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LABOUR INPUTS AND TIME ALLOCATION AMONG THE AFAR

by Ayele Gebre-Mariam

The labour requirements of herding among pastoral societies are not well documented in the literature, despite the fact that the economics of pastoral production has been much studied in development projects in tropical Africa. Yet information on labour requirements is essential for planning effective pastoral development projects. This report on the Afar provides quantitative data on labour aspects of household/herd relations.

Several aspects of pastoral labour are examined: The various labour inputs for the different activities of different management units pursuing multi-species pastoralism with herds of different sizes. The tasks of individual members of a household, their timing, and the institutions for labour sharing. The culturally accepted division of labour by age and sex. The variation in the supply and demand for labour between households and social mechanisms for adjusting to those variations. The effect of work patterns and requirements on the social organization and mechanisms of the Afar.

The data on labour inputs were derived from interviews, measurements, and observations. Interviewing was the main method used. Afars were interviewed periodically at water holes, wells, and permanent rivers. Also used were direct measurements with simple hand scales, a watch, a volume measure, a pedometer, and similar simple tools. In addition, there was systematic observation of persons engaged in food production.¹

Various ways of measuring the time investments in particular tasks provide useful indices of work input. The essential labour data bear upon the various aspects of production, consumption and exchange.

Some of the tasks studied were the day-to-day activities of the labour force while other tasks were carried out on a seasonal basis. The labour requirements of a household² increase or decrease according to the number of livestock kept. A household which depends on multi-species pastoralism requires a larger labour force than one which breeds cattle or sheep alone.

To compute a time budget a typical Afar household is considered. This is based on the average number of persons per household of 52 network members located at Burka for the Abusemera tribe, Gawito Mesgid for Aghini tribe, Afelu and Weranso for the Dodda tribe, and Badoli for the Kui Henkeba and Aghini tribes. This is a non-random sample, which tries to cover a study area of about 5,000 km² within the sub project area of the North East Rangelands Development Unit.

The Afar rangeland is located in north east Ethiopia on the western edge of the Great Rift Valley and includes a cross section of the rift escarpment and plains below extending as far as the Red Sea. The rangeland lies roughly between 11°00' and 12°00' north and 40°00' east.

¹ This work was carried out under the auspices of ILCA and I am grateful for that. I also thank Dr. Philip Salzman for his comments on the draft.

² This refers to the head of the household, wife or wives, children and dependents. Based on this a typical household consists of 6 persons. The range is from 3 to 10 persons.

The Afar country is the most arid and one of the hottest areas in East Africa and is certainly one of the driest and most inhospitable environments for human occupation in the world.

The rainfall is bi-modally distributed with the main rains in July to September and secondary rains in March to April. The area is characterized by an annual rainfall of 561.4 mm on the western edge of the escarpment and 225.3 mm on the lava plains and volcanic ash where only camels and goats sustain a fragile pastoral existence. Often the rain falls altogether for one to three consecutive years. Herd production is limited by the availability of grass, shrubs and bushes.

The Afars depend on multi-species pastoralism. Cattle and camels are kept mainly for milk, while small stock is kept as a cash buffer and for meat. Small stock have been shown to be prominent in Afar husbandry; and as source of income, they act as a buffer and serve to bring in cash in times of need.

Labour shortage among the Afar occurs during dry seasons and drought periods. In the dry season and drought periods, the food intake of the Afar is low and so is the work output. Hence, a large labour force is indispensable in the dry season. The more livestock one owns the more labour one needs. A typical household size among the Afar is 6 persons, whose activities the head of the household supervises. The wife of the head of the household fetches water, collects firewood and grinds grain. Two males, one of 20 years and the other 12 years, tend camels and small stock respectively. But this practice is not universal. A male of 14 years tends cattle, a girl of 6 years tends kids and lambs. A small herd owner has 3 to 4 persons per household and that of a large herd owner 8 to 10 persons per household.

The individual within each household divides his time economically in the management of alternative resources: animals and land. During the dry season (October to February and May to June) more labour is needed for the arduous tasks of getting water from water holes. Why is there more work in the dry season? One reason is that grazing is scarce. Households look for more profitable herbage and hence livestock have to be taken to where grazing is available. Another is that grain has to be purchased from the Oromo lowlands. Due to poor fodder, milk yield is less. A third reason is that water is scarce in some places and so water holes have to be dug. In order to buy grain and to look for grazing stockowners have to travel long distances. Livestock are also given more attention. There is more work output and hence a need for more energy. The dry season is the crunch period of low food intake and high labour output work. The high output is not attained unless the food intake is high. Households are also engaged in other income generating activities.

In the green season (March to April and July to September), households have more food and do less work. Herding is at its easiest. Watering is close to huts.

Labour Inputs

Let us consider the conditions and the circumstances of the individual tasks. Explaining the major categories of household tasks here will suffice from further elaboration in the other 3 labour/time allocation tables. The labour input for different activities is computed on the basis of a small and large herdowner.

Domestic Chores

Among the domestic chores the main tasks were preparation of food, milking, fetching drinking water, making household items, and going to markets. The head of the household sells small and large stock, while his wife sells only small stock. The head of the household or wife goes to markets every week or two, and the round trip takes 6 hours from the Burka area, 14 hours from Afelu, 3 days from Cheleka to Bati, and 8 hours from Badoli to Aleley Subla. Grain is bought from the Oromo lowlands for home consumption.

The wife of the head of the household looks after the small children. There is no labour data on the time spent by women in activities such as cooking and looking after children.

a. Preparation of Food

The pounding and grinding of maize and sorghum is carried out by adult females and takes two hours a day in hagai and gilaal.³ This activity is a tedious and labour intensive operation.

Grinding of Grain:

Wheat: The dirt is first cleaned, and then the women grind it. There after it is mixed with water and placed on the backing stone.

Sorghum: The dirt is first removed and then women grind it. During the second grinding it is mixed with water. After this it is pressed and baked.

Maize: The maize is broken by beating it on a flat stone. After this it is ground once, pressed and baked. Sorghum grinding is easiest, followed by wheat grinding and maize grinding. In the process of making unleavened bread, the baking stones take an average of 35 to 50 minutes to get hot. It takes 5 minutes for the bread to get ready, to clean up and wash the container. The bread is ready in 20 to 40 minutes. After it is baked, it is covered with mounds of earth.

The adult males slaughter small stock during the Moslem religious holidays, the Birth day of the Prophet Mohammed, Id el Adha and Id el Al Fetir. The collection of firewood depends on household size. A household with two persons collects firewood once a day. This firewood is brought on womens' backs and weighs 6 to 10 kg. The time spent in travelling from the firewood site to the camp is at least 40 minutes once a day. In sum food preparation activities will take 3 hours a day.

b. Milking

Milking a cow, one head of small stock, and a camel (3 milking animals) together takes about 15 minutes per day per adult person. The milking of one head of small stock, a camel and a cow takes 3 to 5 minutes, 5 to 10 minutes, and 5 to 7 minutes respectively. The milking of camels is performed by adult males and that of small stock and cows by adult women. Young girls also assist

³ Seasons: "Karima" - the main rain period (July to September)
"Sagum" - the little rain period (March to April)
"Hagai" - the hot spell (May to June)
"Gilaal" - the dry season (October to February)

their mothers during milking. The women churn milk to make butter every day. Women do the cleaning of milk containers by burning faggots inside them. The milking vessel is cleaned with Balanites Aegyptiaca and Cordia ovalis at least once a week. It takes 5 minutes to smoke and dry the milking vessel and 10 minutes for a milk storing vessel.

c. Churning Milk

Children churn milk using Koda, and it takes 4 to 5 hours before butter comes out. Adult women churn 8 to 10 litres of milk in a container, and butter comes out after 3 to 4 hours.

d. Fetching Water

Women fetch drinking water every morning or evening. The round trip takes about 1.5 hours a day (for 6-8 persons), or 45 hours per month. The time depends on how far the water source is. The number of times for fetching water and the quantity brought depends upon the following conditions:

- a) Temperature. In the rainy season when milk is available little water is drunk;
- b) Household size;
- c) Whether calves of cattle and camels and even of small stock are watered at home;
- d) Special ceremonies such as Seddeka, Mewlid and other religious festivals.

The means of transport employed are camels and donkeys. If the water sources are not far from the households, women fetch water on their backs. A woman takes a donkey to a watering site and brings two skin bags of water for kids and lambs on her back. In places where the distance to a watering site is great, women leave with a flock in the morning and return back in the evening with water. The two skin bags of water will be enough for a wife, husband, 3 to 4 children, and for all purposes. If they drink enough during the hot season adults drink about 3 litres of milk. Cooking and washing requires between 30 to 40 litres a day. Camel herders do not drink water but entirely depend on camels milk. Water is drunk by Afars in the morning after breakfast when they water livestock, and in the evening after dinner.

e) Cleaning the Kraal

A woman cleans the dung of sheep and goats from kraals and it takes her 15 minutes per day per household.

f) Making Household Items (see Table 1)

The main items the Afars make include carved wooden spoons and milk and water storing vessels.

The milking vessels are stitched from fibers, and can hold 3 to 4 litres. Milk-storing vessels are carved from Celtis integrifolia by adult males and can hold about 6 litres. Covers for milk storing vessels are stitched from palm fibers.

Afar beds are made from slender trees of the species Arundo donax. Afar women stitch these trees together with cattle leather. The bed can accommodate 3 to 4 persons.

A woman makes mats, which are used as roofing cover from palm fibers, and it takes her one month to make one as an occasional activity. However, women carry out this task only once in a while. The number of mats required per household varies from 10 to 30 and the price for a single mat was 8-10 Birr (March 1981). Urban dwellers in Bati and traders sell mats to Afar women. Afar women make ropes from Sansevieria robusta during the rainy season. The dismantling and reassembling of an Afar dwelling is done at least every season, 5 times a year, and takes 1 hour for each activity.

It is difficult to reckon the number of persons and work hours on a per household basis. The task designated is mainly that of a woman. I reckon that this work takes 6.87 hours a day for one individual. The number of hours devoted to this task per month is 6.87 hours x 30 days or 206 hours of work.

Construction Activities

The Afar males make enclosures from thorn bush. In localities where stones are available enclosures for sheep, kids, and lambs are made of stones. An adult male takes 1 day to finish a stock enclosure for 30 head of cattle. Such an enclosure lasts for one month.

The adult Afar women construct their huts from Arundo donax. Household construction together with the collection of building material takes 2 days, and the hut lasts for 5 years.

Water holes or wells have to be dug in groups. The time taken in digging water holes deep as the height of 4 to 5 men is one man-month. Every dry season, water holes are opened by local community members. Every watering day, water holes have to be repaired because they are trampled by the stock. Watering is carried out by human chains using old powdered milk tins and Afar ayney. For this operation more than one person is indispensable.

Troughs have to be made every dry season, and the time devoted to this task is one hour per adult person. The length of a trough is between 1 and 2 metres, the breadth and depth are about 60 cm and 35 cm respectively. Such troughs can water 10-20 head of cattle at one time. An adult male takes 5 to 10 minutes every day in gilaal and hagai to repair a trough. Watering from a water hole is a laborious and time consuming operation for herdsman. Watering animals from wells takes place in the dry season when water is scarce in Afar land. According to my observation, it takes one minute to draw enough water from a water hole for 5 head of cattle with 3 people in the chain. Adults work for 30 minutes at a stretch when watering without a break. During the 30 minute period they water other stockowners' animals as well. Troughs and water holes are mainly the work of men. The total time per month per person allotted for these operations is 34 hours.

Herding Tasks

The two kinds of herding regimes are herding home herds and satellite herds. Cattle, camels, sheep, and goats can fit into these herding regimes. The multiplication of management units increases supervisory labour; i.e., dry and milking animals cattle, camels, sheep, and goats. Young boys and girls and the aged members of a household tend the home herds, which include milk giving cattle and camels. Adult males, possibly accompanied by their wives, tend satellite herds, which include dry cows, steers, dry she-camels, adult male camels and others. These days, after two severe droughts, (1972-74 and 1980-81), it is impossible to see any satellite herds belonging to individual households. Individuals used to own satellite herds during the pre-drought periods. This has changed now because of the reduced size of individual herds. In March 1981, I came across a satellite herd of 180 head of cattle belonging to 10 households.

In both herding regimes, herding takes about 12 hours for one person except in the dry season when the task lasts the whole day up to midnight for cattle, plus 2 hours in the evening for camels. Sheep and goats are only herded during the day and are corralled at night because they are at risk from predators.

Herdsman spend some time in assisting animals at the time of birth. I have no data on how much time is spent on this. The time that herdsman spend looking for lost animals, especially camels, is considerable.

A seven year old child could tend 20 kids and lambs, whereas a 10 year old child can tend 30 to 40 calves and a few young camels.

The minimum herd size in different areas that an adult can tend varied from place to place but on an average was 10 cattle or 5 camels or 10 sheep and goats. The minimum size of a herd depends to a considerable degree on the scale of non-pastoral activities and incomes. If the threshold is below a minimum level of 3 to 5 head of cattle, 2 to 3 camels and 2 to 3 sheep and goats, the household will have its animals herded by the local community.

The maximum herd sizes per adult herder are about 40 to 50 head of cattle or 200 sheep and goats or 30 to 40 camels. This is only for herding, for watering demands more than one individual in the dry season. The maximum herd size depends on the individual herder's ability to handle the milking, watering and tending in bush country.

Small stock: Herding activities take 23.8 days or 285 hours/month per person. Some Afars tend donkeys with small stock.

Kids and lambs: The time devoted to herding kids and lambs is 225 hours/month per person. Kids and lambs are tended separately from the dams so that the young cannot suckle since if they do, there would be less milk for the household.

Camels: A camel grazes for approximately 240 hours a month.

Cattle: Herding of household cattle is a one man activity. Calves used to be herded separately before the 1972-74 drought when pastoralists used to won larger herds. One person was then required to herd calves. The time-budget allotted to herding cattle is 240 hours a month.

Watering Tasks

Water availability for humans and livestock is not a problem in NERDU. Afars state that even a fox has a water well. There are two different water sources in NERDU: permanent rivers and ponds, and wells.

Livestock are watered at permanent rivers like the Awash, Mille, Waama and Uwa. Among the semi-permanent rivers are the Fursa, Bisidima, Bedenna, Weranso, Burka and Gawis. The Afars have wells and scooped hollows along these dry river beds for human and livestock use in the dry season. Adult males water cattle and camels at permanent rivers. Children and adult females water small stock. At permanent rivers the watering of each species is a one man job. One herdsman can even water the animals of a household by himself.

There are very few natural or man made ponds in Afar country. These are used mainly by livestock in the wet season when the animals are driven to the ponds to drink. Labour inputs are not involved in watering animals at ponds.

The permanent wells in the study area include Regden, Eliwuha, Fursa, Halsaya, etc. Shallow wells dug in sand have to be re-excavated. The depth of wells ranges from the height of one man to that of eight. As the dry season becomes severe, the water level goes down, and the number of men in the chain increases. Watering animals from a well is a group venture. According to the Afar customary law, an adult male who comes to a well site should help in watering stock. Women can bring animals for watering and expect their animals to be watered by any adult males present at the wells. If adult males refuse, they are subject to fines. The fine ranges from 1 to 6 head of small stock which will be slaughtered and consumed by all those present at the wells. Watering of livestock from water holes is a much more laborious job than watering from a river or pond.

The watering task computed is that of hagai time of hot spell for livestock using wells. Trekking and watering take up a substantial portion of the total time spent at the field. The wet seasons are Karima and Sugum and covers 5 months of the year. The remaining 7 months are classified as dry seasons - hagai and gilaal. The water source in the dry season can be wells which are dug by the Afar in the same place year after year.

In a water hole over 7 m deep about 450 cattle and 500 camels can be watered in a day. A water hole is named after the name of an individual or local community who has dug it.

Two boys in a chain were watering camels at Waantu. The two hauled 21.2 to 31.8 litres per minute. At Afelu 3 adults in a chain watered 44 head of cattle in 30 minutes, which is equivalent to 1.5 minutes per animal. In 30 minutes the three adults in a chain hauled from 580 to 870 litres of water from a well. The amount of water drunk per head of cattle was from 13.2 to 19.8 litres per watering day.

At Afelu wells 206 head of cattle were watered by four persons in a chain in 60 minutes which is equal to 3.4 animals per minute. At the same wells, 35 sheep and goats were watered in 2 minutes with 4 persons watering in a chain. The four persons in a chain drew 718 to 1077 litres of water in 30 minutes, which is equivalent to between 23.9 and 35.9 litres per minute.

At Afelu wells from 1712 to 2568 litres of water were hauled in 33 minutes with 5 persons in a chain which comes to 51.8 to 77.8 litres per minute. In 75 minutes 430 head of cattle were watered, which is equivalent to 5.7 animals per minute.

In the wet season, water is available everywhere, but stockowners prefer to fetch water from the nearest river bed.

Small stock: Small stock are watered every other day for 5 hours a day, which makes a total of 75 hours per month. Sheep and goats drink about 4 litres of water per day during each drinking time.

Kids and lambs: Kids and lambs are watered after 2.5 months. Kids and lambs are watered every other day for one hour, which makes a total of 15 hours a month per person. Water is brought from rivers or wells for kids and lambs by women and by donkeys. After 1 to 2 months they are taken to a watering point, be it a well or a river. Water is also brought for calves till they reach 2 to 3 months of age. 15 to 20 litres of water is enough for 20 kids and lambs per drinking day.

Camels: Camels are watered every four days for 6 hours with two persons doing the job, which takes 120 hours a month.

According to Mukassa (1979) a camel drinks at the rate of 135 litres in about 10 minutes. A camel's drinking pattern depends on the temperature and the quality of the vegetation. In gilaal 1980, a camel sloshed down 93 litres of water at Waantu wells. This was assessed by measuring the amount of water drunk by a camel per drinking day in hagai using skin bags. At Kusirele wells along the Weranso river, an adult camel drinks 23 to 25 litres per drinking day in a dry period. There is much difference in the amount of water drunk by camels at the Waantu and Kusirele wells. A possible explanation may be that camels drunk more water from deep and salty wells than from shallow and cold wells. The Kusirele wells are not more than 3.5 m deep, whereas the Waantu wells are over 4 m deep. In sugum the drinking capability of a camel is similar to that in gilaal and not more. In hagai a camel drinks more water than in gilaal. A camel can stay 4 days without food.

Cattle: Cattle are watered every day for 4 hours, which makes a total of 240-360 hours per month with 2 persons watering. At the height of the dry season a herd of cattle can drink about 13 litres of water per drinking time.

Salt Needs

The different species have different salt needs. An important supplement to range feeding for all species is the provision of salt vegetation, salt well water, salt pans and salt earths. Salt earth or salt water if fed to livestock in the rainy season. To satisfy their need for this type of salt, animals walk from 3 walking hours to as many as 15 walking hours to places such as Halsaya and Asboleh. Cattle, camels and small stock go to salt lick sites at least once a year. Pastoralists very rarely buy commercial salt for small stock.

Camels get a salt cure whenever they feed on the grass Echinochloa Colonom. This grass is a substitute for salt water. Without salt a camel will grow thin and will not rut. It will become a sick animal.

Supervisory Activities

The head of the household or a senior man in the household oversees all the activities of its members. The daily herd inspection, including checking the health of the animals, is undertaken by the household head. The head of the household determines where animals should be grazed, which animals should be disposed of, when to buy grain, etc. The less frequently performed tasks such as deticking and doctoring small and large stock is performed by the head of the household.

The head of a household participates in the work party when animals are watered, takes animals to a salt lick area, cuts branches off trees to feed small stock and camels in the dry season, and helps women to get water from water holes. He also cleans his firearm, keeps a watchful eye on his wife, chases other women and occasionally slaughters animals. These activities take a total of 150 hours a month. During the wet season, the men play Afar football (kosso) during the day time and race (hara hare) in the evening.

Adjustment of Labour

The Afar have devised a mechanism for solving labour shortages pertaining to livestock activities. The pooling of labour resources is a frequent occurrence among local community members (kaidoh). Neighbors mix their cattle herds together and do the same for camel herds to solve labour shortages. This is true of small herdowners. The pooling of labour also takes place among brothers, fathers' brother's children and mothers' sister's children. Some co-resident households who are closely related pen their cattle together and do the same for camels. In both cases they share herding duties. Sheep and goats belonging to different households are herded separately because they need clean water, good grazing and are easily lost to predators as they go astray. Those with large herds and a small labour force have their animals herded by the local community in return for the use of milk, butter and occasional role of the animals.

Local community members who do not participate in the labour activities, be it watering or herding of animals or both, are penalized for their misconduct. The usual penalty is 6 sheep and goats. The animals are immediately slaughtered and eaten by the people who happen to be at the water holes. Thus the Afar adjust their labour supply to the number of animals and also adjust the number of animals to the household needs and capabilities.

Conclusion

The Afar economy is labour intensive. Each sex has its own share of activity. However, men and women help each other in most activities. There are certain activities that are solely for men. These include grazing livestock at night and cutting branches for enclosures for livestock and cutting thorns for hut fences. Activities solely for women are grinding grain, baking unleavened bread and making coffee for visitors.

The Afar work-patterns are characterized by division into specialized herds and dispersal of animals, a practice which creates a large aggregate labour requirement. My field work was done during a drought period which might have increased labour requirements due to increased watering and longer dispersal of herds and flocks from the main settlement. The annual labour/time allocation in the dry and wet seasons for small and large herdowners varies considerably per person per day.

Afars devote more time to herding their livestock than to other activities such as domestic tasks, construction activities and watering livestock. Watering and domestic tasks each take approximately 18% of the total labour required and come next to herding chores, 64% of total labour required, when considering the annual labour profile of large and small herdowners.

There is no peak period for construction activities and for making of household items. But herding and watering tasks are labour intensive activities in the dry season. Three people in a chain can haul water from a water hole for about 5 head of cattle in one minute in the dry season. However, this does not happen in localities where permanent rivers are available, but in places such as Afelu, Weransó, Jeldi, Eliwuha, Fursa, Dirma, etc. In the wet season, herding takes most of the time of the household members, followed by domestic chores and supervisory activities.

Table 1

Items, How each is made, From what material, Range of possible sizes, Time taken to make it and Durability

Item	Technique & Material	Sizes/ Capacities	Gender roles	Production time (days)	Durability (years)	Quantity/ household
- <u>kore</u> : butter container	-carved from Gyroparuc hababensis and Commiphora playfairii		men	1	1 - 3	3
- <u>ayney</u> : water container*	-woven of palm fibre and Sanseveria robusta	2 - 5 litres	women	15 (occasional work)	3 months and 3 - 4	3
- <u>oloyita</u> : Afar bed	-made from Barleria orbicularis	153 x 173 cm	women	30	3 - 10	1
- <u>sebu</u> : milk ladel	-carved from Commiphora playfairii		men	1	1	3 - 4
- <u>melkea</u> : spoon	-carved from Cordia ovalis		men		4 months to 1	3 - 4
- <u>kora bera</u> : cover for <u>kora</u>	-woven from Gyrocarpus hababensis and Commiphora playfairii	15 - 20 kg	women	7	5	3
- <u>girib</u> : grain container	-made from goat and sheep skins	15 - 20 kg	women	15	7 - 10	2
- <u>okus</u> : butter container	-made from sheep, goat and kid skins		women	15	10	2
- <u>gedbo</u> : food container	-made from Barleria orbicularis		women	4	1	1
- <u>koba</u> : milking vessel	-carved from Commiphora playfairii & Commiphora erythrae		men		8 - 10	1 - 2
- <u>koda</u> : vessel for churning milk	-made of sheep and goat skins		women	5	6 months	2
- <u>sar</u> : water container	-made of goat skins	20 litres	women	90	1 - 2	3
- <u>dero kora</u> : dough container	-carved from Gyro carpus hababensis		men	3 - 4	2	1

Table 1 (continued)

Item	Technique & Material	Sizes/ Capacities	Gender roles	Production time (days)	Durability (years)	Quantity/ household
- <u>kawti</u> : livestock brand	-made of metal		men	1 hour	10	1
- <u>mudeyna</u> : stick for combing	-made from Commiphora playfairii		men or women	1 hour	1 - 2	
- <u>gelbo</u> : processed sleeping hide	-made of cattle kids		men	1	5	3
- <u>aduba</u> : for riding donkeys (to sit on)	-made of sheep hide		men	1	2 - 3	2
- <u>afleta</u> : kid skin cooler	-made of goat skin	2 litres	women	4 - 5	1	2
- <u>gira ugena</u> : sit for fire arm	-made of palm fibre		women	7	a man's life	1
- <u>kaunta</u> : milking vessel (for small stock)	-made from palm fibre and Sansevieria robusta	1 litre	women	3 - 4	2	1 - 2
- <u>kotho</u> : small container (kids drink milk from it)	-carved from Commiphora playfairii and commiphora erythraea		men	6 hours	2	1
- <u>buni mukecha</u> : coffee grinder	-carved from Commiphora playfairii and commiphora erythraea		men	6 hours	3	1
- <u>ewi hada</u> : milk storage vessel	-made from Cordia ovalis, Barleria orbicularis & hides	118 x 20 cm	women	2 - 3	5 - 6	1
- <u>berberi anyney</u> : pepper container	-made of Sansevieria robusta & palm fibre		women	1 hour	3	1
-Afar sandals			women	15 - 20	2	
-kraal for small and large stock			men	1	1 month	

Table 1 (continued)

Item	Technique & Material	Sizes/ Capacities	Gender roles	Production time (days)	Durability (years)	Quantity/ household
-Afar <u>hada</u> stick for tending stock	-made of Cordia ovalis	1 m - 1.4 m	men (kids) women (lambs)	1 hour	1 month	3
-giley: knife	-made from metal			10		

*An ayney used for milking animals lasts longer than an ayney used for hauling water from a well to a trough.

Table 2

Dry and wet season distances from camp sites to domestic and human watering points.*

Location	Dry Season Distance (Km)	Wet Season Distance(Km)
Weranso	5	5
Dirma	1.5	1.5
Gawito Mesgid	3	1

*Water for humans and livestock is available from the same place.

Table 3

Watering Frequency of Livestock

Species by age	Who waters by age group and sex	Water Source	Frequency watered* & season
Immature to adult camel	Male 15 yrs. +	river well	In <u>gilaal</u> every 4 days, 08.00h. to 14.00h.
		pond	In <u>hagai</u> every 2 days, 06.00h. to 14.00h. In <u>karima</u> and <u>sugum</u> every 10 days.
Immature to adult cattle	Male 15 yrs. +	river well	In <u>gilaal</u> every day, 08.00h. to 14.00h. In <u>hagai</u> every day, 10.00h. to 14.00h.
		pond	In <u>karima</u> and <u>sugum</u> whenever the animals desire since water is available everywhere.
Immature to adult sheep and goats	Male & Female 12 yrs. +	river	In <u>hagai</u> every other day, 09.00h. to 14.00h.
		well	In <u>gilaal</u> sheep are watered every other day and goats every day.
		pond	In <u>karima</u> and <u>sugum</u> whenever they want.

*The limiting factor for watering frequency is the dryness of the earth in the hottest spell period.

Table 4

Labour/time allocation for small herd owners in the dry season
(3-4 persons/household)

Task	No. of persons	Man hours per month	% of total
I DOMESTIC TASKS			
a) preparation of food, pounding and grinding of sorghum, collection of firewood, cleaning of kraal, churning of milk.	1	630	7.7
b) milking	1	35	0.4
c) fetching of drinking water	1	315	3.9
d) making of household items	1	422	5.2
II CONSTRUCTION ACTIVITIES	1	238	2.9
III WATERING			
a) small stock	1	525	6.4
b) cattle	1.5	1260	15.5
IV HERDING			
a) small stock	1	1995	24.5
b) cattle	1	1680	20.6
V SUPERVISORY ACTIVITIES			
(Includes salt licks, cutting of branches, inspection of health of animals, and other similar tasks).	1	1050	12.9
TOTAL	3-4	8150	100.0

According to the computation 3 to 4 persons work for 8150 hours for 7 months, or 291 to 388 hours per person per month, or 9.7 to 12.9 hours per person daily.

Table 5

Labour/time allocation for small herd owners in the wet season
(3-4 persons/household)

Task	No. of persons	Man hours/month	% of total
I. DOMESTIC CHORES			
a) preparation of food, pounding and grinding of sorghum, collection of fire wood, cleaning of kraal, churning of milk.	1	450	9.9
b) milking	1	25	0.5
c) fetching drinking water	1	225	4.9
d) making household items	1	305	6.7
II. CONSTRUCTION ACTIVITIES	1	170	3.7
III. HERDING			
a) small stock	1	1425	31.4
b) cattle	1	1200	26.4
IV. SUPERVISORY ACTIVITIES			
(Includes salt licks, cutting of branches inspection of health of animals, and other similar tasks.)	1	750	16.5
TOTAL	3-4	4550	100.0

In the wet season, since water is available in pools and puddles, there is less input in terms of watering stock. Even grazing is available everywhere and animals graze by themselves without the close supervision of a herder.

According to the above computation 3 to 4 persons work for a total of 4550 hours per month, or 277 to 303 hours per person per month, or 7.6 to 10.1 hours per person daily.

Table 6

Annual labour profile for small herd owner
(3-4 persons/household)

Task	No. of persons	Man hours/ month	% of total
I. DOMESTIC TASKS			
a) preparation of food, pounding and grinding of sorghum, collection of firewood, cleaning of kraal, churning of milk.	1	1080	8.5
b) milking	1	60	0.5
c) fetching drinking water	1	540	4.3
d) making of household items	1	727	5.7
II. CONSTRUCTION ACTIVITIES	1	408	3.2
III. WATERING			
a) small stock	1	525	4.1
b) cattle	1.5	1260	9.9
IV. HERDING			
a) small stock	1	3420	26.9
b) cattle	1	2880	22.7
V. SUPERVISORY ACTIVITIES			
(Includes salt licks, cutting of branches, inspection of health of animals and other similar tasks.)	1	1800	14.2
TOTAL	3-4	12,700	100.0

According to the computation 3-4 persons work for a total of 12,700 hours per year, which is equivalent to 8.6 hours to 11.6 hours per day per person.

Table 7

Labour/time allocation for large herd owners in the dry season
(8-10 persons/household)

Task	No. of persons	Man hours per month	% of total
I. DOMESTIC TASKS			
a) preparation of food, pounding and grinding of sorghum, collection of firewood, cleaning of kraal, churning of milk.	1	630	4.1
b) milking	1	75	0.5
c) fetching drinking water	1	225	1.4
d) making of household items	1	305	2.0
II. CONSTRUCTION ACTIVITIES	1	238	1.5
III. WATERING			
a) small stock	2	1050	6.7
b) kids and lambs	1.5	154	1.0
c) camels	1.5	1260	8.1
d) cattle	2	1680	10.7
IV. HERDING			
a) small stock	2	3990	25.6
b) kids and lambs	1.5	1575	10.1
c) camels	1	1680	10.8
d) cattle	1	1680	10.8
V. SUPERVISORY ACTIVITIES			
(Includes salt licks, cutting of branches, inspection of health of animals and other similar tasks).	1	1050	6.7
TOTAL	8-10	15,592	100.0

According to the labour/time allocation 8 to 10 persons work for a total of 15,592 hours per month, or 226 to 282 hours per person per month or 7.5 to 9.4 hours per person daily.

Table 8

Labour/time allocation for large herd owners in the wet season
(8-10 persons/household)

Task	No. of persons	Man hours per month	% of total
I. DOMESTIC TASKS			
a) preparation of food, pounding and grinding of sorghum, collection of firewood, cleaning of kraal, churning of milk.	1	450	5.4
b) milking	1	75	0.9
c) fetching drinking water	1	225	2.7
d) making of household items	1	305	3.7
II. CONSTRUCTION ACTIVITIES			
	1	170	2.0
III. HERDING			
a) small stock	2	2850	34.1
b) kids and lambs	1.5	1125	13.5
c) camels	1	1200	14.4
d) cattle	1	1200	14.4
V. SUPERVISORY ACTIVITIES			
(Includes salt licks, cutting of branches, inspection of health of animals and other similar tasks).	1	750	8.9
TOTAL	8-10	8350	100.0

According to the above computation 8 to 10 persons work for a total of 8350 hours per month, or 152 to 190 hours per person per month, or 5.1 to 6.3 hours per person daily. Among 8 to 10 persons per household, most are children and are under 5 years. The number of children under 5 years in these households range from 1 to 3.

Table 9

Annual labour profile for large herd owners
(8-10 persons per household)

Task	No. of persons	Man hours per month	% of total
I. DOMESTIC TASKS			
a) preparation of food, pounding and grinding of sorghum, collection of firewood, cleaning of kraal, churning of milk.	1	1080	4.5
b) milking	1	150	0.6
c) fetching drinking water	1	450	1.9
d) making of household items	1	610	2.5
II. CONSTRUCTION ACTIVITIES	1	408	1.7
III. WATERING			
a) small stock	2	1050	4.4
b) kids and lambs	1.5	154	0.6
c) camels	1.5	1260	5.3
d) cattle	2	1680	7.1
IV. HERDING			
a) small stock	2	6840	28.6
b) kids and lambs	1.5	2700	11.3
c) camels	1	2880	12.0
d) cattle	1	2880	12.0
V. SUPERVISORY ACTIVITIES			
(Includes salt licks, cutting of branches, inspection of health of animals and other similar tasks).	1	1800	7.5
TOTAL	8-10	23,942	100.0

The table shows that 8 to 10 persons work for a total 23,942 hours per annum, which is equivalent to 6.6 hours to 8.2 hours per person per day.

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