods and income

11. **How does irrigation contribute to household income /livelihoods more generally?**

Family food diversified Additional income from sales of the produce

12. **What are the main constraints to the use of small scale irrigation?**

a. problem of supply of quality seed

b. no direct market access to the end users of the products–. Farmers are forced to sell their products to retailers who have legal business license in Bahirdar. Some farmers are located far away from the asphalt road and so it takes them 1-2 hour s walk to reach the main road with the load of vegetables on their heads

c. shortage of technical knowledge in irrigation – still practicing traditional way

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13. **Do you have an irrigation calendar along the year?** Yes

February -May

14. **Who does it favor most?**

It doesn't favor any particular body

15. **Do men and women have equal opportunities to irrigate their crops?**

- Men and Women have equal opportunity to irrigate their crops.

16. **When is the critical time to use irrigation for crop production?**

- February and March are the critical months to use irrigation

17. **Does irrigation have any disadvantages /negative consequences?**

Irrigation by itself doesn't have any significant negative consequence but crops like Khat which are grown by irrigation spoil the culture by making the youths become addicted.

More specific questions on irrigated forage potential

18.**Is there any experience of improved forages production in the area?**

- Yes, but very little

19. **Is irrigated fodder production being practiced in the kebele currently?**

- No

20. **If yes what motivates farmers to grow irrigated fodder?**

21. **If not, why not?**

Lack of awareness; there hasn't been any intervention so far

22. **How many of you currently use irrigation for growing feed for livestock?**

- None of them is using irrigation for growing feed

23.**If you don't use irrigation for forage currently, do you want to consider using irrigation to grow forages in the future?**

- yes ,

24. **What pre-conditions (things that need to change) would need to be in place for you to consider using irrigation for forage?**

- The water lifting technologies that can decrease labor requirement are preferred

25.**Who would make the decision to allocate water to forage (i.e. if the water resource is communal)? - This would help us explore men's and women's participation in decision-making on water management.**

- No experience of irrigation for fodder but there is equal decision making practice among men and women for irrigated crops

26. **In which season/situation would growing forage using irrigation make most sense?**

- when there is shortage of feed, during April and May

27. **Do you know of any improved forages being grown in the area? If yes, please give examples.**

- Yes, Napier grass and Sesbania and few Oats and Vetch

28. **What forages/feeds would you target for irrigation? (Explore difference between men and**

women)

- Napier grass for both women and men

29. **Do you want to try more varieties of the improved forages to try with irrigation?**

- yes

30. **How much land on average could be assigned by the farmers to grow irrigated fodder? (Min, Max)**

- 0.0625 ha – 0.125ha

31**. Where is the source of the planting material you want to obtain? Do you have any institution (private, public, NGO) in mind to source the improved forage planting materials?**

- BOA (Bureau of Agriculture) and NGO (Non- governmental organization)

32. **How reliable are these sources in terms of supply of quality planting material with reasonable price in time of need?**

- there is problem of equal distribution among farmers

33. **What modes of acquisition of planting materials are practiced in the area (Free gift, purchase with reasonable price, and purchase with inflated price)?**

- Free gift

34. **How do you intend to acquire the planting materials in future (Free gift, purchase with reasonable price, from a friend/fellow farmer)?**

- Free gift

35.**To which animals (Dairy cows, fattening cattle, fattening shoats) would you feed the material and why? (Explore differences between men and women)**

- For dairy cows and fattening animals

36. **What are the possible marketable (profitable) livestock products would you use the irrigated forage for? (Milk, Butter, Ayib, Fattened animal (cattle, shoats),(also explore differences been men and women)?**

- Liquid milk, butter, fattened animals

37. **Would there be an opportunity to trade in the irrigated fodder? Explain**

- yes , they said that the irrigated fodder has an opportunity to trade if farmers receive benefit.

38. **Where would be your potential market/s for dairy products, fattened cattle, fattened shoats, irrigated forages? (Explore differences between men and women)**

- There used to be a dairy cooperative in the area but currently not functioning due to shortage of milk supply. If the milk supply is restored the cooperative can restart functioning.

  Fattened animals can be sold to Bahir Dar town. Consumers

  Forages can be sold to peri urban dairy farmers around Bahirdar

Gender dimension of irrigation

39**. Who decides on the type of crops to grow using irrigation? Does decision role vary with crop type?**

- Both male and female decided on the type of crops to grow using irrigation but the decision role vary with crop type.
- For instance most of the time males prefer cabbage and kosta (spinach) whereas female prefer tomato ,chilly.

40. **Who does the irrigation activities (spell out the different irrigation activities and explore if there are role differences among the different community groups by activity? (Men, Women, Boys, Girls, Hired labor)**

Irrigation Activity	Done by				
	Men	Women	Boys	Girls	Hired labor
Hoeing	x	X	x	x	x/for khat /
Chemical spray	x		x		
---- /balamasidegef(trellises for climbing crops)	x		x		
Fertilizer application			x	x	
Watering with- motor	x		x		

pump					
-hand dropping (planting)		X	x	x	
- fetching water (irrigating)		X	x	X	
Tilling /smooth farm	x		x		
?Growing offspring from nursery (transplanting)		X		x	
Harvesting	x	X	x	x	
Fencing	x		x		

41. **How do the irrigated crops differ under management by men and women and maybe youth?**

- Planting by men, watering and cutting by women and youth

42. **Do women, men and youth face the constraints/challenges equally? Explain? (Problems relating to conflicts with women's existing workloads can be discussed and norms or culture that limit women's participation in irrigation)**

- Women do more than men.

43. **How are the other agricultural decisions made between Men and Women?**

- Men decide

44. **Who does the livestock feeding and management between Men and Women?**

- Men manage livestock during grazing and watering from rivers; . women are responsible for feeding animals at home by cutting grass and providing water

45. **Who controls the income from livestock between Men and Women?**

- Men control income from sales of live animals, khat and other vegetables.
- Hens ,egg and milk income is controlled by women
-

46. **Does irrigated fodder increase/decrease women's and men's workload?**

- Decrease both women and men work load. How? If forages are grown at certain area and fed cut and carried to animals, it saves time of tending animals for the whole day. However there is a need of labor to irrigated the forage but may be lower time than for tending animals at grazing

47. **Does irrigated fodder take water away from other uses? If yes, from what other uses? If so, are men, women or children most affected? And how?**

    Currently, well water is being used for livestock and other household uses. If the well capacity is small, there will be water shortage when there is additional need for water.

- When water shortage is faced boys are more affected by irrigation activity because they are forced to fetch water from distant rivers on the back of donkeys.

Date 25/12/2014

Group 2 Participants (Farmers registered for improved Pulley pumps and control farmers)

No	Name	Sex	Age	Educational status
1	DasashMelak	Female	40	Illiterate
2	GebeyDinku	Male	45	Adult education
3	Belay Amogne	Male	60	Adult education
4	NibretuTakele	Male	37	Adult education
5	Serkaddiss Alemu	Female	50	Adult education
6	Kassa Ademe	Male	46	Adult education
7	AtalayAdeme	Male	47	4th
8	Melaku Mekuanenet	Male	33	4th
9	Misganaw Alemineh	Male	50	6th
10	Getnet Agumas	Male	42	Illiterate

11	Simegnew Abebe	Male	22	10th
12	WasihunAgegnehu	Male	58	Adult education
13	MulualemAgegnehu	Male	37	Adult education
14	KassahunBeza	Male	47	Adult education
15	MuluAntigegn	Male	40	5th

The existing irrigation initiative

1. **Is there currently any irrigation practice in the area and for how long has it been in place?**

- Yes, above 20 years of experience.

2. **What are the current sources of water for irrigation? What are the other *possible sources* of irrigation water available in the kebele?**

- Rivers, lake , shallow well and developed springs

3. **Is there any irrigation scheme in kebele? If so, how is it managed?**

- There is no well organized irrigation scheme in the area.

4. **Who, within the kebele, has access to the different water sources? Who makes decisions on water usage/management – for the collective scheme**?

- Mainly youths has access to different water sources since they have potential labor force.

5**. What proportion households in the kebele practice irrigation?**

- All practice irrigation activities in the sub kebeles the participants belong to but the scale and intensity differ among the households.

6. **What are the main crops grown under irrigation?**

- Perennial crops like coffee, gesho (a tree of which leaves and branches are used to produced local drink), mango ,avocado and khat are the major whereas chilly, cabbage

,tomato, onion and potato are among the fruits and vegetables produced in the area under irrigation. Teff, barley and wheat are also produced by irrigation to some extent.

7. **How do you decide which crops to favor for irrigation? Who is involved in decision making?**

- Based on water and farm availability and the market demand for crops. Both male and female farmers are involved in decision making.

8. **Among the households growing irrigated crops, what proportion of the irrigated crop is used for family food and for market on average?**

Crop	Market	Family food
Coffee	Few	Most
Khat	All	
Chilly	Equal	Equal
Cabbage	All	
Tomato	All	
Potato	Most	Few
Mango	All	
Avocado	All	
Gesho	All	

- 95% of the grown crops are for market the rest 5% for family food.

Water lifting and conveyance options

9. **What are the water lifting options used for irrigation?**

- Local pulley Rope and bucket pulled manually from shallow wells, Carrying water from rivers with plastic cans

10. **What are the water distribution (conveyance) systems used for irrigation?**

- Hand carrying of water from source to plots and gravitational furrow irrigation from rivers where the landscape favors
- Horticultural crops are irrigated using drip system where as perennial crops are bucket watered.

Contributions of irrigated crop production to livelihoods and income

11. **How does irrigation contribute to household income /livelihoods more generally?**
    - Crop production by irrigation benefits the farmers higher than the rain fed production because it is less affected by natural catastrophic events like rainfall irregularity or flood or hail storm. The income from the produce supports the families very much and families are well nourished from the variety of crops produced.

12. **What are the main constraints to the use of small scale irrigation?**
    - Some farms are located far from the main road which makes it difficult to transport the products for market
    - Water lifting and conveyance systems are very in efficient

    - Presence of pests
    - Frost problem especially on khat.

13. **Do you have an irrigation calendar along the year?**

    - Yes From October to December and from February to May

14. **Who does it favor most?**

No difference

.

15. **Do men and women have equal opportunities to irrigate their crops?**
    - Yes they have equal opportunity to irrigate their crops.

16. **When is the critical time to use irrigation for crop production?**

- From February to May /due to late harvesting of rain fed crops/

17. **Does irrigation have any disadvantages /negative consequences?**

- Yes, pulling water by rope from well causes health problem to women particularly for pregnant women.
- The bulk of the money from sales of irrigated crops like khat is controlled by men

More specific questions on irrigated forage potential

18. **Is there any experience of improved forages production in the area?**

- There is no experience of producing improved production in the area.

19. **Is irrigated fodder production being practiced in the kebele currently?**

- No

20.**If yes what motivates farmers to grow irrigated fodder?**

21. **If not, why not?**

- Presence of free grazing, lack of awareness

22**. How many of you currently use irrigation for growing feed for livestock?**

- None

23. **If you don't use irrigation for forage currently, do you want to consider using irrigation to grow forages in the future? If yes, yes**

24. **What pre-conditions (things that need to change) would need to be in place for you to consider using irrigation for forage?**

- Quality seed, motor pump, water tube (delivery hose), quality pulling machine ,technician who maintains irrigation technologies in the kebele, stop free grazing ,technology to break hard pans to use ground water.

25. **Who would make the decision to allocate water to forage (i.e. if the water resource is communal)? - This would help us explore men's and women's participation in decision-making on water management.**

- Both men and women

26. **In which season/situation would growing forage using irrigation make most sense?**

- January to May

27. **Do you know of any improved forages being grown in the area? If yes, please give examples**.

- Yes. Vetch ,Oats ,Napier grass.

28. **What forages/feeds would you target for irrigation? (Explore difference between men andwomen)**

- Napier grass for both male and female

29. **Do you want to try more varieties of the improved forages to try with irrigation?**

- Yes , we want to try.

30. **How much land on average could be assigned by the farmers to grow irrigated fodder? (Min, Max)**

- 0.01 – 0.0625ha

31. **Where is the source of the planting material you want to obtain? Do you have any institution (private, public, NGO) in mind to source the improved forage planting materials?**

- From private sector, Bureau of Agriculture, NGOs

32. **How reliable are these sources in terms of supply of quality planting material with reasonable price in time of need?**

- Reliable and quality seed

33. **What modes of acquisition of planting materials are practiced in the area (Free gift, purchase with reasonable price, and purchase with inflated price)?**

- Free gift

34. **How do you intend to acquire the planting materials in future (Free gift, purchase with reasonable price, from a friend/fellow farmer)?**

- Free gift

35. **To which animals (Dairy cows, fattening cattle, fattening shoats) would you feed the material and why? (Explore differences between men and women)**
    - Dairy cows
36. **What are the possible marketable (profitable) livestock products would you use the irrigated forage for? (Milk, Butter, Ayib, Fattened animal (cattle, shoats),(also explore differences been men and women)?**
    - Mostly milk
37. **Would there be an opportunity to trade in the irrigated fodder? Explain**
    - Yes it can be sold after self-sufficiency
38. **Where would be your potential market/s for dairy products, fattened cattle, fattened shoats, irrigated forages? (Explore differences between men and women)**
    - Bahir Dar

Gender dimension of irrigation

39. **Who decides on the type of crops to grow using irrigation? Does decision role vary with crop type?**

    - Both men and women decide to irrigate crops ,no difference in decision roles
40. **Who does the irrigation activities (spell out the different irrigation activities and explore if there are role differences among the different community groups by activity? (Men, Women, Boys, Girls, Hired labor)**

Irrigation Activity	Done by				
	Men	Women	Boys	Girls	Hired labor
Watering	x	x	x	X	
Planting	x	x	x	x	
Harvesting	x	x	x	x	
Picking (cultivation) /gesho,coffee		x	X	x	

Tillage	x		x		
Hoeing	x	x	x	x	
Selling -khat	x		x		
-others	x	x	x	x	

41. **How do the irrigated crops differ under management by men and women and maybe youth?**

- The irrigation (watering) activity is undertaken by women and youths. Men work other activities other than irrigation activities.

42**. Do women, men and youth face the constraints/challenges equally? Explain? (Problems relating to conflicts with women's existing workloads can be discussed and norms or culture that limit women's participation in irrigation)**

- There is no any norm or culture that limits women participation

43. **How are the other agricultural decisions made between Men and Women?**

- Though it is men who initiate the idea, the decisions are made communally.

44. **Who does the livestock feeding and management between Men and Women?**

- Women undertake the livestock feeding and management activities more than men

45. **Who controls the income from livestock between Men and Women?**

- Women control the income received from milk and milk products whereas men control income received from sales of cattle and khat.

46. **Does irrigated fodder increase/decrease women's and men's workload?**

- It increases women workload because it is women who do the irrigation (watering activity),

47. **Does irrigated fodder take water away from other uses? If yes, from what other uses? If so, are men, women or children most affected? And how?**

- Yes, it competes with the water for khat of which income is controlled by men but the income is used by the entire family