

Ministry of Pastoral Development & Environment  
(MoPD&E), Somaliland  
&  
Candlelight for Health, Education & Environment

## Case Study

# Impact of Charcoal Production on Environment and the Socio Economy of Pastoral communities of Somaliland



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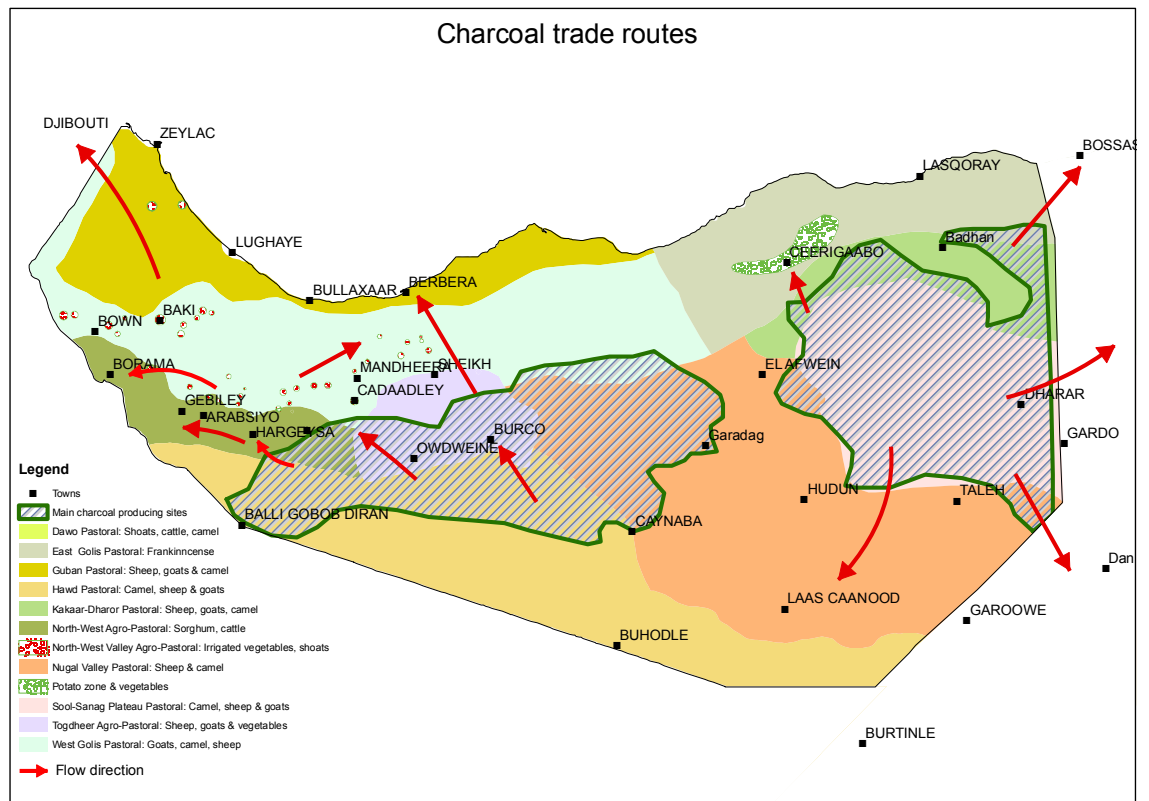
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## Executive summary

Biomass is the main and, indeed traditional source of energy for Somaliland population. Charcoal is the principal energy producing fuel commonly used in urban households and institutions for cooking and heating whereas firewood is commonly used in rural settlements. This energy generated from Acacia species that predominantly grow in plateau zones where annual rainfall ranges between 150-300mm. Acacia species also have other economical and environmental values.

In the past fifteen years, in response to rising demand of charcoal consumption in urban areas of the country, the charcoal production increased, so Acacia woodland resources were consumed faster than they regenerated. The worst affected areas include Salahley, Sabawanag, Adadley, Sheik and Odweine Districts, which cover the charcoal demands of Hargeisa, Burao and Berbera.

As there has been no comprehensive report on the charcoal production of these areas and its negative impact on both the eco-system and socio-economy of the population in the area, this case study was undertaken to ascertain the magnitude of charcoal production in the area. It was also intended to determine appropriate measures to reduce the effects of charcoal production on the environment and livelihood of the rural society.

Prior to 1990, the charcoal production and trade were the only ways the poor could find employment and livelihood. According to tradition, charcoal producers were looked down upon by the society. Bad remarks such as “go away, you charcoal producers!” and “a charcoal producer never wears a white shirt” indicated the charcoal producer’s low status in the community.

The rapid process of urbanization in the country over the past years brought about a change of charcoal production trend. Many wealthy people joined the business and the number of charcoal traders who deliver the stuff to Hargeisa, Burco and Berbera increased simultaneously. A stiff competition over market opportunity and over woodland resource started between the charcoal traders. This was more noticeable in areas under the districts of Salahley, Sabawanag, Adadley, Sheikh and Odweyne.

The charcoal businesspersons are categorized into individual license holders and village level (small-scale) businesses of Hargeisa (Galbeed) and Sahil Regions as well as the charcoal cooperatives of Togdheer region.

The charcoal businesspersons of Hargeisa and Berbera do not have specific charcoal production sites and workers, as do the charcoal cooperatives of Togdheer Region.

Nevertheless, they just buy from rural people who have been progressively more involved in the charcoal production for the past two years.

The involvement of the rural people in the charcoal production started in large-scale with the Saudi livestock export ban but it was confined to certain specific areas and later spread to all areas as charcoal became an important source of income to nomads. This was encouraged by charcoal traders who provided the producers with the materials/tools necessary for charcoal production and supplies such as other supplies such as food, Qat, tobacco etc.

Analysis made from interviews and discussions with different rural charcoal producers and community elders point out that 95% of rural charcoal producers are aged between 17 and 30. These youths are principally involved in charcoal production to obtain money for:

- Qat chewing
- Counteract poverty
- Create wealth (assets, houses, businesses)
- As replacement of the harsh livestock rearing chores
- Revenge, misplaced justice

In the light of charcoal economy, the study revealed that those groups involved in the charcoal production for purposes of poverty counteraction and replacement of livestock rearing spend less than 30% of charcoal income for their household needs whereas about 50% of charcoal income is spent on Qat consumption. Comparatively, the other three groups spend more than 80% of charcoal income for chewing Qat.

Moreover, 90% of charcoal producers end in debt. This is particularly true of those who chew Qat on daily basis. Throughout the study areas, only two charcoal producers were reported to have bought livestock from charcoal income. One has bought 70 heads of shoats in an area around Gatiitale village while the other one around Ina Cadami village bought two female camels and 10 heads of shoats.

On the contrary, despite marked differences in capital, all charcoal traders made/realized possessions/properties from charcoal income. The individual license holders (licensed by the MoPD&E) are the group that has drawn the largest capital from charcoal due to easy and unhindered delivery of charcoal to towns where the demand is so high.

Currently, it is estimated that 65% of the charcoal delivered to Hargeisa and Berbera towns, is prepared from live trees compared to 25% in Burao. The phenomenon of burning charcoal from live trees is largely taking place at private enclosures in all areas under the districts of Salahley, Sabawanag, Adadley, south of Sheikh and west of Odweine. The communal lands

in where most of charcoal is burned from live trees include Qorijableey, Raydabka, Ina igare, bali- kaliil, Baha-dhamal, Bali mataan, Go'da weyn, Go'da yar, Girni.

Likewise, both harvesting trees for charcoal and production techniques result in a about 30% of energy wastage. During harvesting trees in preparation for charcoal production, a fire is set at about 50cm above ground level leaving a good large part of the trunk unused. Two types of kilns are used: The pit type and a surface mound kiln both with lower efficiency of energy conversion as opposed to theoretical maximum. The surface mound kiln could be improved further through air inlets/vents, ignition and insulation of the entire kiln. (For more details, see page 20)

The unsustainable utilization of tree resources for charcoal production has led to a significant depletion of *acacia bussei* trees. Generally, across the area the remaining *acacia bussei* trees observed in the period of study were young. In some areas, there are already signs that *Acacia bussei* population have been greatly reduced and prominent evidence for this depletion is the stumps and isolated trees left.

This change on acacia Woodland obviously had a significant impact on the rangelands on which large majority of the rural population depended. Soil erosion has developed in many deforested areas, and roads made by the trucks carrying or fetching charcoal in the remote areas had caused formation of gullies that can be seen in most of the study areas.

There is no precise data showing the extent of rangeland degradation caused by charcoal production but already the its negative impact can be manifested in the decline of forest cover, loss of bio-diversity in flora and fauna and livestock size and production.

When the young generation became involved in the charcoal production and abandoned livestock rearing, their herds of livestock remain to graze at confined areas, sometimes for a whole year (rather than moving them to better grazing areas). This has adversely affected the quality and nutritional composition of grass in the area causing decline of livestock herd sizes. On the other hand, as acacia species is important in dry season as fodder for livestock, their depletion has led to shortage of fodder in dry seasons.

The local people are well aware of the eminent threat of tree destruction on their livelihood, because the fodder, traditional utensils carved from trees, building materials fencing, medicine and almost all uses from trees would vanish with them.

It is worth mentioning, how the village elders of Raydabka and Qorijabley have carried



out endeavors directed at this issue. This included raising the community's awareness and encouraging community to oust charcoal traders from their territories, imposing fines on live tree choppers, and arrests. Unfortunately, they could not achieve tangible progress on the issue. This resulted in the indiscriminate tree cutting, which local elders feel unable to halt. They believe that without external help provided by the central government, they cannot regain control of their resources. Environment conservation and protection legislations that has been developed by the MoPD&E are inactive due to financial and human resource constraints

There has been an increasing conflict between those derive their livelihood from charcoal and those who utilize tree resources for other traditional uses. Competition among charcoal traders over the remained patches of trees is rife. As time passes, and the wood resources are diminished, ensuring conflicts may jeopardize security in the near future.

According to figures provided by the MoPD&E, the charcoal consumption in Hargeisa for the last six months of the year 2003 amounted to 516,990 sacks and to produce this quantity needs to cut 323118 trees with circumferences ranging from 70-90cm. Of which 161,559 (50%) are live trees. Charcoal consumption will rise with the fast growing urban population, thus the remaining yet untouched wood resources will be depleted within a short time.

There is also a general lack of awareness in energy conservation in urban areas which the main destination of charcoal. Over 95% of urban population use inefficient devices metallic Stoves for cooking. This leads to up to 50% of energy wastage during cooking, which in turn, necessitates cutting considerable number of trees every day to satisfy the energy demand of urban population.

Moreover, despite the limited exhaustible energy sources and the heavy dependence on traditional biomass fuel, which results in fuel shortages and skyrocketing prices there is a good chance for wider application of fuel saving devices and techniques as well as alternative energy sources. Some awareness raising efforts towards use of improved cooking stoves have been done through demonstration and media, but limited availability of the stoves is one main constraint setting back their widespread use. Previous efforts to familiarize the urban communities with the improved fuel saving stoves were carried out by IUCN and Agricultural Development Agency (ADO).

Candlelight, taking stock of lesson learned from previous interventions in the familiarization of energy efficient/ fuel saving stoves started in December 2003 a program aimed at scaling up production of these stoves through training and awareness raising.



## Summary of recommendations

- Increase of wood supply through agro-forestry in farming areas by introducing village woodlots. The depletion of woodland resources due to charcoal production is the most serious environmental issue in the country. There is a need to prevent the indiscriminate cutting of trees and to ensure trees will be conserved on sustained yield basis.
- Massive awareness raising on the resource management and empowering communities to take the responsibility of protecting the environment is an important key factor that will contribute to slowing down of the current rate of deforestation.
- The ministry should place more emphasis on managing land in collaboration with the local people. Their participation in the interventions and decisions that will have impact on them is crucial for creating a sense of ownership and sustainability. An aspect of this management might be that charcoal to be burned only by people with permits in specified areas, but this is not realistic, as charcoal production has become widespread occupation among pastoral communities. Community elders should also be involved in the tree cutting permit issuance. Community elders in the areas around production sites should be given a role in tree cutting permit and patrolling of the production sites. To obtain a charcoal permit the headman of the area first has to indicate whether there are trees to burn for charcoal and where they are. Through the district administration, the applicants for permits should dispatch a letter to the Ministry who will then issue the license in consultation with the community elders of the locality.
- Further more, both the district authorities and local community elders should visit and witness the situation of charcoal production sites. The successful implementation of this management will enable the elders to regain control of the natural resources.
- Charcoal suppliers to Hargeisa, Berbera and Burao should be grouped into associations and cooperatives. This will make the monitoring and control of their activities easier for the Ministry.
- Popularization of energy efficient improved ceramic stoves and kerosene stoves contributes to minimizing charcoal consumption at household level. This will necessitate training of artisans in the production of improved mud stoves. Also with the increase in the price of charcoal due to the increasing demand and the dwindling biomass resources, more people might show interest in kerosene stoves.
- The potentiality of utilizing the fast growing/spreading Mesquite plant (*prosopis juliflora*) for charcoal and firewood should be explored. This plant has already covered large areas, mainly along seasonal watercourses and ex-Ethiopian refugee camps in Galbeed and Sahil regions.

- Increasing conversion efficiency of charcoal production kilns and training of charcoal producers. The current charcoal production kilns and tree harvesting process leads to the loss of a large volume of wood (as much as 15-30%) which is of course cut from dry or live tree. In order to diminish the need to cut such large number of trees, we recommend increasing the number of air inlets, type of ignition methods and even insulation of the entire surface mound kiln, and modifying the harvesting, cutting and stacking processes.
- As there is substantial deposit of coal in parts of Somaliland, a study on the viability, production and utilization is needed to be carried out.
- Any intervention that seeks to control the scale of indiscriminate tree cutting, or, rehabilitate the environment will prove difficult to implement successfully without improving the livelihoods of the community. The living condition of many families in the area is dependent on the charcoal production income. This is particularly true for the returnees from the refugee camps and the internally displaced people (IDPs). Had employment opportunities and income diversification been created for these people, the chances of the discontinuation of environmental destruction would have been increased. For that reason, we recommend means of improving the livelihoods of the pastoral communities be studied, discussed and relevant interventions are carried out. On the other hand, it would be better to create alternative income earning activities for those with agro-pastoral backgrounds such as bee keeping, poultry farming, revolving fund, agro-forestry and agro-pastoral as well as to provide them with other financial and technical assistances to improve their farming production.
- To promote the effectiveness of the Ministry of Pastoral Development & Environment (MPD&E) in addressing the above-mentioned issues, it should have the capacity to take up this big task. The following issues are crucial to the effectiveness of the Ministry:
  - Staff training on technical and managerial issues, policies development, monitoring and evaluation, information and renewable energy technologies etc
  - Provision of the necessary infrastructure needed for the smooth running of its activities such as transport, communication equipment etc.
  - The staff of the ministry be increased to a level where they can be utilized at all the districts.
  - Arrangement of study tours for the key staff members from the Ministry in order to gain more experience, preferably from the neighboring countries.
  - Allocation of more budgetary resources to the Ministry
- Lobby and advocacy  
The issue of deforestation of charcoal production is the most critical issue that might lead to national environment disaster, which would be difficult to reverse or would take long time to recover.

Thus, lobby and advocacy activity should be carried out by the Ministry, NGOs involved in the environmental projects. This will include:

- Launching of general as well as targeted environmental awareness campaigns, lobbying within the government institutions (the Houses of Representatives and the Guurti and the cabinet as well).
  - Formation of environmental advocacy/lobby forums consisting of Government institutions, local and International NGOs.
  - Implementation of the Environmental Conservation and protection Act (No. 04/98)
- Environmental rehabilitation programs:
- It is also crucial to implement environmental rehabilitation interventions through establishment of grazing reserves, soil erosion control, establishment of bio-diversity reserves, soil conservation and tree planting programs. This will not only create employment opportunities for the pastoral communities but will also contribute to the maintenance of the environment and continuation of the pastoral system in one form or another. Full participation of communities in all stages of such interventions is also important.

## 1. Introduction

The over-exploitation of national acacia woodlands and its negative impact on the environment and socio-economy of the pastoral communities, and the whole population in general, is major concern and a subject of discussion in all levels of the society.

Acacia woodlands are found in all the ecological zones of the country but grow predominantly in the plateau zones where average rainfall ranges between 150 and 300mm annually. The natural regeneration of the trees is very slow; as demand generally outstrips regeneration, deforestation is therefore a serious problem. Trees have much socio-cultural importance and economical benefits as well which can be derived or obtained from them, apart being very essential for the control of soil erosion. Because of the large-scale deforestation rate that has been going on over the past 15 years, concerns alerting about the dramatic decline of acacia woodlands due to charcoal production and other uses have been voiced. Charcoal is the principal energy source commonly used in urban households and institutions for cooking and heating.

Economic necessity and lack of enforcement of the country's environmental policies has resulted in the indiscriminate cutting of acacia species for charcoal production by groups while others opportunistically exploited them for economic gain. As there has been no detailed study on the charcoal dynamics in Somaliland, together with its effects on the environment and socio-economy of pastoral people, the Ministry of Pastoral Development & Environment (MPD&E), in collaboration with Candlelight, decided to carry out this study, which will focus on the environmental and socio-economic effects of charcoal production activities on the rural society.

In pursuit of this, a two-member team from the technical unit of the MPD&E was delegated to undertake the assignment in 6 districts of in Togdheer, Galbeed and Sahil regions, namely: are: Baligubadle, Salahley, Sabawanag, Adadley, Sheik and Odweyne.

The aim of the case study was to:

- Assess the scale of woodland resources degradation due to charcoal production and the conflicts that arise over woodland resource use.
- Identify, interview and analyze data collected from a number of stakeholders engaged in the charcoal trade.
- Evaluate the extent the rural people are involved in the charcoal production and factors influencing this.
- Recommend practical strategies to slow down the large-scale tree destruction underway in these areas.

## 2. Methodology

In order to achieve the above mentioned aims and objectives, the following methodology is used:

- Formal meetings with district authorities and community elders.
- Individual and group interviews with both the charcoal producers and with the charcoal traders.
- Observation
- Transect walk around charcoal production sites.
- Cross- checking information collected from different stakeholders.

## 3. Description of the study area

The study area falls in the Haud ecozone between Hargeysa and Burao starting from the southern foothills of the Golis Range and reaching the Ethio-Somali border to the south. Historically, the area has been very rich of acacia woodlands and is characterized by large plains, valleys and combination of acacia shrubs and woodland. There has been a change over times in land use and settlement patterns. Previously, the area was used for wet season grazing, and in the dry season, livestock moved to areas around permanent wells. Due to substantial increase of water points and land tenure, the traditional grazing system has changed. There has also been an increase of the areas of land under cultivation and areas enclosed by individuals for pasture. Consequently, the area of land open to grazing for pastoralists decreased sharply.

### 3.1. Food Economy Zones of the Study Area

Pastoralism is the dominant economic sector with people rearing camels, sheep and goats. Agro-pastoralism is practiced in areas around Golis Mountains, along dry rivers (Adadley, Goda Weyn, Goda Yar etc) and in valleys to which water drain from Golis Mountains such as Gatiitale, Beerato, and Odweine etc. The agro- pastoral families cultivate privately owned land in the rainy seasons and at the same time keep livestock.

Since 1991, grabbing public land for private use and forming thorn enclosures by pastoralists became phenomenal. Seasonal rain-fed crops in drier areas have also increased. *Qat* (*catha edulis*) is becoming popular throughout the area as a cash crop due to the high demand among both urban and rural people. In spite of the increase in cultivation, livestock production remains the most important economic activity in the study areas. Pastoralists that still practiced traditional herding system are being pushed every day to marginal areas in terms of pasture quality and quantity, access to water points is also become difficult due to those private enclosures, their tree browse is also being decimated for charcoal production

– all these making them carry vengeance to all those ‘contributing to their distress’ and thus encouraging them to join the bandwagon to destroy their share of the environment.

Based on food economy, the study area can be divided into the following zones: -

a) Salahley District	Pastoralists
b) Sabawanaag District	Pastoralists
c) Adadley District	Agro-pastoralists
d) Odweyne District	Agro-pastoralists & Pastoralist
e) Sheck District	Agro-Pastoralists
f) Balli-gubadle District	Pastoralists

#### 4. Charcoal Production in the Study Area

Localities under the districts of Salahley, Sabawanag, Balli-gubadle, Adadley, Odweyne and Sheikh, are the main sources of the charcoal used in the main cities of the country, like Hargeisa, Burao, and Berbera due to the fact that these localities are rich in *Galool*, which is the most preferred species for charcoal production.

Likewise, beginning from early 2003, there was a sharp increase of charcoal production in those areas due to the entrepreneurship of new, more organized charcoal producers who operate like the *Qat* importers. They were not content with the traditional markets of Hargeisa, Burao and Berbera, but had started a marketing drive extending their product to many areas to the west of Hargeisa, such as Gebilay, Tog-wajaale, Arabsio and Borama.

During the field trip, the case study team observed the damage done by charcoal producers to the ground, and the adverse effects of charcoal production on the environment in these areas. They also noticed the charcoal production scars on the woodland. One could feel that the rate of charcoal production is lower near the towns as preferred trees for charcoal are depleted from the surroundings of towns, but the further one goes to the remoter areas the situation worsens as trees are still in abundance compared to the former.

The charcoal marketed in Berbera, and a good part of that delivered to Burao are both burned from east and north of Go'da Weyn village while portions of the charcoal brought to Berbera and Hargeisa are produced in areas west and south west of Go'da weyn village, while the main source of charcoal consumed in Hargiesia comes from South and southeast of Hargeisa. These include the Garoodi plain, Geli Darxumo and Dal-dawan area. Charcoal coming from Region V of Ethiopia is a main cross-border trade for the communities of Harshin and Dagah-buur. According to a reliable source, roughly around 15,000 bags of charcoal harvested from Harshin district alone are transported across the border to

Hargeisa on monthly basis. (The charcoal production areas this team visited are as shown in Annex-I).

Although live trees are used for charcoal production in some parts of the communal land, such as, Raydabka, Qorijableey, Bali-kaliil, Go'da weyn and go'da yar, the team have noticed that the charcoal producers in enclosures use 85% of live trees for charcoal production. (For most seriously affected areas see (Annex-II).

## 5. People Involved in Charcoal Production

The data collected from the study areas, revealed that 90% of those involved in the charcoal production activities in the study areas are local people. The remaining 10% are workers of the charcoal cooperatives in Togdhdeer region, who possess fixed charcoal production sites (*Ardaayo*) and workers. The majority of the cooperative workers are from towns and villages.

The mission noticed that the charcoal traders who deliver charcoal to Hargeisa and Berbera buy charcoal from local producers and have no specific sites of their own. Previously, those charcoal traders had their own workers and production sites. However, things gradually changed in the year 2001 when the scale of production grew up.

When analysis was made on the techniques charcoal traders use to encourage young people in the pastoral society on the charcoal burning activities, it was noted that previously when dry trees were abundant, the charcoal traders had their own workers and charcoal production stations. However, when the dead trees got scarce, they turned to other ways and methods, which will enable them, continue their charcoal business successfully while at the same time avoiding the wrath of the community. They should involve them in the destruction of tree resources as it was natural that workers hired from cities will not be allowed in cutting the trees for charcoal.

The only way they can continue their trade was to burn the live trees. To make this palatable to the local communities, they involved the pastoral society on charcoal burning activities, specially the young people, and influenced community elders in the areas to forestall possible opposition to their plans.

On this matter they mobilized and trained the young people in the villages on how to produce charcoal: Chopping trunks, collection and kiln making. The charcoal traders provided the young people all they needed in money, food, *Qat* and materials such as axes, iron sheets for kiln making and utensils.



Certainly, many of the village elders tried to tackle this new phenomenon, but failed. Because of this, the number of rural people being involved in the charcoal production has been increasing day by day, and this led to the spread of charcoal burning among the nomads and villagers.

### 5.1. Socio-Economic Characteristics and Analysis of Charcoal Producers

The charcoal producers living in the rural areas, whether pastoralists or agro-pastoralists, are divided into:

**Hidhiile:** These are individual small-scale charcoal producers, who have the capacity from 30 to 120 bags per month. They are either self-employed who sell their product to every one they encounter, or those employed by charcoal businessmen. The latter supply them everything this category (Hidhiile) need for charcoal production including food, money, *Qat*, materials and donkeys for transportation. In return, they are obliged to sell their product to his/her investor/client.

**Hidhi-waadhi:** Literally means (big Hidhi-waadhi). These are groups (ranging from 3-4 persons) working together and producing charcoal together. Their capacity of production varies from 200-400 sacks per month.

They sell their commodity to every one they strike an agreement with, or they sell to a certain charcoal trader, who is their client and provides them with their needs.

**Dhex-mare:** Plays supervisory role and is the representative of a charcoal trader in the village near the production area. The supervisor is always involved in some other kind of petty business in the village such as teashop, grocery, *Qat* stall etc.

His responsibilities include:

- Submit the needs of the workers at the production site to the charcoal trader;
- Avails/provides advance money to workers in order to cover their food and *Qat* needs. This is deducted from the proceeds of the charcoal they produce.
- Keeps charcoal traders informed on work progress and the sites where charcoal is ready and guide/orient trucks to the sites.

The ages of charcoal producers range between 17-30 years; and when asked why they chose to be charcoal burners, their responses were as follows: -

1. Those who whose intention is to counteract poverty: The group falling in this category, often called *Maxaysato* is the poorest who had turned to this business to earn a living

from it. They possess a very small number of livestock to move from place to place. They are permanently settled near villages or in a private enclosure and mostly comprise of returnees from refugee camps. A member of this category met by the team at Adadley district told them that he had 300 shoats when he settled in the enclosure four years back and now has only 40 shoats. This group makes up 35% of the charcoal producers. It is noteworthy that this group spends most of the income earned from charcoal production on household needs.

2. Those who are heavily addicted to Qat chewing: This group of charcoal producers consists of young people aged between 17-22 years who have abandoned livestock rearing in preference to live in the villages. All they gain from charcoal production is spent on their personal needs and mostly on *Qat*. They become detached from and lost in touch with their families for long periods, moving from one charcoal site to another and frequenting nearby villages for replenishment of their needs for charcoal production. The team had noticed that this group was relatively increasing in numbers more than the other groups and they make approximately 35% of charcoal producers.
3. Those who want to increase their income: This possesses remarkably good numbers of livestock and the main reason for their involvement in charcoal production is to gain additional material benefits such as a vehicle, or build a house etc. They make up 5% of the charcoal producers. An interview conducted on 10 of them indicated that they have around 150 – 360 shoats and 10-20 camels.
4. Those who prefer to avert the sale of their livestock: This group possesses livestock estimated between 80-150 shoats. When asked why they burn charcoal, most of them answered that they want to see their livestock grow in number and utilize forest resources as a direct income generator rather than the other way around. They also make up 20% of the charcoal producers. A story from one who had close linkage to this category of charcoal producers goes like this: Once there was an old nomad, well endowed with livestock herd (over 300 shoats). To spare his shoats from selling, he and his son began to burn charcoal in order to earn income to cover the needs of their household. After a time his livestock dwindled due to disease and drought and eventually varnished and he could not even discharge the debt he incurred. This was because they family had departed from the proven traditional pastoral system (mobility) and consequently their livestock was confined to a small area, over-grazed and invested with tick-borne diseases.
5. Revenge, misplaced justice: This group of charcoal producers joined the business after they have seen that the community elders were not taking precautions against the culprits (tree choppers). This group comprise of 5% of the total.

A story concerning this group goes like this: *Once a nomad saw a man cutting trees for*

*charcoal production. He told him to stop cutting live trees. They quarreled on the issue and at last, the man said, "I am cutting my share of the trees and not yours." After a spell of time, rain poured and flooded the area and few days later the land turned green. One evening, it happened that the nomad saw the very man (who cut the live trees) grazing his livestock in the area. On asking him why he is grazing his livestock there since he cut his share of the trees, the man answered him rudely and they fought one another.*

*The community elders intervened to resolve the conflict and after hearing each of the two men, they came up with a verdict that sided with the tree-cutter! They reasoned that "since the man did not cut away any of the trees belonging to a private person, he was free to do whatever wishes communal land! It was after this incident that the nomad started cutting and burning trees to hit back at the community that did not really care for the preservation of her environment.*

## 6.0. Effect of Charcoal Income on Household Livelihood

An inquiry into how the income generated from charcoal production contributes to rural household economy and how it is spent has been made and a group of 45 charcoal producers, 11 supervisors, and 17 community elders were interviewed.

From their responses, we concluded that about 50% of income realized from charcoal is spent on Qat and that charcoal producers are always in deficit.

The following poem highlights the effects of charcoal activities on the household livelihood.

### *Gabay 1 (Somali Poem)*

*Dulmi qabe hidhiiloow muxuu dogobbo moofeeyay  
Isagoo naftiisii dulmiyay deynna lagu yeesbay  
Dantiisaba ma raacee muxuu soo dab-dacaleeyay  
Goor waagu daalacay muxuu leydhka dib u eegay*

### *Poem 2 by a Charcoal-burner*

*Raga jidibka qaatee dhirta iyo qoriga goynaaya  
Nina lama qisaasine dantaa loo qafleeyahaye  
Qayilaadda Qaadkiyo hadduu soo qadimo soorta  
Inta qoriga maadh laga helay yaa kaa qarsoon weliye*

The first poem, the charcoal producer is termed as *dulmi-qabi* (culprit) who indiscriminately burns the trees, the hard work on himself, always drown in debt, living in isolation and removed from his family and the ignorance to stop it.

The second poem expresses that the charcoal producers always defend their business and retorted that no financial capital is deposited from the charcoal income, but is primarily used for Qat consumption.

About 32 individual charcoal producers have been interviewed on how they spend the income generated from charcoal. Twenty four members were found to have similarities in income and expenditure as follows:

<b>Income from 100 sacks of charcoal per month</b>		
Cost per sack = Somaliland Shillings: 6,000		
Income per truck load	Sl. Shs. 600,000	= \$77.8
<b>Expenditure:</b>		
Food for family consumption	Sl. Shs. 200,000	= \$ 26.0
Food for charcoal producers	Sl. Shs. 72,220	= \$ 9.4
Personnel costs (food, qat, cigarettes)	Sl. 360,000	= \$ 46.9
Total expenditure		\$ 82.30
Deficit	Sl. Shs. 32,220	\$ 4.5

Although this group seemed to have maintained their trade with minimum deficit, yet it is apparent that their way of expenditure is not feasible, as almost 50% of the income is used for personal needs such as Qat and cigarettes. It is also clear that this group might have saved some money had they used the income for household needs only.

It is worth mentioning that it has been reported that a member of charcoal producers at Gatiitaley village have bought 70 shoats from charcoal income, however the survey team did not meet the man as he was out for a trip to Berbera. In areas around Ina cadami village, another one bought 2 female camels and 10 shoats from the proceeds of charcoal sale. When the team asked the later how often he chews Qat. He said that he uses half of bundle (*Caqaar*, roughly around 125g) on weekly basis- adding, that it costs about 24,000 sl.sh (3.2 \$) per month, which is less than 6% of his income.

In the course of the survey it has been noted that those who mainly fall into deficit are those who chew Qat on daily basis.

On the other hand, it has been noted that not charcoal producers alone fall in deficit, but the supervisors themselves encounter deficits although they take a sum of 70,000 SL.SH. from every truck they supervise, facilitate or dispatch to the charcoal traders in the urban centers. The supervisor sometimes accompanies the trucks to Hargeisa, Burao or Berbera and sometimes remains in the town long enough waiting the costs and might incur some more expenses that exceed his entitlements. They also encounter deficits when they provide

some credit to the charcoal producers in hard times, when business is low and thereafter many of them may not pay or delay repayments.

Pastoralists facilitate the charcoal production activities. In return they consume mostly on Qat, but not on family needs. However, most of the interviewees were overhead saying that they may think of stopping charcoal production since it did not improve their livelihoods in anyway.

### **7.0. Charcoal trade Structure in the Country**

In the course of the past 13 years, there was a drastic change in the structure of charcoal business activities in the country. In the past, the major groups involved in charcoal production were from poor households who later grouped into cooperatives licensed by the government. The chaotic period following the end of Said Barre regime was characterized by phenomenal changes in the lifestyles of the people and high urbanization rate, which swelled the population of the urban centers and high increase of Qat consumption habit in the pastoral communities as well. The ever-increasing demands for charcoal in the urban areas had encouraged many citizens to get involved in charcoal production activities and do not see it as a poor man's business anymore. They listen from the BBC airwaves that it is a multi-million dollar business and the riches made from exporting it to the Arabian countries from Puntland and southern Somalia.

The inability of enforcing the country's environmental legalization, aimed to conserve and protect the natural resources mainly due to paucity of the resources allocated for the all-important environmental sector makes the business open for everyone and out of the bounds of concerned authorities' capacities.

An increasing number of people involved in charcoal production make vast areas of rangeland depleted of Acacia tree resources that are greatly beneficial to livestock grazing as well as for environment conservation. The new groups who join charcoal business have different backgrounds and occupations (Qat sellers, soldiers, businesspersons, drivers, etc.).

It has been noted that live tree cutting is encouraged by the charcoal traders through introduction of the pastoral youth to charcoal production providing them both training on charcoal production methods, cash and equipment. The members who are engaged in charcoal business are currently categorized into three groups.

At the village level, groups who are actively involved in charcoal business are mostly women who have unemployed husbands, widowed or are heads of families. They send charcoal to the urban centers by trucks that also transport milk, livestock and other animals products to towns, or sometimes charter a special truck for it.

These groups are usually operate in areas close to the main towns and are nowadays increasing in number. Some of them do not produce charcoal on continuous basis and sometimes lose their workers who leave the villages to the main cities.

### Income and Expenditure of Village traders (Based on one Load of 100 of sacks)

Income from 100 sacks of charcoal per month		
Income from the sale of 100 sacks		
100 sacks @ 13,000 Sl.shs	<b>1,300,000</b>	<b>USD 181.90</b>
Expenditure		
Municipal tax	20,000	2.6
Ministry of Environment (revenue)	40,000	5.2
Labor cost	600,000	77.8
Rental of truck	300,000	39.8
Wood cost	150,000	15.0
	<b>1,110,000</b>	<b>140.4</b>
Profit / load	<b>200,000</b>	<b>41.5</b>

N.B. The individual license holders who have no trucks can deliver to market on the average 4 loads per month, whereas the one who has a truck can deliver to market on average 6 loads per month.

#### 7.1 Enclosure owners

Given the onslaught on tree resources on the open rangelands by charcoal producers, the private enclosures, reserved by their 'owners' either for fodder or rain-fed farming are currently the main source of charcoal in the study area. Most of the 'owners' of these private enclosures do not usually produce charcoal, but most of them sell both live or whatever dead wood remaining in their plots the charcoal traders. The traders, whom they charge 2000 or 1500 sl.shs per sack, earning 150,000-200,000 sl. Shs. Per truckload, do the cutting, kilning of trees and packaging charcoal. However, some of them produce charcoal and sell it to charcoal traders.

In the course of the survey, the team met with groups who were holding their livestock in a part of their enclosures, while charcoal production activities were going on in another part

of the enclosure. They sold the trees in the later part to charcoal traders! When inquired why they sold the trees in expense to their livestock for charcoal production they remarked that livestock production system is no longer sustainable and they were trying to supplement their income with the proceeds from charcoal. Besides when they move from this place, other charcoal producers will not spare the trees, and thus the maximum benefit should be drawn from the land – even if the technique is harmful to the environment.

## 7.2. Individual Charcoal License Holders

Individual members who are holding licenses and are registered with the MoPD&E transport charcoal to the main urban centers such as Hargeisa and Berbera and have started since 2002 extending their business to Arabsiyo, Gebilay and Wajaale. This group is estimated at 170 license holders of whom 40 of them maintain a cross-border charcoal business whereby their businesses are extended to Region V of Ethiopia.

This group seemed to be the most successful and had formed capital including vehicles, which the public nicknames as *Dhuuxii Galoolka* (Marrow of Acacia bussei) and buildings from this trade – a new status symbol and primary objective for rural communities, promoting charcoal trade from ‘inferior business’ to a new status symbol and primary objective for many people.

The chart below indicates the expenditure for charcoal production activities and the profit earned by these group members: -

### Income and Expenditure of Individual License Holders (Based On One Load of 200sacks).

Income from 200 sacks : USD 1 = 7700 sl.shs.		
Income from 200 sacks	Sl. Shs. 2,600,000	\$ 337.8
<b>Expenditure</b>		
Municipal tax	20,000	2.6
Ministry of Environment (revenue)	40,000	5.2
Labor cost	1,200,000	155.6
Truck rental	600,000	77.8
Wood cost	200,000	26.0
	<b>2,060,000</b>	<b>337.8</b>
<b>Profit</b>	<b>540,000</b>	<b>70</b>

N.B. the individual license holders who have no trucks can deliver to the market on the average four loads per month, whereas a truck owner can deliver on the average seven loads per month. Those with two vehicles can deliver 14 loads.



### 7.3 Togdheer Charcoal cooperatives

In Burao, the provincial capital of Togdheer region, there are three charcoal cooperatives registered with the MoPD&E which are *Nooleys*, *Tamfiig* and *Najax*, with 61 members.

During a transect walk in their area of operation, the team have observed that dead wood is more abundant in those areas where these cooperative operate, with the exception of some areas in *Go'da yar*, *Go'da weyn*, *Haqayo malaasle*. This can be related to the comparatively lower consumption of Burao than Hargeisa, but will eventually be routed out within few decades, as it is well known fact the regeneration of acacia trees and growth is very slow.

Unlike other charcoal traders of other regions, they own specific workers and production sites. They do not buy charcoal from anyone else as the charcoal traders of Hargeisa and Berbera do. As result, there are no any other charcoal producers in their areas.

Economically they earn a great deal from their charcoal business, as indicated in the table below:

#### Income and Expenditure (Per One Load of Charcoal 300 Sacks)

Income from 200 sacks : USD 1 = 7700 sl.shs.		
Income from 300 sacks	Sl. Shs. 3,000,000	\$ 389.70
<b>Expenditure</b>		
Ministry of Environment office in Odweine	20,000	2.6
Municipal tax in Burao	7,700	1.0
Municipal tax Odweine	12,500	1.6
Ministry of environment revenue (Burao)	60,000	8.0
Labor cost	1,050,000	136.5
Truck rental	600,000	77.8
	<b>1,750,200</b>	<b>227.5</b>
<b>Profit</b>	<b>1,250,000</b>	<b>162.2</b>

N.B. Their majority of them deliver on average to the market 3 loads per month.

### 8. Role of Women in Charcoal Production

In fact, the role of the women on charcoal production is very limited. This can be justified, because the charcoal production is a very hard work. During the case study, the team came to know that women are somehow involved in the business. We have seen one woman burning a small pit near her house. She could produce one sack of charcoal. The place was 2 km west of Go'da wein. In another place of that area the team saw a little boy of about 9 years of age, burning charcoal in a little hole near their *Aqal*. There were also two little holes near the burning one. The charcoal produced in them was stacked nearby. On interviewing him, we came to know that his mother operated these holes, and she was away at that time to Hargeisa

Central Hospital with her husband for treatment of their eldest daughter who got sick. When the ration/dry food grains left for the household finished, he started burning charcoal to earn an income for survival during his parents' absence. With this young boy, there was his younger sister, who was looking after a small number of livestock near their residence.

Burao Charcoal cooperatives had mentioned that they know two women who burn charcoal in a village called Girni, they produced 100 sacks of charcoal. In another occasion, the Adadlay Police commander told the team that two women produce charcoal near an area called Geli-darxumo towards south of Adadlay

The team had observed businesswomen involved in charcoal wholesale trade at the urban centers, mainly in Hargeisa (40), Berbera (4) and Gebilay (4). Women are more involved in the retail business as it is more conducive to the household setting, whereby women can earn income without leaving their homes and children.

## **9. Competition over the remaining resources and cross border charcoal trade**

The charcoal trade sector was previously known as the business for the poor people. However since 1990, this trend has changed and many well off individuals joined the business giving rise a stiff competition between the old and new charcoal businesspersons. This competition started as the large city charcoal retailers - formerly clients to the poor producers were taken over by the well off traders, who could supply the retailers' selling depots with new loads long before the previous consignments are finished. this forced the small-scale charcoal traders, give up their clients and eventually terminate/close their businesses.

One of the biggest achievements of the Somaliland authorities is its understanding of charcoal export as an illicit trade. In most parts of the country, with the exception of parts of Sanag and Sool, which have been a disputed territory for nearly a decade, the authorities have at least ensured that law prohibiting charcoal export is enforced. The areas in eastern Sanag and Sool have been subjected to a merciless operation, which had resulted in the clearance of thousands of hectares of prime forestland. Coincidentally, the recent severe droughts that had impacted the communities of Sanag and Sool plateau, was worst in those areas where the trees were burned in kilns and then exported to the Gulf markets.

The action taken by Puntland authorities and the civil society organizations (CSOs) had reduced the magnitude of charcoal exportation in the Northeast region. It is also noteworthy to mention the efforts of the Resource Management Somali Network (RMSN) to stop the export of charcoal through lobby and advocacy at local and regional levels. However, charcoal export and boat people crossing the Gulf of Aden – the former to the Gulf States and the

later to Yemen, are reported to be continuing secretly at some 'ports' outside Bosaso. It is also widely believed, according to informants in Burao, that some of the charcoal harvested from the mountainous western part of Togdheer reaches some destinations in Puntland, Bosaso in particular.

Wood resource competition in the country emerged in year 2001, when dry trees for charcoal production became scarce. Every charcoal trader was putting emphasis to capture an area rich in wood trees, particularly the private enclosures. The localities affected most start from the mountains south of Go'da Weyn, Hawd area up to Gatiitaley Village, and West of Balligubadle. This woodland competition forced many charcoal producers to cross the Ethio-Somaliland boundary and produce charcoal in areas of Region V neighboring Somaliland. According to a reliable source, around 15,000 bags of charcoal burned across the border are sourced from Harshin district alone.

During early 2003, the Ethiopian authorities had attempted to halt charcoal consignments crossing to Somaliland, whereby drastic measures including confiscation of trucks found carrying charcoal and even burning them, did not work, and since the date of this report, shipments are still arriving Hargeisa and many towns to the west of Hargeisa.

Likewise, there has also been a competition in human resource among the charcoal businessmen. To obtain more workers to produce charcoal, the businessmen competed to offer workers high incentives.

Charcoal traders who earned huge profits from the trade extended their operations to places like Gebiley, Wajaale and Arabsiyo. This threw out the small-scale charcoal businessmen, who previously were the suppliers of these areas.

## **10. Charcoal Export**

During the case study, the team investigated the issue of charcoal exportation. Although some reports told us that there is some charcoal export activities from Burao to Bosaso. There were no evidences found. This is because the charcoal exportation from Somaliland is illegal according to the law and is carried out in secret.

Loywaddo town at the boundary town between the Djibouti and Somaliland is the only checkpoint that all goods, people and vehicles pass through between the two neighboring countries. As the team observed, there is some illegal charcoal export activities in Lawyaddo. Knowledgeable informants told the case study team that in recent years the export of charcoal to Djibouti was limited due the police forces in the border area, which captured

charcoal crossing to Djibouti, however unspecified number camel loads of charcoal infiltrate at unmanned locations along the border.

## 11. Charcoal production Techniques

*Acacia Bussei* is the most appreciated species for charcoal burning throughout the study areas but there are pockets of *Acacia Etbaica* which predominate the mountain ranges stretching from Biyo Fadhiisiga to Go'da Yar villages.

The Common harvesting methods observed at the time of the study were either to set fire at the base of the tree or cut it at 40 cm above the ground level. These types of harvesting trees for charcoal will never make possible for trees to regenerate again. For example, the team has witnessed in a place 2km south-west of Balli-Ahmed village, one charcoal burner digging up the stumps and remnants of previously burnt trees for charcoal production. This has also been reported in places like Arawelo, Jab-dhurwaa and, Masajidka etc.

Thirteen charcoal producers who were inquired why they preferred live trees responded that they have no other alternative as deadwood is almost completely exploited.

With regard to charcoal production technology, two types of kilns were observed across the study area. The pit/trench kiln is practiced in mountain areas where the surface mound kiln is not in use due to in availability of enough soil to cover it, whereas in valleys, surface mound kiln is used.

Despite, variations in sizes of the pit kilns, the average one is 1.30m deep, 1.70m wide and 2.60m long. Before woods are stacked into the pits, they are cut into stumps of about 1m long to avoid open spaces for air penetration. Woods are arranged horizontally leaving open spaces in the center of the pit. This space is filled with a combustible material from Forbes species to make fire spread effectively down to the pit during the burning process. Afterwards, three or four strong iron bars or some strong metal just a little longer than the pit are laid across the pit (one in each corner and one or two in the middle) to prop corrugated iron sheets over the pit.

The average production of a medium kiln is 10 sacks each time. To produce this quantity one needs 2 or 3 days to dig the pit, one day for arranging the wood, one day for burning and one for cooling.



The other kiln is surface mound type, designed as Somali traditional house with strong pole erected at the center (1.50m high) to hold it from the ground. Other woods of lengths 1m are positioned around the center pole. It is then buried with sand and iron sheets, and finally set to fire from the top.

Both kilns need to be closely supervised during the carbonation process to prevent the charcoal to burn into ashes. On the pit kiln, when the wind blows strongly the air inlets must be reduced. On the other hand they have to be increased when a little wind is blowing. Whereas, the surface mound kiln needs open-air inlets when upper part collapses and blocks air inlets, because all air inlets are established at the bottom of kiln

In an analysis made to determine the number of live trees and number of dead wood of an average mature size that can produce about 200 sacks, the study team noted that 20 donkey cartloads of dead wood (equivalent to 100 dead trees) compared to 25 cartloads of live trees (equivalent to 125 live trees) are needed to produce the same quantity of charcoal. Moreover, the duration required to produce 200 sacks from dry woods is relatively less than the time required when extracting from live trees. Here is a detailed comparison:

a) To produce 200 bags of charcoal from life trees

Activity	Days
Cutting trees	30
Collection and piling for kilning	6
Kilning	6
Cooling	2
Unearthing & preparation for loading	2
Total	46

b) To produce 200 bags from dead wood (when they are abundant): This is theoretical as there is no dead wood in abundance)

Activity	Days
Cutting trees	15
Collection and piling for kilning	2
Kilning	2
Cooling	2
Unearthing & preparation for loading	2
Total	23

Among factors found to be contributing the variation of time spent on charcoal production are the labor, working materials and transportation facilities, quantity of trees found there together with the size of their girth. Apparently, when the two different kilning methods (see above) were examined at production period, they were both found to have very low energy conversion rate as contrasted with the theoretical maximum when compared to sub-surface kilns, which have 40% efficiency, built in South Somalia or improved model of charcoal kilns such as dome-shaped types (95% efficient).

The pit kiln is low in energy conversion (less 10%). During carbonation, more energy blows all the way through to the top of the metal sheets, which are uncovered. The control of air is very difficult too. The surface vertical accumulation kiln is a further improvement of the pit kiln. The energy conversion rate is also under 20%. Nevertheless, there are still chances to improve it further. Particularly, the number of air inlets, type of ignition methods and even insulation of the entire kiln.

## 12. Conflict over Tree Resources Use

As usual, conflicts over resource use arise, when several groups use resources differently. Depletion of wood resources is a serious environmental issue in Somaliland. The rapid increase of charcoal demand due to population growth in urban and economic development is creating considerable pressure on the limited wood resources. Because of these charcoal production activities, most of the country is experiencing severe deforestation. This had created competition over the remaining wood resources, which sometimes develop into conflicts.

The depletion of wood resources is one of the significant sources of conflict in the country, particularly, in district of Salahley, Sabawanag, Adadley and Sheikh. These districts attract various charcoal businesspersons who deliver charcoal to Hargeisa, Burao, Berbera and others because of their geographical proximity to the those major urban centers and the fact that the area still possess the largest remaining acacia bussei forests.



Conflict often rise among traditional resource users (pastoralists) and emerging stake- holders (Charcoal Producers, District Authorities, MoPD&E)

a) Conflict among charcoal businesspersons often arise due to:

1. Wood resource competition: In order to increase the charcoal production, the traders compete with each other on how to gain the potential woody areas, both private enclosures and communal lands.
2. Market competition: Each trader tries to market more charcoal in order to satisfy market demand, and thus pays higher price for charcoal.

N.B. They always resolve the conflicts among themselves

b) Village elders/community and charcoal traders: Village elders as community representatives often voice their displeasure with the negative effects of charcoal production. Unfortunately, their objection is ignored. Because whenever the elders' refusal is heard, the charcoal traders mobilize their workers, mostly from the village, against them.

Some villagers saved their communal land after they carried out campaigns against charcoal burning, by way of imposing fines on some village charcoal producers and charcoal traders.

c) Development interventions and charcoal businesspersons: -

The team has also experienced that the charcoal traders exert influences on the workers of the development interventions, attracting them to take part of the charcoal production system, which has relatively more income for them than their projects.

As the supervisor of the soil erosion control of Gan-libah implemented by CLHE, told us, six of the project workers left their duty station and joined the charcoal producers. He also mentioned that if it goes on this way, many project workers would follow suit.

d) MoPD&E and the District Municipalities

The study team experienced that there are conflicts between the district authorities, and The MoPD&E. These conflicts are based on charcoal revenue collection.

The district authorities used to take some revenue from trucks carrying charcoal, while the MoPD&E also collects revenue from the same. This resulted in conflict between the two parties and the charcoal traders. After analysis of the situation the team realized that



according to Act. No.12 of the unification of central Government and local government revenues, the Ministry is only mandated to collect revenues from natural resources including charcoal, fodder for the livestock, firewood, gums etc. However, the district authorities ignore this act.

### 13. Impact of Charcoal Production on both Environment and the Socio-Economy

#### 14.1. Environmental impacts

During the case study, the team placed more emphasis on knowing more about the negative impact of charcoal production on the fragile ecosystem as woodland resources are currently experiencing an extensive degradation, through charcoal production, building materials, and overgrazing. In addition to cutting trees for charcoal production, forbs and herbs are also collected and used as easily combustible materials during kilning. The surface mound kilns, also damage the top soil, through digging and burning during the production cycle. Moreover the area where surface mound kilns are erected/ established will not be re-vegetated even if rain drenches.

In the case study areas, the team has seen devastated young trees, and the landscape full of burned stumps, cut branches, abandoned kilns, and vehicle trucks crisscrossing large tracts of land. These roads are made by the trucks carrying and searching charcoal in the remote areas leaving behind destruction and misused land. This is a good indication of the severity of environmental degradation and deforestation taking place in the country.

The following table indicates charcoal consumption in Hargeisa alone for the second half of year 2003:

SN	Month	Number Of Sacks
01	July	78,900
02	August	87,300
03	September	73,500
04	October	93,000
05	November	87,900
06	December	96,390
	Total	516,990 Sacks of size 17-18Kg.

N.B. 516, 990 sacks of charcoal, can be produced from total trees of 323,118, with diameter of 90-140 cm. 80% of the charcoal is produced from live trees. In this case 161,559 are live trees harvested for charcoal production, whereas 413,601 trees are dead. This also means that around 6,892 Hectares, of woodland had been cleared for that 6-month period.

It is believed that the charcoal production is more severe than overgrazing as a cause of rangeland degradation, because acacia species which is an important fodder for goats and camels is more rapidly annihilated by charcoal producers than by over grazing.

Moreover, the pressure that the woodland in the case study areas is experiencing now results in:

- Loss of biodiversity
- Soil erosion
- Recurrent droughts
- Migration to urban centers
- Decline of wild life
- Scarcity of woody resource
- Watershed degradation

The socio-economic status of the case study areas sharply declined during the last 3 or 4 years by a combination of various factors such as livestock export ban and drought. This was further aggravated by spiraling process of land degradation

Teenage pastoralists abandon livestock rearing in preference to either charcoal production or employment seeking in the urban centers. The feeble and the old are left to take care of livestock and their needs. These youths (male) find employment in the charcoal business for a whole year round, consequently the livestock remains in one area throughout a year or so, without being taken to areas of better grazing. Thus the livestock, on which the economy of pastoralists depended, decreased in size and productivity due to shortage of fodder and tick-borne diseases. Although the livestock ban contributed to the decline of the socio-economy of the pastoral society in the study areas, nevertheless it has no relations with their involvement on charcoal production.

According to, an interview we had with elders in the areas, the pastoral households experienced an economic setback as follows:

	Before 3-4 years ago			At present		
	Rich	Middle	Poor	Rich	Middle	Poor
Salahley, Sabawanaag and Balligubadle	300-500 shoats, 50-70 Camels	200-300 shoats 10-15 Camels	100-150 shoats 5-10 Camels	150 –200 goats, 10-15 Camels	100-80 goats 3-5 Camels	25-35 goats camels 0-5
Adadley, Odweyne & Sheekh	800-1000 shoats, 70-100 Camels	500-700 shoats 15-20 Camels	100-150 shoats 10-15 Camels	500-600 goats, 20-30 Camels	200-250 goats, 10-14 Camels	50-100 goats 3-5 Camels

#### **14. National Policy and Legislation on Charcoal Production**

The Somaliland Government mandated the MoPD&E to enhance and ensure the sustainable management of the natural resources and promote the livelihood of the pastoral society. Since its establishment, the Ministry prepared and produced many documents including, National Environment Policy, and National Rangeland Management Policy, and strategy to combat against desertification. Likewise, the Environment Conservation and Protection Act No.04/98 was drafted and circulated.

Based on this Act No.04/98, The Ministry issues charcoal production licenses to cover and at the same time regulate the biomass based energy demand of the population in this country, particularly in the urban centers. In this Act, it is also mentioned that the Ministry will collect revenue from the natural resources, i.e. charcoal, hay, gums and resins etc and those who misuse these permit in a manner contrary to what is stipulated in the act will be fined.

In the case study, the team realized that the MPD&E is the core factor that facilitated the increase of charcoal production activities, simply because the Ministry issued many charcoal production licenses to charcoal businessmen/woman, with no supervision and monitoring system at hand.

The revenue collected by the MPD&E from the natural resources goes directly to the Central Government accounts. Unfortunately, the annual budget allocated to the Ministry for carrying out its activities is far less than what is needed for close supervision and implementation of these policies. The staff of the Ministry has a workforce of around 87 persons stretched over the six regions of Somaliland and are lacking the crucial infrastructure for carrying out their duties such as transport, communication equipment etc. Therefore, with the Ministry's financial bottlenecks on one hand, the rising demand for charcoal (locally and in the Arabian countries too!), the absence of control mechanism, it is clear that the Ministry is not in a position to manage the biomass resources effectively.

#### **15. Way forward**

The extensive cutting of acacia species for charcoal has already resulted in adverse ecological and economic consequences. Further degradation of wood species will reduce the capacity of tree resources to provide both livestock browsing and energy requirement for urban people, which in turn would lead to massive human sufferings. Already there is a huge influx of pastoral communities to the urban centers and thus creation of internally displaced (IPDs) camps in around towns.

As a result, the team recommends the following:

- Increase of wood supply through agro-forestry in farming areas by introducing village woodlots. The depletion of woodland resources due to charcoal production is the most serious environmental issue in the country. There is a need to prevent the indiscriminate cutting of trees and to ensure trees will be conserved on sustained yield basis.
- Massive awareness raising on the resource management and empowering communities to take the responsibility of protecting the environment is an important key factor that will contribute to slowing down of the current rate of deforestation.
- The ministry should place more emphasis on managing land in collaboration with the local people. Their participation in the interventions and decisions that will have impact on them is crucial for creating a sense of ownership and sustainability. An aspect of this management might be that charcoal to be burned only by people with permits in specified areas, but this is not realistic, as charcoal production has become widespread occupation among pastoral communities. Community elders should also be involved in the tree cutting permit issuance. Community elders in the areas around production sites should be given a role in tree cutting permit and patrolling of the production sites. To obtain a charcoal permit the headman of the area first has to indicate whether there are trees to burn for charcoal and where they are. Through the district administration, the applicants for permits should dispatch a letter to the Ministry who will then issue the license in consultation with the community elders of the locality.
- Further more, both the district authorities and local community elders should visit and witness the situation of charcoal production sites. The successful implementation of this management will enable the elders to regain control of the natural resources.
- Charcoal suppliers to Hargeisa, Berbera and Burao should be grouped into associations and cooperatives. This will make the monitoring and control of their activities easier for the Ministry.
- Popularization of energy efficient improved ceramic stoves and kerosene stoves contributes to minimizing charcoal consumption at household level. This will necessitate training of artisans in the production of improved mud stoves. Also with the increase in the price of charcoal due to the increasing demand and the dwindling biomass resources, more people might show interest in kerosene stoves.
- The potentiality of utilizing the fast growing/spreading Mesquite plant (*prosopis juliflora*) for charcoal and firewood should be explored. This plant has already covered large areas, mainly along seasonal watercourses and ex-Ethiopian refugee camps in Galbeed and Sahil regions.

- Increasing conversion efficiency of charcoal production kilns and training of charcoal producers. The current charcoal production kilns and tree harvesting process leads to the loss of a large volume of wood (as much as 15-30%) which is of course cut from dry or live tree. In order to diminish the need to cut such large number of trees, we recommend increasing the number of air inlets, type of ignition methods and even insulation of the entire surface mound kiln, and modifying the harvesting, cutting and stacking processes.
- As there is substantial deposit of coal in parts of Somaliland, a study on the viability, production and utilization is needed to be carried out.
- Any intervention that seeks to control the scale of indiscriminate tree cutting, or, rehabilitate the environment will prove difficult to implement successfully without improving the livelihoods of the community. The living condition of many families in the area is dependent on the charcoal production income. This is particularly true for the returnees from the refugee camps and the internally displaced people (IDPs). Had employment opportunities and income diversification been created for these people, the chances of the discontinuation of environmental destruction would have been increased. For that reason, we recommend means of improving the livelihoods of the pastoral communities be studied, discussed and relevant interventions are carried out. On the other hand, it would be better to create alternative income earning activities for those with agro-pastoral backgrounds such as bee keeping, poultry farming, revolving fund, agro-forestry and agro-pastoral as well as to provide them with other financial and technical assistances to improve their farming production.
- To promote the effectiveness of the Ministry of Pastoral Development & Environment (MPD&E) in addressing the above-mentioned issues, it should have the capacity to take up this big task. The following issues are crucial to the effectiveness of the Ministry:
  - Staff training on technical and managerial issues, policies development, monitoring and evaluation, information and renewable energy technologies etc
  - Provision of the necessary infrastructure needed for the smooth running of its activities such as transport, communication equipment etc.
  - The staff of the Ministry to be increased to a level where they can be utilized at all the districts.
  - Arrangement of study tours for the key staff members from the Ministry in order to gain more experience, preferably from the neighboring countries.
  - Allocation of more budgetary resources to the Ministry
- Lobby and advocacy  
The issue of deforestation of charcoal production is the most critical issue that might lead to national environment disaster, which would be difficult to reverse or would take long time to recover.

Thus, lobby and advocacy activity should be carried out by the Ministry, NGOs involved in the environmental projects. This will include:

- Launching of general as well as targeted environmental awareness campaigns, lobbying within the government institutions (the Houses of Representatives and the Guurti and the cabinet as well).
  - Formation of environmental advocacy/lobby forums consisting of Government institutions, local and International NGOs.
  - Implementation of the Environmental Conservation and protection Act (No. 04/98)
- Environmental rehabilitation programs:

It is also crucial to implement environmental rehabilitation interventions through establishment of grazing reserves, soil erosion control, establishment of bio-diversity reserves, soil conservation and tree planting programs. This will not only create employment opportunities for the pastoral communities but will also contribute to the maintenance of the environment and continuation of the pastoral system in one form or another. Full participation of communities in all stages of such interventions is also important.

## 16. Annexes

### Annex-I

#### Charcoal cproduction sites and delivery markets

	Area	District	Delivery market
01	Ina gacan jiid	B. gubadle	Hargeisa
	Cuna qabad	"	"
	Sayla bari	"	"
	Sayla galbeed	"	"
	Gunburaha	"	"
02	Ina-barre	Sabawanaag	"
	Qorijabley	"	"
	Balli-axmed	"	"
	Baali-ugaadh	"	"
	Balli-gaas	"	"
	Balli-shire	"	"
03	Bali-kaliil		
	Ina-guuxaa	Salaxley	Hargeysa
	Baha-dhamal	"	"
	Qool-buulale	"	"
	Ina-igare	"	"
	Raydabka	"	"
	Arawelo	"	"
	Ina-yare	"	"
	Qoolcaday	"	"
	Dhinbil riyaale	"	"
04	Qoolbuulale	"	"
	Deri-maraa	Adadley	Hargeysa
	Biyofadhiga	"	"
	Looli	"	"
	Salaan	"	"
	Dabajilab	"	"
	Lafomaroodi	"	"
05	Waabaha	"	"
	Xidh-xidh	Odweyne	"
	Mureec	"	"
	Shilmaale	"	"
	Qaloocato	"	"
	Xidhxidh	"	"
	Mureec	"	"
	Shilimaale	"	"
	Qaloocato	"	"
	Harasheekh	"	"
	Cabdidheere	"	"
	Xaydaanle	"	"
	06	Baarcad	"
Qudhac-gudle		"	Burco
Geeldidis		"	Burco
Haqayomalaas		"	Burco & Sheekh
Goda yar		Skeekh	Burao & Sheekh
Goda yar		Sheekh	Burao & Sheek
Girmi		Sheekh	Burao & Sheekh
Gugux		Sheekh	Sheekh
Gidhays		Sheekh	Sheekh



**Annex II**

The most affected areas by charcoal production

Village	District	Village	district
Qorijebley	Sabawanaag	Gatiitaley	Odweyne
Balli-kaliil	"	Xidhxidh	"
Balli-axmed	"	Mureec	"
Balli-mataan	"	Shiimaale	"
		Qaloocato	"
Bahadhamal	Salahleey	Harasheekh	"
Qoolbuulala	"	Cabdidheere	"
In-igare	"	Xaydaanle	"
Raydabka	"	Baarcad	"
Arawelo	"	Qudhaca qudle	"
Dhinbil riyaale	"	Geeldidis	"
Deri maraa	Cadaadleey	Haqyo malaas	"
Daba-jilab	"	Goda yar	Sheekh
Xassan qudaar	"	Goda yar	"
		Goda weyn	
Baraagaha ilm xarbi	"	Girmi, Gugux & Gidhays	"
Waabaha	"	Inagacan jilib	Balli-gubadle
Ina-sumuni	"	Cunaqabad	"
Lafa maroodi	"	Sayla bari	"
Biyo fadhiga	"	Sayla galbeed	"
Ina cadami	"	Gunburaha	"
Dabajilab	"		



