

*Full Length Research Paper*

# Condition, use, and management of water resources among pastoralists in Harshin District of the Jijiga Zone, Ethiopia: A gender perspective

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**A study was conducted in Harshin district, Ethiopia to monitor the condition, use and management of water resources among Harshin pastoralists. For the study, three sub-districts (Kebles), Harshin, Medeweyin and Lanqerta, were selected. Both quantitative and qualitative data were collected using household surveys, key informant interviews and focus group discussions. The study found that water supply in Harshin district is 100% surface water system through rain water harvesting in Birkas, and 63, 100 and 0% in Harshin, Medeweyin and Lanqerta, respectively, do not have Birkas. Besides, 76% of the respondents were not satisfied with the quality of drinking water. Moreover, existing water supply sources contamination is exacerbated by low latrine coverage of 96, 50 and 0% in Harshin, Lanqerta and Medeweyin, respectively. Among the respondents, only 55% cleaned their storage material once in a week, while 18% never cleaned. However, 100, 33 and 50% of the respondents in Harshin, Lanqerta and Medeweyin, respectively, purify the water. The study recommends that strong assistance is required in maintenance of birkas, construction of silt traps and separate drinking structure for livestock coupled by capacity building and awareness rising for cleaning the available scarce water.**

**Key words:** Water resources, pastoralists, rainwater, water-harvesting, gender.

## INTRODUCTION

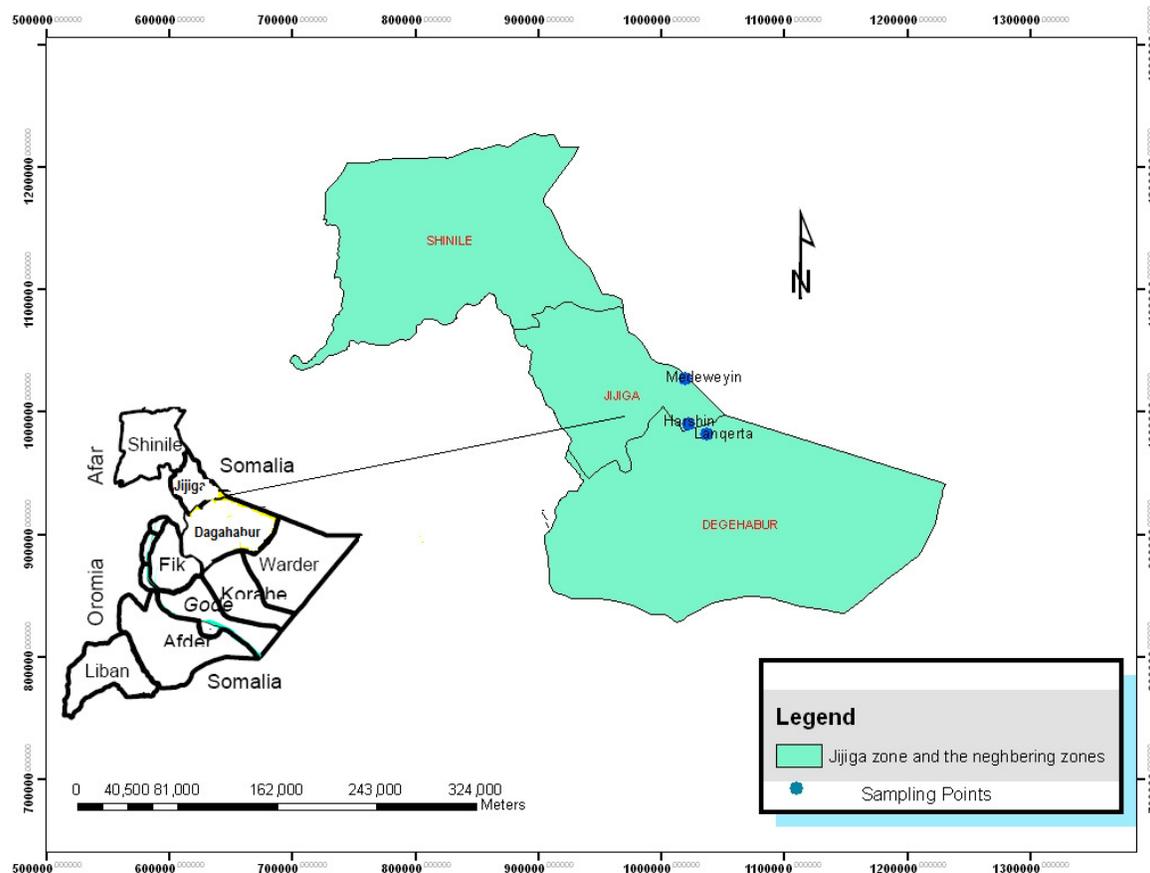
Drinking water in sufficient quantity and quality is one of the most basic human needs and rights. The human right to water entitles everyone to sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic uses. 'The State has obligations and responsibilities to ensure that all people have access to safe water' (Sever, 2005). Accordingly, Millennium Development Goal 7 on Environmental Sustainability aims to reduce by half the number of people who have no access to clean drinking water and basic sanitation (UN-Water, 2006). This is because of the fact that water plays paramount importance in the lives of people and its deterioration both in terms of quality and quantity has direct or indirect impact on the wellbeing, health, and livelihood of people. Though, progresses are made in many countries,

several people in the world still do not have access to sufficient and safe water. The majority of them live in developing countries and pastoralists are the worst affected group.

Issues related to use, management and control of water resources are as equally important as availability of water. Discriminatory practices that exist within communities based on social identities such as gender, ethnicity, age, religion, etc. could affect one's access to these resources. The fact that women and children engaged in domestic water supply imply that women have more contact with water. In developing countries context, domestic work including activities related to water takes up to one-third to one-half of a woman's working day (Aureli and Brelet, 2004; Cleaver and Elson, 1995; UNDP, 2003).

Experience has shown that interventions which include the views and input of both men and women generally work better than those who do not (Aureli and Brelet,

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**Figure 1.** Location of the study area, by Zinabu T.

2004; Cleaver and Elson, 1995; Fong et al., 1996; Sever, 2005; UNDP, 2003). Hence, understanding the differences in accessing power, resources and amenities will help in designing strategies and interventions that do not further exacerbate existing discriminatory practices (UN-Water, 2006).

In Harshin district, the livelihood of the people mainly depends on extensive traditional livestock production, natural rangeland vegetation, and water resources. Yet, environmental degradation throughout the region has intensified in the past 10 years and manifested in the forms of deterioration of drinking water quality, and increased rate of evapo-transpiration (Kassahun et al., 2008). The water resource in the district is scarce and with erratic nature. Traditionally, the people in Harshin district store the only available source of water, rain water, in cisterns (known as Birkas) for domestic as well as livestock consumption.

Previous works has been performed on the quality of Birkas water; however, the gendered perspective, use and management of water resources among Harshin pastoralists were not part of it (Zinabu and Melat, 2012). It is with this background that a study was initiated with the aim to investigate how water resource is being utilized, managed and controlled by the pastoral communi-

ties in Harshin district of Somalia National Regional State, Ethiopia. The study also reveals the established gender relations in using, managing and controlling water resources.

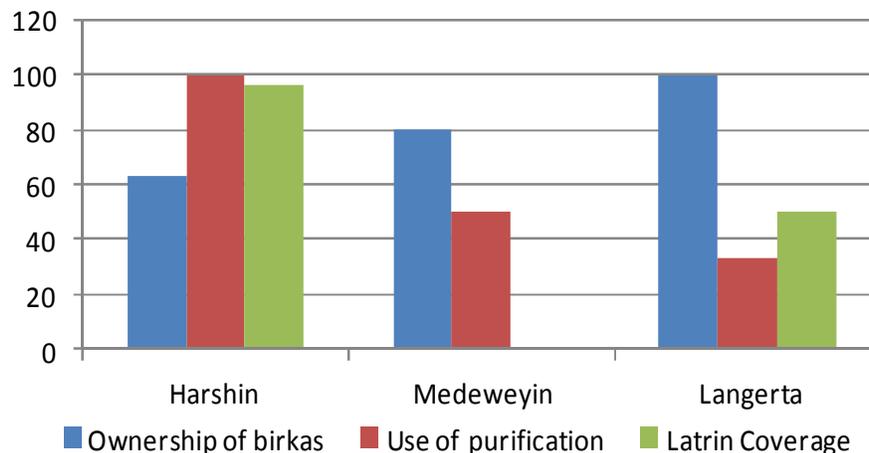
## MATERIALS AND METHODS

### Description of the study area

The study was carried out in Harshin district of the Jijiga Zone, Ethiopia located 125 km east of Jijiga town (Figure 1). According to the 2007 census report, the district has a total population of 80,215 of which 45% are female and 55% male (FDREPC, 2008). About 90% of the district communities dwell in the rural area and depend mainly on livestock production for their livelihood while 10% of the populations are urban and suburban dwellers. For the study, three sub-districts (kebeles) were selected in consultation with the heads of District Administration, Health Bureau, Water Bureau, Food Security, Veterinary Service, and Police. Accordingly, the selected Kebeles were Harshin, Medeweyn, and Lanqerta.

### Methods

Both quantitative and qualitative data were collected. Quantitative data were collected from household (HH) surveys while qualitative data were collected using key informant interviews and focus group



**Figure 2.** Percentage distribution of ownership of birka, use of purification system and latrine coverage in Harshin District.

discussions. For the survey, pre-tested structured questionnaire were prepared. Enumerators and translators who are familiar with local language and culture were recruited and trained on the contents of the questionnaire. Focus group discussions and key informant interviews were facilitated by the researchers. The household survey was conducted in 55 HHs. The key informants' interviews were conducted with the Health Bureau, Water Bureau, and Women Affairs. A gender analysis was conducted to understand gender roles in construction and maintenance of birkas, how access to community birkas is governed, quality of participation in the governance between men and women, gendered roles and responsibilities related to water resource use and management, HH division of labor to water related tasks, and experience of water related diseases. Data collected through key informant interviews and FGDs were categorized and narrated along research objectives. Content analysis was further employed in the presentation of the results. Survey data were tabulated, analyzed and interpreted using simple descriptive statistics.

## RESULTS AND DISCUSSION

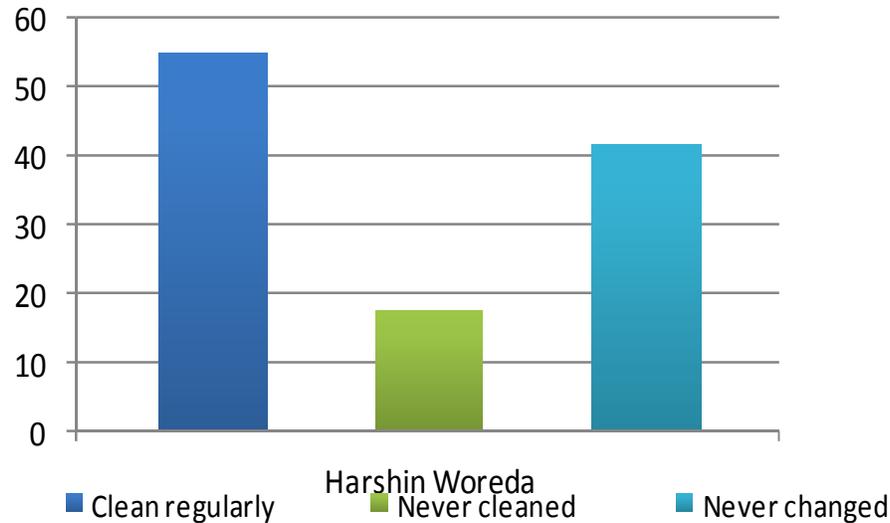
### Condition of water and sanitation

Water supply in Harshin is 100% surface water system through rain water harvesting. Run-off water from rainfall is directed and filled into digged cemented structures called Birkas. People in all Kebeles depend on surface rainwater harvesting both for human and livestock consumption. There are a total of 3503 Birkas in the District, of which 69% are functional. Majority of the respondent HHs (63% in Harshin, 100% in Langerta, and 80% in Medeweyn) do not have private birka due to the high cost of construction (Figure 2). Hence, most of the community members use water from communal birkas constructed by the government and the community and / or through reciprocal kinship relations with private birka owners.

There is no sufficient water throughout the year and as a result most HHs are forced to buy water during dry seasons. Among the respondents, 96% do not have

sufficient water throughout the year. Some of the strategies pursued to get water during dry seasons include store and use water for dry season, buying water, and in severe cases migrating to nearby District depending on availability of pasture and water, proximity, low population density, limited competition, and presence of relatives in that order.

The District Health Bureau indicated that 99% of the community do not have clean water supply as they use untreated surface water. This is further exacerbated by the low latrine coverage. Most community members use the open space in the surrounding to defecate. Parallel study in the area reveals the existence of coliform above the guideline value in 90% of the birkas (Zinabu and Melat, 2012). According to the focus group discussion with community members, condition of water in the District is much deteriorated. There are all sorts of contamination sources from the environment, human and livestock. Some of them are lack of cover/roof of almost birkas, use of same water source for human and livestock, weak fences to protect animals and children from entering, washing clothes close to birkas, lack of waste management system, and lack of regular cleaning and maintenance of birkas which contributed to the flourishing of aquatic small animals in the birkas. The water in some birkas smelled bad, and changed color into yellowish green due to algal growth and as a result of organic matter decomposition during dry seasons. The District Health Bureau explained that acute diarrhea, urinary tract and kidney infection, intestinal parasites, and bacteria related problems (due to the presence of active motile bacteria including *Shigella* and *Salmonella* in the water) are prevalent health problems associated to poor water condition. The office further explained that children are the most vulnerable groups to these threats because of their poor resistance and adaptation to the condition. These call for an urgent response from community as well as local and regional development actors.



**Figure 3.** Cleaning and changing of storage materials (%) in Harshin District.



**Figure 4.** Women and children collecting water and Birka condition, in Medeweyin Wereda, by Melat G.

Latrine coverage was found to be high in Harshin (96%) followed by 50% of the HHs in Lanqerta and 0% of the HH in Medeweyn. In Harshin, high coverage of latrine (96%) and ownership of birkas (63%) might be linked to the high intervention by governmental and non-governmental organizations.

Water is collected from the birkas by bringing personal plastic containers from home. Similar containers are used for storage. Among the respondents, 96% use plastic containers to collect water and all use similar containers to store. Frequency of cleaning storage materials varies and 55% of the respondents replied that they clean their storage material regularly once a week with available detergents. On the contrary, 18% respondents explained they never cleaned their storage material. Moreover, storage materials are often not changed at all unless broken and 42% of the respondents never changed their storage material (Figure 3). Unless frequently cleaned and changed, unhygienic storage materials could be a source of contamination.

### **Construction, use, management of Birkas and gender issues**

Both men and women participate in the construction and maintenance of birkas. But there exists sexual division of labor. While men dig a hole, provide construction materials such as cement, sand and stone, mix and construct, the women's role is confined to support services such as consulting, provision of catering services for the men as well as cleaning the surrounding area to prevent dirt contamination during construction (Figure 4).

Fetching water for domestic use, washing clothes and utensils, caring for children and sick family members are entirely women's responsibility. Both adult and young women engage in such activities. However, there is gendered difference in watering livestock; watering big animals like camel and cattle is performed by men while women are responsible for small animals (goats and sheep) which are done around homestead by bringing



**Figure 5.** Woman taking out water from Birka by Zinabu T.

water from Birkas. Where crop and vegetable production practices present (among agro pastoralists), it is men who engage in such production. Hence, it can be said that there exists sexual division of labor in using water resource for domestic activities as well as watering livestock.

Water collection for domestic use is entirely women's responsibility and is highly risky. Several incidences were discussed where women have fallen into the birkas while pulling water (Figure 5).

Regarding use and management of birkas, all community members are entitled to collect water from communal birkas. No such discrimination exists from using community birkas based on any social identity. As most birkas are community properties, they need to be governed by a village committee. Men respondents know about the presence of such committees while most women respondents do not. And those few women who know about the committee said that 'only men gather and decide. Our task is around the home'. There is no participatory approach where women were represented in electing village committees for managing birka. Lack of participation in management implies that the women's rights and privileges are taken away. If women do not participate in management of household or community resources, their right and privileges as member of a household of community to participate and contribute in decisions regarding use and management of those resources would not be heard (Sever, 2005). Therefore, they depend on male members and their good will for the use of such resources. This intensifies their subordinate position and dependency on male counterparts.

During the FGD, the women explained that even when NGOs and government bureau officials come to discuss

on water issues, they only discuss with men community members. This support the argument that even though women in developing countries play a pivotal role as collectors, users, and managers of water for agriculture and domestic use, they remain in a disadvantage position in water resource utilization and interventions programs (Cleaver and Elson, 1995). Their considerable knowledge of water resources, including quality, reliability, and storage methods is too often not taken into account by decision makers who still ignore that this hidden chest of knowledge that is one of the major keys to the success of water resources development (Aureli and Brelet, 2004; UNDP, 2003).

Among private birka owners, the study inquired decision making patterns regarding allowing other community members to collect water from owned birkas, selling of water during dry seasons and over cash collected. The discussions indicated that husbands are the ones who decide in all the cases.

Hence the study implied that though there is no gender based discrimination in using community birkas, the level of women's participation in control and management of birkas both at household and community level is very low if not non-existent.

### Health issues and purification of water

The community recognizes water from birka as very poor, contaminated and not safe. 73% respondents think that the water is of poor quality. It was observed during the field work that animals and human use water from the same source. Lack of Birka roofs to protect from various forms/types of contamination of dust and waste nature from and around birkas, presence of worms and small aquatic animals in the water, and entrance of wild animals like foxes and hama were mentioned to have caused poor quality. Similarly, 76% responded that they are not satisfied with the quality of their drinking water. According to them, the water is not clean, cause diseases, and requires lots of detergents for washing cloths and utensils. Similar study conducted (Zinabu and Melat, 2012) showed that 90% of the samples collected from this district has high contamination with coliforms (>350 CFU/ml), which shows that the area is much neglected and the people are in high risk of waterborne diseases and the requirement of further treatment beyond chlorination.

The community indicated that they have experienced the following water-borne/related diseases: stomach-ache, diarrhea, malaria, typhoid, cholera, fever, skin disease (itching and spotting), and eye disease. Kidney problem among women was also mentioned as a serious health problem. Most of the diseases have high incidence among women and children, and children are the most affected group. Respondents also indicated that their livestock have experienced diarrhea, skin diseases (locally called *Kuda*), and mouth and stomach diseases because

of the same problem.

Despite the fact that there exist water supply and sanitation interventions, such as provision of water agar and chlorine, maintenance of birkas and construction of roofs for few selected Birkas, the community believes that interventions are not sufficient and are of limited reach. Hence, the community developed their own strategy to purify the water they use before consumption. While some use water agar, boiling, and use of cloth to separate the waste, others add Naphthalene, Gypsum ( $\text{CaCo}_3$ ) locally called Nora, or bark of a shrub locally called 'Gelol'. Further investigation is required to test their effectiveness and dosage. Even though the level of purification is not satisfactory in general, all the respondents (100%) in Harshin use at least one of the means afore-discussed, where as the percentages are 33% in Langerta, and 50% in Medeweyn. High-level intervention in Harshin Kebele must have contributed to this.

Since intervention by non-governmental and governmental organizations in the District to assist water supply and sanitation is very limited, it is recommended that assistance is required in maintenance of existing birkas, construction of silt traps and roofs to minimize contamination from dust, animal and human source, and construction of separate drinking structure for livestock.

## Conclusion

Rain water harvested in Birkas is the only water source for communities living in Harshin District. However, 99% of the community do not have sufficient and clean water supply. Existing water supply sources are contaminated from the environment, human and livestock, and the problem is exacerbated by low latrine coverage. Acute diarrhea, urinary tract and kidney infection, intestinal parasites, and bacteria related problems are prevalent health problems. Lack of frequent monitoring and care of water collection and storage materials intensify the problem. Interventions are not sufficient and are of limited reach. As a result, the community developed their own strategy to purify the water they use before consumption which needs further investigation is required to test their effectiveness and dosage. The study indicated that though there is no gender based discrimination in using birkas, women's participation in control and management of birkas both at household and community level is very low if not non-existent.

The study recommends that assistance is required in maintenance of existing birkas, construction of silt traps and roofs to minimize contamination from dust, animal and human source, and construction of separate drinking structure for livestock. Besides, frequent monitoring and care of collection and storage materials is required and appropriate technology to pull out water from birka should be put in place. Constructing improved domestic water sources and health education especially improve the lives of women who collect the water and care for sick children.

The improved health of children also gives women more options on how they spend their time. Consultation, management and decision making processes should take into account the differential access men and women have therefore devise strategy to have an inclusive participatory approach. It should be noted that participation in management or decision making does not only involve participating women and men in the implementation phase but also in the design and planning phase.

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