

**WEEP**

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Water-security in Ethiopia and the  
Emotional response of Pastoralists

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ESRC-DFID Development Frontiers



Report of the Scoping Visits  
in Dulessa and Mille Woredas, Afar Region

10-12 October and 1-4 November 2017

by

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# 1. Introduction

## Purpose

This report presents findings of the inception phase of the Economic and Social Research Council's supported research 'Water Security in Ethiopia and the Emotional Response of Pastoralists' (WEEP), led by Cranfield University in collaboration with IRC Ethiopia, the International Water Management Institute and Oxfam Ethiopia. Two field visits, hosted by staff of FSA, were made to the research's selected pastoralists: the Afar. The purpose was to improve the understanding to inform the project's methodology and to prepare the site selection. John Butterworth and his IRC team and Ato Guret Ahmed Executive Director of Friendship Support Association (FSA) prepared the following itinerary from 10-14 October by the entire team. Later, from 1 – 4 November, Abinet Kedebe visited Mille Woreda for the same purposes, also with support by FSA.

The Cranfield University and IWMI teams gratefully acknowledges IRC's, Oxfam's, and FSA's excellent support to the very insightful field trip.

The following report reflects main observations, informal discussions within the team especially with Bethel Terefe and Abinet Kedebe, and some follow-up literature review of Flintan et al (2008) and other. After the itineraries, the report is structured according to the two formative research phases: local norms regarding emotional wellbeing in general (sections 2 and 3) and emotional responses specifically related to water access experiences (section 4). Section 5 focuses on water supplies in Dulessa Woreda, and section 6 on Mille Woreda. Section 7 concludes with the final site selection.

## Itinerary

### 10 October 2017

- Via Ankober to Argoba Special Woreda in between Amhara and Afar Regions
- Lunch in an Afar/Muslim restaurant in Argoba
- Discussion with Argoba Special Woreda water officer
- Visit to town water supply with household connections
- Travel to Dulessa Woreda in Afar Region
- Meeting in the house of the former FSA worker with the chair of the Tirtira Kebele
- Discussion with land administrator of Dulessa Woreda
- Discussion with the Dulessa Woreda Administrator
- Supper in Dulessa
- Travel to our host village in Tirtira and sleep under the stars

### 11 October 2017

- Informal interviews with women and with men in Tirtira host village
- Travel with stop at the railway construction camp 'Istanbul', from which Bethel and Solome returned to Addis
- Visit to Hurunto Kebele with solar pumping system installed by FSA and nearby abandoned woreda hand pump
- Visit to the village of Ato Kedafo Adem, Guret Ahmed's brother, in Hurunto Kebele with a partially functional hand pump

- Travel to Doho lodge

### **12 October 2017**

- Travel from Doho lodge to Addis

### **1 – 4 November 2017**

- 1 November Travel to Mille and visit to Semera University and Mille Woreda water officer
- 2 November Visit of Dagle and Giraro Kebele south of Mille
- 3 November Visit to Gega and Butele Kebele north of Mille
- 4 November Travel to Addis

## 2. General wellbeing among the Afar

### Livestock and pastures

The single most important determinants of wellbeing for Afar pastoralists in the steppe or desert climate of the Afar Region are livestock and pastures, and, hence, the rain upon which grazing vegetation depends. In the driest months, pastoralists often have to move to still available pastures. When rain falls, it can be intense, causing flash floods.

For example in our host village in Tirtira, Dulessa Woreda, the 2017 rainy season from June to September, was not good, so everyone will have to fetch water at a place at some 5 km distance. (In other villages, women may stay behind). The drought hit much worse in 2015. Livestock died. Those who had 30-40 cattle and oxen lost all animals; only 3-4 camels, who are more resistant to drought, are left; their care takers had to buy fodder.

In the past, government gave 50 kg of wheat per household per month, but this is not regular anymore. (N.B. food for such safety nets or food for work is bought within the country and not imported as food aid anymore as used to be done in the past).

The most serious threat to pastures across the Afar Region, even more serious than water shortage according to one interviewee, is the rapid spread of the *Prosopis Juliflora*. It now covers 1,2 million hectares. This thorny shrub/tree was introduced in the late 1970s and early 1980s by a collaboration between government and international organizations because of its rapid growth and use for firewood, for charcoal trade to diversify livelihoods, and for soil improvement to combat desertification. However, no animal can eat it. It is called 'woyani' as it started spreading during the time of the political party with the same name that came into power in the early 1990s. It grows aggressively because of its deep vertical roots that suck all water from great depths, and new plants grow from underground horizontal roots. This deprives other local vegetation water and sunlight. Also, it attracts malaria mosquitos and serves as hiding place for wild animals. Pastoralists call it the 'Devil Tree'. There have been programs that tried to eradicate, but these were not effective. One strategy was burning. In the past, burning of vegetation just before the rains was sometimes practiced, but that practice disappeared. There are no spontaneous bush fires. (For detailed costs and benefits of invasion of *Prosopis Juliflora* in the southern Awash basin of Afar Region, see Elukor et al 2016).

A transition away from pastoralism is slow. Diversification of pastoral livelihoods includes trade in meat, charcoal trade, small enterprise, crafts, urban migration, employment in new investment projects and ad-hoc employment in and around construction works. As rainfed cropping is difficult in

the Afar Region, a transition to settled agro-pastoralism and crop farming generally requires water infrastructure that also enables irrigation, besides domestic and livestock water uses. Around Awash in the southern part of Afar and northern part of Oromo, with marshes and wetlands, Afar and Kereyuo pastoralists have been settled in large-scale irrigated sugar cane plantations since 1969, when the first scheme was built under Haile Selassie with Dutch consultants. A second scheme was constructed under the Derg. The third scheme was initiated more recently. However, the new schemes primarily benefited wealthier men (Flintan et al 2008).

The Argoba Special Woreda at the foot of the escarpment down from the highlands to the Afar lowland is a quite unique case of a mix of cropping and trade (by Christians) and pastoralism (by Muslims).

### Government interventions other than water

Enormous road and railway construction projects linking Addis to Djibouti port, are being implemented in the Afar Region. It is still unclear to us how displacements and compensation played out; and what the future impact will be. In any case, the opening up of the region will further attract large-scale investors, with implications for the land and water resources of the Afar, including the risk of 'land and water grabbing'.

The Administrator of Dulesa Woreda shared his knowledge about one such case. 'A white man' (of unknown origins to him) had gone to the national investment bureau and got an investment permit for land and groundwater in Dulesa Woreda. From the national level he went to the Regional level (and possibly the Zonal level). At Woreda level, the Administrator only knew that he will use the land for large-scale groundwater-irrigated fodder production for his livestock in Amhara Region. The Administrator underlined the advantages that he perceived as being promised, and which he welcomed: employment creation and the construction of a water supply scheme.

The Afar Region (and other pastoral areas) have no land registration or other form of formalization of customary pasture land tenure arrangements. All practical arrangements are made between government authorities and the male clan elders. This may weaken customary tenure and open up for outside claims to land by the state or investors without any recognition, let alone compensation for earlier land occupation for pastoralists' livelihoods.

However, crop land is being registered in (men's) individual names since two years, as mentioned by the land registration officer in the Dulesa Woreda. Although he said he should in principle also register water resources, he lacked information about those.

## 3. Gendered wellbeing and patriarchy among the Afar

### Introduction

From our interviews, information by project partners, and literature (Flintan et al 2008), it appears that wellbeing, including mental wellbeing, is entirely gendered, as follows.

Women and men in Afar sub-clans share the joint overarching goal of ensuring that they themselves and all of their livestock (camels, cattle, sheep, goats, donkeys) survive. Sub-clans have primary rights to land that, overtime, has come to be accepted among the Afar as the own sub-clan's territory and secondary rights (or 'lease' rights) in other sub-clans' territories. Territories include the land's water, vegetation and other natural resources. In the sense of that 'greater common good', both women and men perceive livestock, land, water and other natural resources as common property: everyone takes

care and is likely to respond emotionally to any issues around livestock, land, water and other resources, and negotiations between sub-clans on their uses. Cross-cousin marriages (through the father's kin) are common, which further cements mutual exchange and sharing and caring relationships, which are vital for the clan as a whole to accommodate for loss and hardships over centuries.

However, the division of decision-making power over resource use and seasonal migration is strict and hierarchical, underpinned by strong gender norms. These divisions are bound to shape emotional responses. Men control the reproduction and use of most livestock and the search for pastures, and decide about intra- and inter-sub-clans issues. Women are relegated to a status of resource-less care takers of their husbands' and children's domestic needs, which includes milking within (temporary) settlements. Only if there is a surplus of milk can women make butter and cheese and sell.

### Marital relationships and control over women's sexuality

Marriage arrangements and control over women's sexuality are central to enforce this hierarchy. Forced teenage marriages are common. The girl involved is often not informed. The groom's family pays bride-wealth to the bride's family, and the bride has to move to her husband's sub-clan. For Dulessa, Daniel Abebe, our guide from FSA, gave the example that before the drought of 2015, the bride wealth was 7-8 cattle and many goats. However, after that, it reduced to 2-3 cattle and an oxen to be slaughtered for the wedding. As in other pastoralist societies, polygamy is frequent. After Somali Region, Afar has Ethiopia's highest percentage of women in polygamous marriages (21.8 percent), while only 9.7 percent of men live in polygamous marriages (EDHS Report 2011). Polygamy is seen as a sign of wealth. Men are supposed to use this wealth to provide for all wives.

Traditionally the bride wealth is seen as a recognition and payment for the wife's future labour or services and her off-spring. Fertility rates are high. Accordingly, however, the bride wealth must be returned if such services are terminated due to voluntary action taken by the wife. During the marriage therefore, the wife can only control property that she receives as a gift, including any livestock donated by her family or her husband. She has no access to property belonging to the husband or his household (Flintan et al p. 19). If the husband dies, his wife is still the property of his sub-clan. Hence, a brother of the late husband would then become the new husband of the wife. If women want to leave either during the marriage or when she becomes a widow, she has to repay the bride-wealth. A woman is often considered no better than other properties of her husband (Flintan et al 2008). Yet, the percentage of female-headed households with divorced, widowed or single women in Afar Region is high: 26.1 percent (<https://data.worldbank.org/indicator/SP.HOU.FEMA.ZS?locations=ET>)

Afar grooms' wish to be assured of girls' virginity at marriage has led to the worst form of female genital mutilation (FGM) in the east-west line in Africa that crosses the Afar Region and where FGM is still practiced. In addition to cutting girls' clitoris, her labia are stitched. During the wedding night, the groom has to cut her open, using his typical big knife. This may lead to her bleeding to death (Picture 1). Also, complications such as fistula and child morbidity at birth are frequent. <https://www.youtube.com/watch?v=r8lV1z4zy7g>). Women's mortality rates at child birth as a result of FGM are extremely high. This contributes to an exceptionally skewed sex ratio in the Afar Region: the 2007 Census conducted by Ethiopia's Central Statistical Agency (CSA) found that the Afar Regional State had a population of 1,390,273, consisting of 775,117 men and 615,156 women, so 126 males per 100 women.



Picture 1. In Tirtira

FGM is illegal in Ethiopia and campaigns helped reducing milder forms of FGM In southern parts of Ethiopia, or FGM does not exist at all there. However, there the raiding of girls is common, for example during market days. Once a girl has been raped, she is forced into marriage with the rapist. Parents can still try to get the bride-wealth of the rapist. One case in Oromia caused much national debate: a girl tried to defend herself against such rape and, in spite of her many warnings, could only defend herself by killing him in the end.

Strict norms about marriage and sexuality also affect men to some extent. In our host village in Tirtira, we saw how the elder men ('the punishment fathers') met to discuss and punish a man who had slept with another man's wife in another village. The blame was on the man, and not disproportionately on the woman, it seemed.

In Afar, as in many other parts of Ethiopia, the prevalence of HIV/AIDS has considerably been reduced to less than 3 percent for women, and less than 2 percent for men, also thanks to well-funded state and donor action. However, the prevalence seems increasing again.

### [Gendered activities, property rights and decision-making](#)

As found by Flintan et al (2008) in their study in various parts of Afar Region, the basic property rights principle is that all livestock belongs to the clan who monitors and ensures its productive capacity for the good of the clan. Individuals have user rights to the livestock and responsibility for their well-being and good husbandry. As paternal and maternal kin are particularly linked through patri-lateral cross-cousin ties, they possess claims and rights to each other's stock.

However, within this common good framework, there is a strict hierarchy between women and men, which also influence gendered notions of wellbeing and stress. On the one hand, men and boys tend to take care of all large livestock, particularly camels but also all other animals, and decide about their uses. Camels, for example, can be sold for an amount of some USD1000-1500. Men also milk their animals for own consumption, certainly when herding at a distance to the huts.

The reasoning underpinning this norm is, according to our respondents, that 'property is divided up according to the ability and strength to take care of the properties. Men can best take care of livestock because they are the strongest, facing more hardships in a very harsh and dry condition of herding. Moreover, men are responsible for the household'. However, husbands remain accountable to his wife about many decisions. Most commonly conflicts can occur if a husband sells property without consulting his wife, particularly that which had been given to her from her family at different times (including their young). Conflicts can also arise when husbands marry additional wives, which has an impact on property relations with some property being unfairly given to the new wife.

Table 1 is an example taken from Flintan et al (2008) how this translates in norms about wealth in the Kebele Awash 7 in the southern part of the Afar lowlands. Note the norm that more wives in polygamy are seen as property and wealth criteria.

**Table 1. Wealth Ranking in Debo Peasant Association, Awash 7 kilo** (source: Flintan et al 2008, p. 44)

<b>Rich</b>	<b>Medium</b>	<b>Poor</b>
>5 ha irrigated land	>2 ha	-
>50 cattle	>10-15	-
>30 camel	>10-15	-
>50 shoats	>20	<10
Camel & donkey for transport	-	-
>2 wives	1 wife	1 wife
Weapon	-	-

On the other hand, Afar women generally own, sell/exchange and control, at best, some sheep, goats and donkeys (used for transporting large quantities of water over long distances). Women can be given animals, even camels, as gifts at different times of their lives, in particular birth, initiation, marriage, or inheritance. Women milk animals around the huts. Additionally they take part in management decisions related to improving milk output. They may use some of their income to purchase supplementary feed for the livestock, and hence directly able to determine the level of milk off-take. This better enables women to sell milk and prepare and sell butter or cheese for their own income.

Further, women are entirely responsible for the house. This includes the building of the hut, which is a light wooden structure in this hot climate, not requiring much cleaning. However, it gives hardly protection under heavy rainfall. Also, firewood burning for cooking generates suffocating smoky conditions in the house. Further, women are responsible for fetching water for drinking of people and the kids of goats and calves that stay at home, and for cooking and child care.

As mentioned, land is also common property of the entire clan. However, according to the needs of the livestock, men take decisions about where to stay and move. The male elders intervene when conflicts arise. Under Ethiopia's Constitution (1994) women have an equal right with men to use, transfer, administer and control land. The Federal Rural Land Administration Proclamation No. 89/1997 Article 5(4) states that the land administration law to be issued by regional states should



confirm the equal rights of women in respect of the use, administration and control of land as well as in respect of transferring and bequeathing holding rights (NEWA/EWLA, 2003). As mentioned above, in Afar, crop land has started to be registered. However, the land officer of Dulessa Woreda was aware of this law, but told us that only men's names are registered in Afar. In other Regions, for example, Amhara, joint registration is much more advanced.

- Butter	Women	All family	Women	Women	Women		
- Meat	Men/ Women	All family	Women/ Men	Not sold		From cows	For household use
- Hide	Men/W omen	Men/Guest	Women/ Men	Women/Men		From cows	Sold. For household use. Women can inherit products made from hide.
<b>Shoats</b>	Both/W omen	All family	Both/Wo men	Both	Both, children	Exchanged with cattle, bought, inherited through both, wedding gift from wife's parents, gift on birth of child from relatives.	Sold, gift to friends or to newborn relative, contribution to the clan, exchanged for cattle, meat for household use.
- Milk	Women	All family	Women/ Men	Women	Women	From shoats	Sold. For household use.
- Butter	Women	All family	Women/ Men	Women	Women	From shoats.	
- Meat	Women /Men	All family	Women	Not sold		Men prepare it.	For household use.
- Skin	Women	All family	Women/ Men	Women	Women	Men prepare it.	For household use. Sold.
<b>Donkey</b>	Women	All family	Women	Not sold	Women		
- Transport	Women	All family	Women	-	Women	Bought.	Sold. Not inherited.
<b>Gun</b>	Men	Men	Men	Men	Men		

Type	Who Owns it?	Who Has Access/Use/Takes care of it?	Who Controls Access?	Who Controls Money if Sold?	Who Benefits More?	How does it come into household?	How does it leave household?
<b>Camel</b>	Men	Men/son older than 15	Men	Men	Men	Inherited through men, contribution from the clan, bought, exchanged, gift from friends/family or at birth.	Sold, gift to friends and/or new born relative, contribution to the clan, exchanged for guns, meat for household. Inherited through men.
- Meat	Men	All family	Men/ Women	Not sold		From camels	For household use.
- Milk	Men	All family	Men/ Women	Both/Women		From camels	For household use. Sold.
- Skin/hide	Men	Community	Men	Men	Men	From camels	
- Transport	Men	All family/society	Men	Men	Men	From camels	
- Social value/mkt	Men	All society	Men	Not sold	Men		
<b>Cattle</b>	Men/ Both	Men/son older than 15	Men/Both	Men	Men	Exchanged with shoats, bought and inherited. Inherited from men to men, though sometimes a widow may be able to inherit 1-2 cows.	Sold, gift for friends or to new born relative, contribution to clan, exchanged for guns, meat for household use.
- Milk	Men/ Both	Men, sometimes women & children over 15	Women	Women		From cows	Sold. For household use.

**Table 2. Resource Benefit Analysis of Different Livestock from Dupiti and Elider Woreda** (source: Flintan et al 2008. Note: 'shoats' are 'sheep and goats')

Table 2 gives further details on the hierarchical gendered activities and gender-skewed property rights. Taken from Flintan et al 2008 (page 41 - 42), the table unravels gendered property rights in two Woredas, Dupti and Elider Woreda adjacent to, and north of Melle.

### Socio-political structures and leadership among the Afar

Afar social structure and leadership is patriarchal, which also influences women's, male leaders' and other men's emotional responses. Flintan et al (2008 p. 28) highlight the nested structure of: Mela (clan); Kaidoh (local community); Afa (Lineage group); Dahla (extended family) and Burra (nuclear household).

Follow-up investigation will further clarify the definition of 'clan' and 'sub-clan' and the meaning of the Afar 'clan' as differentiated from Ethiopia's other major ethnic groups, such as the Amhara or Oromo. Also, more clarity will be sought about the synergies and overlap or the relative autonomy of these customary structures and demarcation and functioning of administrative Kebeles and Woredas. Kebeles are at least partly formed according to customary social units. They consist of at least 500 households and about 3500-4000 persons (Wikipedia).

Each 'clan' is likely to be defined according to its well-established male gerontocracy, whereby decision-making power regarding land and other natural resources resides within the clan council, consisting of the clan leader, elders, the *feima* and local wise men. Positions of pass on to sons.

The *feima* is a rule-enforcing authority in Afar traditional administration. It consists of a principal leader (*feima-abba*), a deputy leader (*erenna-abba*) and ordinary members. A slightly different naming is also found in the 'Development Status in Afar National Regional State, Ethiopia; APDA' cited in Flintan et al 2008 (p. 29):

- Sultan: top with highest power
- Makkabuntu: responsible for their culture (qaada) and community law (madqa or Afar ada)
- Fiamata abba (or feima-abba?): responsible for implementing law and punishment
- Fiqma Dagen (or erenna-abba?): deputy for Fiamata abba
- Gulbu Abba: head of sub clan
- Bura Abba: head of nuclear household

Clan elders are particularly powerful, and more feared and respected than the elected chairs of the administrative Kebeles and Woredas and government officials. Oral communication networks and processes such as *dagu* facilitate a quick and efficient movement of information between men, and probably women as well. State officials always negotiate with the clan elders. Only for conflicts between clans does the state assume a mediatory role. Such conflict may erupt when well-armed men seek praise and admiration by raiding cattle from non-Afar pastoralists in times when pastures abound so it is well possible to hold more livestock.

As further cited in Flintan et al (2008), the *finaa* is the clan defence and community policing institution, grants execution and enforcement duties by elders. The breaking of customary rule results in punishment (advise, penalty or corporal punishment) to maintain the continuity of Afar customary law, community values and respect for the traditional authority of the clan. Reasons for punishment are non-cooperation inter- and intra-clan activities, like the search for a lost camel, but also include

adultery, mistreatment of a wife and mismanagement of family stock (Padmanabhan 2008; cited in Flintan et al 2008).

Most household conflicts are resolved within a community and close to a household through a system of family arbitration. The rationale is that such arbitration will seek to satisfy the joint interests of both parties.

Outside the own clan, Flintan et al (2008) cite how clan elders not only protect the primary rights to land by their clan members, but also negotiate with neighbouring pastoralists with secondary 'lease' rights. Secondary access right is gained, among other things, through payment in kind or through provision of services. There are also more informal arrangements implemented by clan elders. These arrangements include cultural ties such as intermarriage and bond-friendships. According to Kassa (2000), such access right is granted during times of shocks such as drought, epidemics, and displacement caused by civil strife.

Women are excluded from these male decision-making structures, but not entirely. As mentioned in Flintan et al (2008; p. 32-33), pastoral women's friendships and trade links, particularly across ethnic borders, provide valuable social capital for peace building (Padmanabhan 2008). Also, peace negotiations are only valid if the celebrations are attended by women, who also prepare the feast: as such they are seen as symbols of peace (Tafere, 2006). This role as peace makers goes even further. During times of conflict institutional arrangements and customary rules become flexible and in many cases provide room for substantial variation in gender relations. For example when areas between two conflicting groups are contested, this prevents the men from taking livestock, particularly the valuable camels, there. In order to ensure that livestock remain healthy, women take up the role of camel herders and at risk, will take the camels to the contested grazing sites without any announcement. In these new gender roles, women take over when men are no longer able to fulfil their primary roles of defending themselves and their animals (Padmanabhan 2008). These opportunities for pastoral women as peace makers to overcome exclusion and establish more gender equality are well accepted: after all, they protect the clan's properties so they serve the entire clan as the most important unit for the survival of Afar pastoralists.

However, leadership remains strongly male-dominated, also in religion. In the Mosque there is only a limited area provided for women so most of the time only men participate. Girls are also excluded from education. Although boys and girls are supposed to have equal access to the school, some families still do not send their girls (Flintan et al 2008; p.62).

Emotional wellbeing with regard to access to water and water development and management is embedded in this general context.

## 4. Water and wellbeing among the Afar

### Gendered water responsibilities and access to water in Dulessa and Mille Woredas

It follows from the above, that women's and men's experiences with regard to water differ in at least three respects. First, the intra-household responsibilities to ensure access to water for drinking by people and livestock and for other water uses are gendered. Men and boys have to ensure water for

drinking by the camels, cows, and other animals for which they are responsible and that they often take away from the huts for herding daily or during longer periods in times of migration. Women depend on healthy cows and goats for milk and milk products. The quantities of water required are large. During men's and boys' absence, they need to drink themselves as well, and can take baths. Men can move to the water sources.

In contrast, women and girls have to move at least part of the water to their huts, for drinking, cooking and also to provide water for the very young animals that cannot join the herds as yet. The ownership of donkeys greatly helps in bringing such water in sufficient quantities, often from distant sources. Women also need water for cleaning of utensils, laundry and washing or bathing of themselves and their children, but that can be done at the source. As the women in our host village in Tirtira underlined, women keep these responsibilities even if they are ill or pregnant; it is against the norms if men have to do. However, in the village Hurunto, where Kedafo Adem, Guret Ahmed's brother lives, we saw a man drawing water for his household uses; his wife did not feel well. When there is a clear joint interest for the household, for example, if women are sick, gender norms are flexible.

Second, without a primary say about access to land and its related water sources and about migratory movements, it is difficult for women to negotiate settlement patterns that meet their needs for natural water sources best.

Third, it is likely – and will be further investigated – that the siting, construction, operation and maintenance of more sophisticated infrastructure is largely decided upon by men. This holds both for traditional infrastructure and for infrastructure that the male leaders negotiate with government and NGOs.

During our field visit, we also probed to some extent about sanitation issues, also because, elsewhere, women cannot be seen to go and defecate, not even to a toilet of her in-laws. This forces women to only defecate very early in the morning or at night, which is unhealthy. In any rural area, open defecation appeared the norm. Quantities are minor compared to defecation by the herds. As one female interviewee mentioned: during the day she can hide herself behind the by now dense *Prosopis Juliflora*.

Dispersed defecation in these hot, rural areas is likely to be hygienic. People clean themselves with stones and leaves. Further concentration of faeces and other waste reduces pathogens transfer, but also increases risks of flies and odour. A bit more water may exacerbate these risks, while a fully-fledged flushing system will remain unrealistic for years to come. Sanitation issues become more urgent in small towns or temporary denser settlements such as the construction camp of the railway station.

### Natural water resource availability and infrastructure

Figure 1 depicts the most important source of water (taking the case of Miele): average rainfall. This is only 287 mm per year.

Other sources flowing into the Awash basin are flash floods from the surrounding high veld during the rainy season, which may cause damage.

Many rivers are ephemeral and run dry after some 2-3 months. Infiltration into the river bed or aquifer stores water. The depth of the water table in in Huruntu Kebele, at the site of the borehole solar powered pump, was 28 m. The borehole was 60 m deep. Others mentioned groundwater levels

between 40 – 100m and this is confirmed by the British Geological Survey (BGS) ([http://earthwise.bgs.ac.uk/index.php/Hydrogeology\\_of\\_Ethiopia](http://earthwise.bgs.ac.uk/index.php/Hydrogeology_of_Ethiopia)). The envisaged large-scale scheme for irrigated fodder in Dulesa Woreda claims to drill up to 400 m. deep. In the southern part of the Afar Region, which is in the upper Awash River Basin, there is much more groundwater in the form of marshes, wetlands and lakes. Information from the Ministry of Water, Irrigation and Energy and the BGS will provide further insight in shallow and deep groundwater availability.

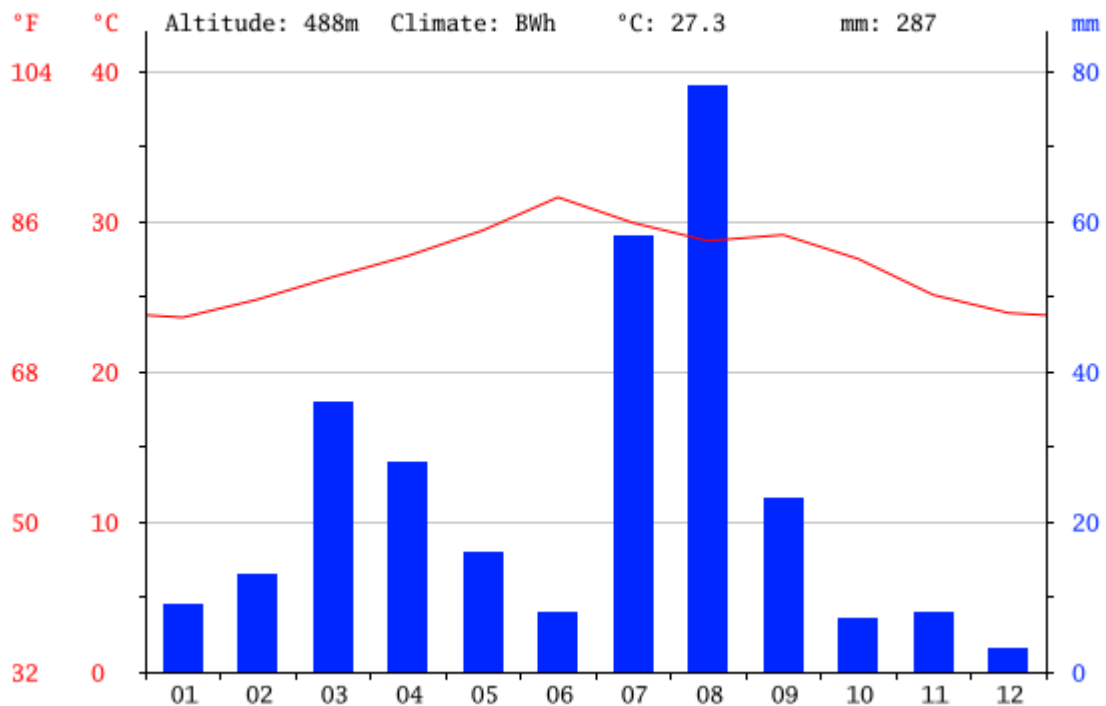


Figure 1: Climograph Lower Miele (source: <https://en.climate-data.org/location/512470/>)

## 5. Water supplies in Dulesa

### 5.1 Customary access to water and infrastructure for self-supply

Most Afar depend on local, informal ways to access water. However, very little is known as yet about these traditional ways in which the Afar directly access water sources (rivers, ponds, wetlands) and invest in local water infrastructure for self-supply. Even the naming of these sources needs to be further clarified.

One form of infrastructure implemented by both women and men are the scoop holes in river beds during the few months after the rainy season. Another infrastructure is the hand-excavated pond (also called well) (see picture). Gender dimensions of the planning, design, implementation, use and maintenance are virtually unknown.

In our host village in Tirtira, there are only natural water sources. Immediately after the river has dried, it is possible to dig and use scoop holes, but this seems not routinely done. Women go with donkeys carrying the containers (see picture 2). There can be long queues. A round trip usually takes from 7 AM to 12 PM. Both people and livestock use the same sources, unless the herds have moved away. Women’s strong wish is to get a borehole (which, as we understood was already planned by FSA).



Picture 2. In Tirtira

Further knowledge about these primary ways in which the Afar access water will enable to also better understand emotional stress or satisfaction around these resources.

## 5.2 Public water infrastructure in Dulessa Woreda

Public water infrastructure in rural areas include boreholes with diesel pumps, hand pumps, solar systems and – unplanned – sand dams for scoop holes. Regarding **boreholes with diesel pumps**, we talked with the water officers of Argoba Special Woreda and the Administrator of Dulessa Woreda about their efforts to install water points in rural areas. Only very few boreholes with diesel pumps, the preferred option as long as there is no electricity, have been installed. In Argoba, all 13 Kebeles seemed to have obtained one borehole. However, in Dulessa 4 out of the 10 Kebeles don't have a pump as yet. Groundwater discharge can be too low and there are high risks of failed drilling. For drilling and big repairs, the Woreda depends on the Zone and Region. As Kebeles can stretch over 40 km, one borehole per Kebele still leaves many people unserved.

In the 4 pastoral Kebeles out of Argoba's total of 13 Kebeles, the main design adaptation for pastoralism was to also construct a trough for livestock.

**Hand pumps** are more common. However many are partially or fully defunct. In the village in Hurunto Kebele with the FSA-installed solar system and in the village of Kedafo Adem, Guret Ahmed's brother, we visited partially or fully defunct hand pumps that were installed by the Woreda well over 20 years old (both Afridev). This happened quite soon after installation. In Kedafo Adem's village, several efforts to repair it were in vain, after which no further effort was undertaken. Water is now lifted by hand in buckets from 28 m depth via the inspection hatch (see picture 3). They told us it was hard work and we believe it also puts the water at risk of contamination.



Picture 3. Defunct hand pump In Hurunto

In the village of the solar-powered system the lifting device of the hand pump had been taken out completely. That pump was fully abandoned, as every water user had shifted to the nearby solar-powered system.

By choosing a site for either any type of pump in-between Kebeles, the Woredas underline their efforts towards equitable sharing of scarce government resources. Moreover, coverage figures increase as well. However, it may further complicate the management by a water committee.

For all pumps visited, water users are supposed to pay the water committee, which, at its turn, has to transfer the money to the Kebele and Woreda. Committee members interviewed said that they had done this, but that there was still no follow-up.

The **solar powered system** installed by FSA in 2013 consists of solar panels, an electricity transformer, a pump, a reservoir of some 40 m<sup>3</sup> and a separate point for domestic uses and two inter-connected troughs (see picture 4). The pump system was installed by Grundfos, originally a Danish company but now a global company in pumps and boreholes (<https://en.wikipedia.org/wiki/Grundfos>). The system functioned well, except for the fact that the valves and taps of the separate stand for domestic uses had been broken, so that part was not currently used. Similarly, the valves of the two troughs were broken, but this was addressed by plugging the pipe of one trough with some plastic, so that the continuous flow from the reservoir would go to the other trough. For the repair, water users had contributed Birr 4000 and gave that to Woreda, but without follow-up.

Remarkably, in spite of year-round 24/7 availability of water, interviewees of the village of the solar system still thought that the past rains had been insufficient so that they still had to move to better pastures. This demonstrates that although water is an important driver of mobility even with a year-round secure water supply, pastoralists will continue to need to move to find new pastures (not necessarily whole settlements but the men with the major camel and cattle herds). Understanding water use at this time of mobility remains a blank spot in our understanding.

FSA installed three other solar systems. In one of them, a diesel pump had to be added as the discharge was too low.



Picture 4. Solar system in Hurunto

Lastly, a more unconventional type of public infrastructure that already meets pastoralists' water needs to some extent are those as spin-off of the enormous **rail and road construction**. The picture 5 shows a road diversion that also serves as **sand dam**, even though this was probably not planned and designed like that. It seemed to be providing water access for longer into the dry season than in other river beds via a scoop hole. It is worth following up with the World Bank and MetaMeta whether and how these huge infrastructure investments in the Afar Region tap the major potential for roadside water harvesting.





Picture 5 road diversion serving as sand-dam to support scoop holes

### Public water services in small towns

Water services are considerably better in small towns. In Argoba Special Woreda, there is a municipal system with household connections and metering (see picture). Electrification since some five years allows running the system on cheaper electricity. There is a WASH committee responsible for management and small repairs. The Woreda remains responsible for repairs; for major repairs, the Woreda requests and gets support from the regional water bureau. Water supplies are intermittent; they rotate across the village sections. The section with water also sells at kiosks for 25-50 cents per 20 l container.



Picture 6. Municipal piped system in Argoba special Woreda

In general, villagization and concentration of the people enable the government to better provide public services for water for domestic uses, health, education, or irrigation schemes. However, most Afar are nomadic pastoralists needing large tracts of land for their livestock.

## 6. Water and wellbeing in Mille Woreda

### 6.1 Digle and Giraro Kebele

The Kebele is located around 35 Km south of Mille town. The community in the Kebele resides basically in five or six *tabias* (Peasant Associations (PA)) where there is facilities like schools and health posts and so on. In the Kebele there are no improved water supply sources. I have visited one of the PA called *Amestegna* (Fifth). In this PA there are no any functional water pumps. There were two non-functional hand pumps in the Kebele. I asked respondents why the pumps were not functional. They said the first one run dry and the pump become non-functional for a longer period. Now it is broken

and even children have been putting some stones and wood in the pipe. For the second one, the water has become very salty and it was not possible for them to consume. Thus they used it mainly for cleaning purposes. Some 4 or 5 years ago it stopped discharging water. First, it started pumping very stinky water and after that water mixed with mud and finally it run out of any discharge. As the water is too salty to consume, the people do not worry that much about reporting the failure of the pump. Since long, the Woreda is aware about the non-functionality of the pump, but it has not conducted any rehabilitation activity.



Picture 7. The two non-functional pumps in Amestegna village

At the moment there are no improved water supply sources in the area and the community relies on a pond, the river and scoop holes for household consumption as well as for watering livestock. Women are responsible to collect water for household consumption purpose. During the dry season the households move and reside near the Awash River, which is located around 6 km away from their current village. They cannot permanently live in this area due to the fact that during the wet season, rains upstream in the highland fill the river and floods the surrounding areas. Residents in the Kebele stated that after the construction of the Tendaho Dam for the sugar production, the river water floods their homestead as well as the grazing land. Due to this, during the wet season they send their cattle to other villages in the Woreda or nearby Woredas (Waransho, Giraro, Badena, Idriessa, Leddie, Chifra, Eloha). Once the wet season is over the cattle return to the village. As they have access to the Awash River bed during the dry seasons and drought they host cattle's that came from other places.

The residents strongly complain about the dam. They say it has negatively affected their livelihood: 'Previously we could farm on the riverbed but now we can't as the area covered by water has increased. Moreover, due to the flooding we can't live in nearby as there are mosquitoes which make us vulnerable for malaria. Since there is no rain, we can't plant anymore on the riverbed once that gets dry'.



Picture 8. Main Water sources of Amestegna

I have seen the riverbed area and the vegetation that is growing in the area (picture 8). As shown in picture 9, Segento (shiwashiwie) is common; this is used for the construction of huts and as fodder. Underneath grow grass and pasture. But there is also some beginning of the invasive Prosopis Juliflora in the area.



Picture 9- Segento (left) and Prosopis (right) in Amestegna

## 6.2 Gega and Butele Kebele

This Kebele is located around 32 km from Mille town in the north. The Kebele is easy to access as it is located on Tarmac road that goes to Mekele via Woldiya town. I visited one PA in the Kebele where improved water supply is available and one without functional pumps.

### 6.2.1 Wayta leta village

The village is exactly located 28 Km away from Mille town. There is motorized borehole that provides water for the community in the past two years (picture 10). Ato Ahmed, who is the guardian of the motor pump, told me that there is a committee composed of seven people. All members have different responsibilities: cashier, purchaser, operation and store, cash collection mobilizer and so on. There is no fee or compensation for committee members. But users pay a fee on monthly basis to

access the water- 50 Birr is the monthly rate. 50 Birr per month is common but households with low income may pay up to 20 Birr per month whereas destitute households (households with no goat / calf) may use the water for free. For communities outside the villager, if they come as guest and are passing-by they can use the water for free but if they water their goats they may be requested to pay.



Picture 10- Motorized water pump with stand pipes in Wayta lete village

Ato Ahmed said the cash collected from the community is mainly used for purchase of fuel and to cover other minor maintenance expenses.

The facility has standing pipes for households and a watering trough for the animal (see picture 11). During my visit the watering trough was not functional as there is crack in the trough. Due to this the animals also consume water from the standing pipe.



Picture 11 Cracked water trough in Wayta leta village

The members of the community are very happy with the water supply they get from the motorized pump. Now they permanently live in this area as there is reliable water for home consumption, schools and health post in the village. Even during the drought time the community is here as there is water.

On the other hand they still send their cattle to other areas as there is no adequate pasture in the area. Cattle keepers take the animals to different areas based on availability of pasture (figure 2).

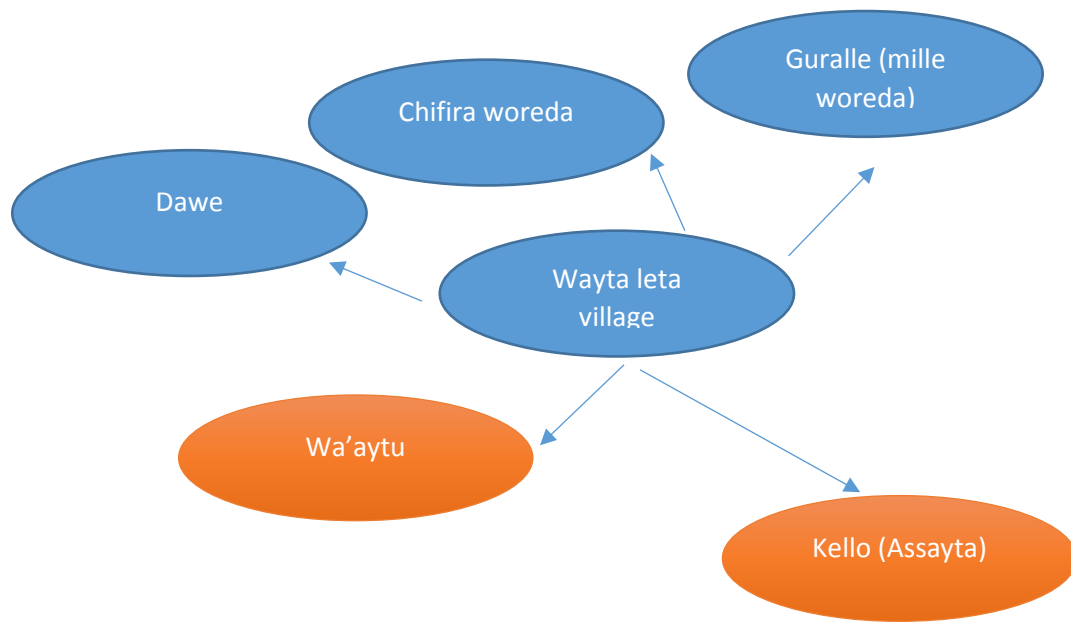


Figure 2. Places and areas to search for pastures

During the drought period they travel as far as Kello in Assita Woreda. Families stay separated for longer period.

As they stated about the importance of rain: ‘Our happiness depends on the availability of rain and pasture. Water schemes like this one are important for cooking, drinking and feeding calves, but the rain is everything for us. It is when there is rain we get pasture, enough milk and the cattle reproduce. So rain is vital’.

### 6.2.2 Wake Village

Wake village is found 8 km away from Wayta leta village along the asphalt road. Currently the community basically relies on the Wake River for water. There are no functional pumps in the village. Picture 12 shows a non-functional hand pump inside the riverbed. The residents told me it has been more than two years since it has stopped pumping water. But within a few meters from the pump the community collects water from scoop holes or flood water.



Picture 12 Non-functional pump in Wake River

Respondents told they normally expect rain in July. If it rains, then there will be good pasture in their surroundings and it means they can maintain their cattle for three or four months in their village. Then after they will send their cattle further up to Gurale, Wa'ema and Eloha over the next months of the year. In case of drought they will be forced to take their animals to further areas nearby to Amhara region- Kassagitta and Sodoma. The movement to Sodoma is a last resort because of the conflict over there. The respondents explained me that these people do not welcome them and they will kill the shepherd and raid their animals. They said they are ruthless and even kill women, which is nearly a taboo in Afar or nearby Issa, a Somali tribe which is in constant conflict with them.

The nuclear family will stay behind while the shepherds are responsible to take away the cattle. The households staying behind collect water from Mille River in the dry season. It is a round trip of nearly about 30 km. Women are responsible to collect water and it takes them about eight hours (4 AM to 12 PM) to bring the water.

I asked them why they do not bring water from the motorized pump in Wayta leta village, which is at 8 km distance on the tarmac road, instead of travelling to Mille river some 15 km away. They said that it is not safe for the goats to travel on the tarmac road and, hence, they need to take the other route. But the road has many gullies and hills and this up and down is not convenient for travel. But the main reason is that when they take the goats to the river, they not only get water but they also get fodder: the Adaytu tree is there, which is good fodder, so they can eat.

In Wake village there is one primary school. But there is no health post or vet clinic. When their animals get sick they give them Oxy, a common pharmaceutical for cattle treatment, and sometimes the Woreda provides vet services during campaigns when epidemics happen.

### 6.3 Conclusions Mille Woreda

- From my visits in both Kebeles, I understood that the movement of households is very limited. It is only the animals that are moving from place to place. Except in Wayta lete village, all respondents identified water scarcity as key problem.
- It also became very clear that availability of water is a necessary condition but not sufficient for the community to settle in certain village
- Most of the villages in both Kebeles rely on river water or scoop holes for household water consumption. Awash and Mille rivers serve as major water sources even during the dry season.
- Environmental degradation is a common challenge in both Kebeles as pasture land is dwindling. On the other hand the expansion of Prosopis is not wide in these Kebeles. However, it is introduced in Digle and giraro Kebele and is expected to expand soon.
- Negative impact of large scale development projects has been seen in Digle and giraro Kebele as the residents complained the construction of the dam has distorted their livelihood; affected their pasture land, are unable to practice farming along the riverbed as they do previously

## 7. Site selection and conclusions

A range of criteria for the site selection were identified, as below. Comparing both sites visited, there were many similarities. However, Dulassa appeared better in terms of support to contact communities that the already available field staff of the Friendship Support Association can provide. Also, the

timings for engagements with communities fit the project team’s travel requirements. Therefore, Dulassa Woreda and Tirtira Kebele were selected.

<b>Research Justification</b>	
Pastoralism as dominant mode of livelihood	Both
Existence of formal and informal water supply transects	Both
Existing datasets to inform decision making regarding community selection	None
Understanding of major social structures that shape resource use and management	Both initial
<b>Practicality justification</b>	
Local partners to gain access to communities	Dulassa
Logistics	Better in Dulassa
<b>Impact Justification</b>	
Relationship with Woreda office	Both initial
Learning alliances	No relations as yet

In sum, the visits during this inception phase showed that service levels are well below even basic service levels as defined by, for example, the Joint Monitoring Program. The question is which incremental improvements can best serve this large group of informal users both for their domestic water uses, for livestock watering and for other water uses. This can be either improvements of current informal self-supply or continued and expanded public services in which the manual or mechanized boreholes that already exist are well managed and maintained, and then expand to reach more rural people.

For such policy decisions, a better understanding is needed of men’s and women’s experiences with the various water sources to meet their multiple water uses through customary and formal multi-purpose infrastructure investments, including road and railway works, and holistic community-based water sharing arrangements in case of conflicts. These experiences will be largely shaped, and be shaped by the emotional responses to the above-described wider context of the Afar Region, in which water uses are embedded.

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