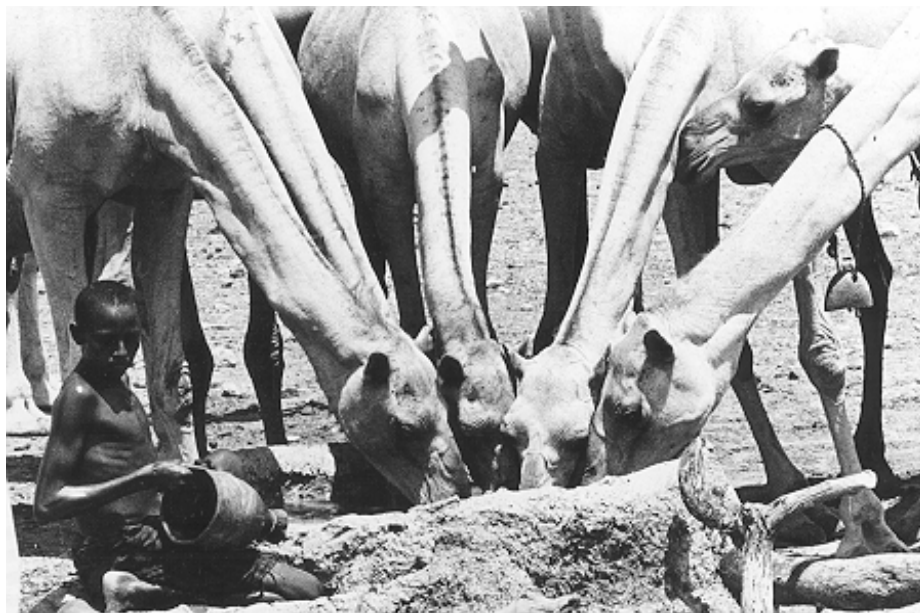


VETERINARY SERVICES IN THE SOMALI NATIONAL REGIONAL STATE, ETHIOPIA: A SITUATION ANALYSIS



by

**Andy Catley
Dr. Mohammed Sheik Said
Dr. Mohammed Ali Farah
Dr. Ahmed Sheik Mohammed
Dr. Ismail M.Handule**

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**Save the Children Fund (UK)-Regional Bureau of Agriculture
Veterinary Services Support Project for the Somali National Regional State**

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Andy Catley, Mohammed Sheik Said, Mohammed Ali Farah, Ahmed Sheik Mohammed and Ismail M. Handule

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Save the Children UK (Jijiga Office)
PO Box 7165
Addis Ababa
Ethiopia

Regional Bureau of Agriculture
Somali National Regional State
Jijiga
Ethiopia

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MOHAMUD TUKAALE OSMAN

Mohamud Tukaale Osman was a famous Somali poet and actor. Somali culture is oral and poetry is used for creative expression, to pass messages, and to introduce or summarise meetings. Tukaale was asked to prepare a poem or narrative that could be used to introduce the recent stakeholder workshops on veterinary services. The poem describes a pastoralist with sick animals who considers four different options for treating them, but ends up asking the workshop participants for help and advice.

Oh people we are astonished and experiencing the worst problem ever encountered!
The animals we rear, the source of our richness,
Are endangered by contagious and epidemic diseases,
About to erase our wealth.
Just now a score of my own livestock fell victim and died,
And worst still, sixty more lie nearby suffering from weakness and pain,
Seriously sick at the homestead, unable to graze this morning.
Alas! There is nothing for me to do but seek emergency help.
Let me go to the men of religion.

Oh knowledgeable men of religion and priests with big turbans!
Make chants and rituals from the stars or books,
Search for a remedy and spell out your charms,
Prepare an amulet and I'll tie one on each head,
Sprinkle balsamic water over them,
And surely the disease will disappear and the animals recover,
With these prayers, all will become perfect.

But wait! Think again. This is a crisis and prayers will help,
But God urges us to try even harder,
So let me seek another option.
For surra that kills camels, the bloat of sheep and the rinderpest,
And the sickness that ruins donkeys and forces mules to secrete mucus,
With its fever the horses cry and instantly die - all of them!
The traditional healers are experts in livestock,
Let me seek a practitioner to compliment the prayers.

But wait! Think again of this outcome.
Suppose he sets a fire and heats an iron rod,
And when it is awfully hot, he may cauterise with herbs,
Causing the skin to fry, the flesh to contort and the body mutilated,
With wounds that may fester and if left alone,
Cause the animals to perish and then we will fight each other in battle,
Thus all my efforts may lead me to crime - better to look somewhere else.
To the servants of science, let me search for the doctors,
Who know the fatal disease of the animals and can easily diagnose,
And with the medicines they know, can quickly reach the solution.

But wait! Think again.
Even if the doctor can come with pleasure, even as a favour,
And renders all his efforts, without drugs and a car from the government,
What can he do? My place is remote and the doctor is townfolk,
Who has never even crossed the valley from his home,
I'm sure he'll become tired. Will I carry him on my shoulder?
But let's not give up with this idea, I must try more.
I know - let me take a calm and tame camel, and find a saddle
To furnish his hump, with padding on each side,
And a shade from the sun, so the doctor sits comfortably on him,

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Then take the rope and lead the camel easily to my place,
Where the doctor can treat the animals.
And then myself being in debt, should kill a bull,
And give him fresh milk, and butter, and serve him with a clean cup,
So he can enjoy and take rest and refreshment.

But calm down and wait! Think again over all this.
The doctor is pampered townfolk, he never rides the camel,
And he knows not the rural area, nor distinguishes a lion from a bull!
Supposes he assumes the camel a beast? Or gets confused, yelping "Help"
Causing the camel to panic and stampede, flinging the man from his back,
And on to a rock, smashing his brain.
Even this accidental death would be the worst thing for me to incur,
Becoming a victim of vengeance and ever-lasting retribution,
And claims for blood-money, a heavy price to pay.
Oh God I'll never defy you - save me from this!
And let me seek another option.

The opportunists who grow rich from the livestock drugs
Imported from abroad, their stores stocked to the brim,
Why not seek the medicine from them and buy with dollars?
Try to use the syringes and learn about the injection,
And the powders to be mixed with water.
Why shouldn't I use the medicines and pour them into the trough
To treat the sick animals? Why not?
Curse to fools, why should I seek a doctor?

But the merchant loves money and strives to make profit,
An opportunistic foe, he shows no mercy for the rural people,
And of the modern drugs, I know not the expiry dates,
how to mix the injection, or even read the label.
I am completely ignorant of it!
For the powdered medicine to be mixed with the water,
The merchant may defraud me, and wrongly wrap for me in a paper,
The poison for hyenas and beasts.
If I pour this into the water, and the animals drink,
Then may swell and stagger,
And all will be killed.
This is like suicide, I will be ruined and poor.
Leave this idea, don't mention it again.

- I am tired and frustrated
- Of the livestock vet services
- All the options I preferred
- And wanted to try
- All proved to be bewildering
- And one worst than the other
- I have knocked every door
- And failed everywhere
- Oh people advise me
- How can I obtain
- The best vet service?

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Abbreviations

CAHW	Community-based animal health worker	PARC	Pan African Rinderpest Campaign
Eth.birr	Ethiopian birr	RRC	Relief and Rehabilitation Commission
EVA	Ethiopian Veterinary Association	SCF	Save the Children Fund, United Kingdom
FAO	Food and Agriculture Organisation	SERP	South East Rangelands Project
MoA	Ministry of Agriculture	SNRS	Somali National Regional State
OAU	Organisation of African Unity	VSSP	Veterinary Services Support Project

6.8 Eth.birr ~ 1 USD

1. INTRODUCTION

Veterinary services in Africa are in transition. State veterinary services are being reorganised and the private sector is taking more responsibility for animal health care. In some African countries veterinary privatisation programmes have been in progress for a number of years and both governments and donors are beginning to learn more about appropriate ways of supporting public and private veterinary sector activities (FAO, 1997).

In Ethiopia, veterinary privatisation is being supported on a national scale through a Pan African Rinderpest Campaign (PARC) project in partnership with the Ministry of Agriculture. Although this project is now well-established, the involvement of veterinarians from the Somali National Regional State (SNRS) in the project has been limited. In response to this situation, Save the Children (UK) have agreed a specific Veterinary Services Support Project with the SNRS authorities which is designed to compliment the PARC project. The SCF(UK) project is to be implemented through the SNRS Regional Bureau of Agriculture and involves the two key players in veterinary service delivery in the region viz. the Ministry of Agriculture (MoA) and the South East Rangelands Project (SERP). The project is funded by the Department for International Development, United Kingdom (formerly the Overseas Development Administration).

This situation analysis has been conducted in order to provide an up-to-date account of veterinary services in the SNRS. Regional veterinary services were reviewed by senior veterinary staff from the Regional Bureau of Agriculture and veterinarians from SERP. In addition, stakeholder workshops on veterinary service delivery were conducted. Workshop participants included veterinary personnel from SERP and the MoA, community elders, religious leaders, livestock owners, women's groups, traditional healers and private veterinary drug vendors in the SNRS. A draft report was submitted to SERP for comments before this final version was produced.

It is hoped that the situation analysis will assist policy makers at regional level when options for defining public and private sector roles in veterinary service delivery are being considered. The report also contains baseline data which is relevant to monitoring and evaluating the current VSSP and which may be of value to central-level veterinary authorities. Due to the close economic, geographic and cultural links between the SNRS and Somalia, the situation analysis includes information on veterinary service delivery in both Ethiopia and Somalia. However, it should be noted that private services in Somalia have existed in the absence of government for a number of years, whereas in Ethiopia, privatisation is a relatively new approach to improved service delivery.

2. A BRIEF HISTORY OF STATE VETERINARY SERVICES IN AFRICA¹

The development of modern veterinary services in Africa is often associated with the colonial armies and their need to protect cavalry and pack horses against disease. Examples of army veterinary services have been described as early as 1795 in South Africa (Wilkins, 1961) and 1902 in Sudan (Jack, 1961). In Somalia, the Italians established the first veterinary institute in Merka, south of Mogadisho, in 1914 and in the former Somaliland Protectorate, veterinarians were deployed by the British from 1924 (Peck, 1973). Although Ethiopia was not colonised, an animal disease survey was conducted as early as 1885 by Italian veterinarians and a French mission provided veterinary services up to 1914; from 1936 to 1941, the Italian army needed veterinary services for its cavalry (Ministry of Agriculture, 1995).

As colonial farmers settled in Africa they imported exotic breeds of livestock which were very susceptible to tropical diseases. This situation prompted the development of civilian veterinary services which aimed to safeguard livestock in the new colonies and enable trade in livestock between the colonies and Europe. At this time, scientific knowledge on tropical livestock diseases was limited and therefore the control of major diseases was based on quarantine, movement restrictions and slaughter of infected stock. Later, research institutes were established to develop vaccines and effective disease control campaigns were launched, most notably against rinderpest. As the colonial veterinary services developed, their range of activities was broadened in order to address problems of livestock productivity, food hygiene and public health. New activities included clinical treatments and control of non-epidemic diseases, improved diagnosis via veterinary laboratories, vaccine production

¹ Much of this section is drawn from Holden et al, 1996.

and meat inspection. At the time of independence in Africa in the 1960s, these responsibilities and structures were inherited by new governments.

In the post-colonial era, veterinary services attracted considerable donor support. Within two decades of independence, the number of veterinary faculties in African universities rose from three to twenty-eight and in sub-Saharan Africa, the number of veterinarians increased from an estimated 2,500 in 1964 to 42,000 in 1984. Veterinary research funding also increased in sub-Saharan Africa from around \$149.5 million in 1961-5 to \$372.3 million in 1981-5. This high level of donor support effectively removed incentives for governments to fund their own veterinary services through taxation and crucially ... *meant that state veterinary services were vulnerable to changes in donor policy* (Holden et al., 1996). Up to the mid-1980s, the organisational structure of many veterinary services had hardly changed from that inherited at independence (Cheneau, 1985).

2.1 The funding crisis of state veterinary services

In the 1970s and 1980s the global economy was affected by serious recession. Developing countries were faced with increasing debts and with some reluctance accepted donor structural adjustment policies that advocated drastic cuts in state-funded services, including veterinary services (Leonard, 1993). In the past, these services had virtually guaranteed employment to veterinary graduates (de Haan and Nissen, 1985) but now had to contend with declining budgets as structural adjustment programmes took hold. Typically, state services were reluctant to reduce the number of civil servants under their control and therefore, saving were dependant on reductions in operational costs rather than staff costs. In some countries, the number of veterinary staff employed by government continued to increase as operational budgets dwindled (Antennah, 1991; Leonard, 1993).

Inevitably, the reduced operational funds available to state veterinary services led to a decline in efficiency and activities. Typical problems included:

- Drug shortages, lack of transport and failure to maintain equipment (Antennah, 1991).
- Reduced resources meant that less work could be done, veterinarians were found sitting in offices and staff morale declined (FAO, 1991; Moris, 1991).
- Re-emergence of diseases of major economic and social importance such as rinderpest and contagious bovine pleuropneumonia.

In summary, the level of donor support to state veterinary services in the twenty years after independence could not be sustained through domestic revenues when donor funding was withdrawn.

A common response of state services to structural adjustment was to implement cost recovery programmes and in the case of veterinary services, establish revolving funds. However, these systems met with very limited success in sub-Saharan Africa, accounting for only 2-5% of livestock budgets (Tber, 1995). According to de Haan and Nissen (1985),

When revolving funds have been established - often as a condition of external funding - experience indicates that as soon as the project is completed such funds vanish in the Treasury or are used for other purposes, and little activity remains.

Second, revolving fund performance has been poor. The receipts from drug sale programs suggest that at best only 80-90% (at worst only 20%, as experienced in a World Bank-funded project) of the sale is deposited in the revolving fund, the rest being lost due to administrative negligence or embezzlement by civil servants. Revolving funds therefore become rapidly depleted.

2.2 Economic theory and privatisation of veterinary services

The trend towards privatisation of state services is based on economic theory. The theory states that under conditions of perfect competition, the private sector can outperform the state in virtually any circumstance (Leonard, 1993). The theory also provides a framework for identifying whether the state or private sector is most likely to provide a given service at optimum economic efficiency and also,

characterises those aspects of a state service which should remain under state control - state intervention is only justified when the private sector is unlikely to perform efficiently (Umali and Schwartz, 1994).

When economic theory is applied to veterinary services, each part of the service is defined as either a public good or a private good. The definitions of these terms as are follows:

Box 1

Definitions of public good and private good

Public good

A *public good* benefits everyone and no-one can be denied access to it. As everyone has access to public goods, there are no incentives for individuals to pay for the service. Therefore, public goods require everyone to contribute towards the cost of the service - this is most commonly achieved through state-enforced taxation. In a veterinary service, an example of a public good is disease surveillance. Note that the private sector is usually unwilling to supply public goods because the benefits are not restricted to those people who pay for the service.

Private good

A *private good* benefits only the individual who pays for the service. People who do not wish to pay for the service or who cannot afford to pay for the service are excluded. In theory, two individuals or consumers cannot both benefit from a specific private good at the same time. In a veterinary service, an example of a private good is the treatment of a sick animal by a veterinarian.

When this type of economic analysis is applied to veterinary services, the public or private nature of each component of the service can be described as in Table 1. This type of analysis has formed the basis for numerous Veterinary Privatisation Programmes in developing countries. In particular, these programmes have focused on support to veterinarians who wish to establish private clinics or pharmacies in order to fulfil the clinical intervention and drug distribution activities in Table 1. Apart from improving the private veterinary sector, these programmes may also enable the state veterinary sector to operate more effectively because less staff need to be employed and therefore, the ratio of staff costs to operational costs improves. When the state is no longer responsible for curative veterinary activities, those staff who remain employed have relatively more resources to conduct public good services such as disease surveillance (assuming that budget levels are maintained).

3. BACKGROUND TO THE SOMALI NATIONAL REGIONAL STATE

The Somali National Regional State (SNRS) in southeast Ethiopia covers more than 350,000km². Altitude varies from 1500 metres in the northwest of the region to about 300 metres in the far south, around the Wabi Shebelle river. The Wabi Shebelle is the only perennial river but there are major seasonal rivers such as the Fafen, Jerer, Dakata and Erer that flow in a north to south direction. The higher altitude areas receive as much as 600mm rainfall per annum (semi-arid) whereas the larger, low-lying areas in the south of the region receive only 300mm rainfall or less (arid).

The rangelands in the south of the SNRS are occupied mainly by Somali pastoralists who rear mixed herds of camels, sheep, goats and a few cattle. Agropastoralism is practiced in the higher rainfall areas in the north of the region and around some of the main towns further south. Crop production within the agropastoral system is entirely dependent on rainfall and therefore agropastoralists remain very reliant on their livestock. Permanent agricultural activities occur along the edges of the Wabi Shebelle river where maize and sorghum are the main crops. Seasonal, flood-retreat agriculture takes place at points where the Wabi Shebelle overflows into the surrounding plains around Imi, Kelafo and Mustahil. Small-scale irrigation is evident on some horticultural farms that produce vegetables, fruit and grain.

Table 1
Classification of veterinary services according to the appropriate sector for delivery

<i>Livestock service</i>	<i>Economic optimum sector for delivery</i>		<i>Economic characteristics</i>
	<i>Private</i>	<i>Public</i>	
Clinical intervention	Yes	No	Mainly private good
Production of drugs and vaccines	Yes	No	Mainly private good
Distribution of drugs	Yes	No	Mainly private good
Vaccination and vector control	Yes	Yes	Private good with externalities
Diagnostic support	Yes	Yes	Private good with minor externalities
Veterinary research	Yes	Yes	Private and public good depending on patents/property rights
Extension	Yes	Yes	Private and public goods depending on the medium of communication and specificity of advice
Disease surveillance	No	Yes	Public good
Quarantine and movement control	No	Yes	Policy measures to contain externalities
Drug quality control	No	Yes	Policy measures to avoid moral hazard
Food hygiene/meat inspection	No	Yes	Policy measures to avoid moral hazard

(source: Umali et al, 1992)

Infrastructure in the SNRS is extremely poor. The area has been isolated from development activities for many years and basic transport and communication facilities are weak - roads are in bad condition and telephone lines between major centres such as Jijiga and Gode are few. These problems are exacerbated by the large size of the region.

Accurate data on human and livestock population figures are not available. The pastoral population and some of their livestock regularly move across the border into Somalia depending on rainfall, availability of grazing and security - traditional clan boundaries cross the Ethiopia-Somalia border along its entire length from Djibouti to northern Kenya. Therefore the results of census can depend on the time of year that the census is conducted. Estimates of human and livestock population should be treated with caution but approximate figures are as follows:

Human population 3.5 million

Livestock population

Camels 1.5 million

Cattle 6.0 million

Sheep and goats 11.5 million

Since the late 1970s the SNRS has been characterised by conflict and human displacement. Today the Ethiopia-Somalia war, the civil war in Somalia and more recent clan fighting in Somaliland and Somalia are evidenced by the 200,000 plus Somali refugees and returnees who reside in camps along the Ethiopia-Somali border. Despite the continued presence of the camps and their major affect on trade in Ethiopia and northern Somalia, the economy of the SNRS is still based on livestock. The livestock trade is closely linked to the export market in Somalia which ships live animals, particularly male sheep, to the Gulf States. In 1994 livestock exports from northern Somalia were valued at \$112 million and around 80% of these animals were thought to originate in Ethiopia (Stockton and Chema, 1995). The recent stakeholder workshops on veterinary services in the SNRS showed how livestock traders relate specific diseases to the reduced sale value of livestock (Veterinary Services Support Project, 1997).

In addition to contributing to the regional economy, livestock are an integral part of Somali culture. Clan power is related to livestock assets and blood-money compensation, called *dia*, is based on payments of 100 camels for the life of a man and 50 camels for a woman. Probably the strongest social institution within Somali society is the *dia*-paying group, the members of which share responsibility for *dia* payments. In agropastoral areas cattle tend to replace camels in *dia* transactions and a *buulo* donation of an ox, cow or sheep is immediately given to the family of an injured person. Herding requires collective responsibility and livestock, particularly camels, feature heavily in Somali song and poetry.

3.1 Livestock production systems and household economy.

Livestock production systems in the SNRS are based on traditional pastoral and agropastoral systems. Pastoral systems predominate in the arid, low-lying areas including Shenile and the huge rangelands in the south. Somali pastoralists rear mixed herds in order to utilise different vegetation types and minimise losses due to species-specific disease. However, in pastoral areas the camel is the most important species due to its high tolerance to drought. Although in the past pastoralists have been criticised for their neglect of the environment, current ecological thinking acknowledges that pastoralism is an appropriate use of natural resources in non-equilibrium, low-rainfall areas. Pastoral systems compare favourably with ranching systems in terms of productivity and in some cases, even out-perform the more modern approaches. In Somali areas attempts to improve rangeland through enclosures and other measures have met with limited success (e.g. see the GTZ Central Rangelands Development Project, Somalia).

Information that relates specifically to Somali pastoralism in the SNSR is lacking but some idea of household economy can be gained by reference to information from central Somalia which borders this area. The food consumed by Somali pastoralists is directly related to the productivity of their livestock, particularly in regard to milk production and numbers of offspring. Estimates of milk consumed by Somali herders vary from 22.2% (Abdullahi, 1993) to 80% (Dunbar, 1984) of family daily energy requirements. The remaining calories are provided by grain, sugary tea and meat; the grain is obtained by the cash sale or exchange of livestock, particularly male sheep. In Figures 1 and 2 below, livestock derived food and income is related to two Somali wealth groups according to Tropical Livestock Units (TLU)² per Active Adult Male Equivalents (AAME) of 2530kcal/day.

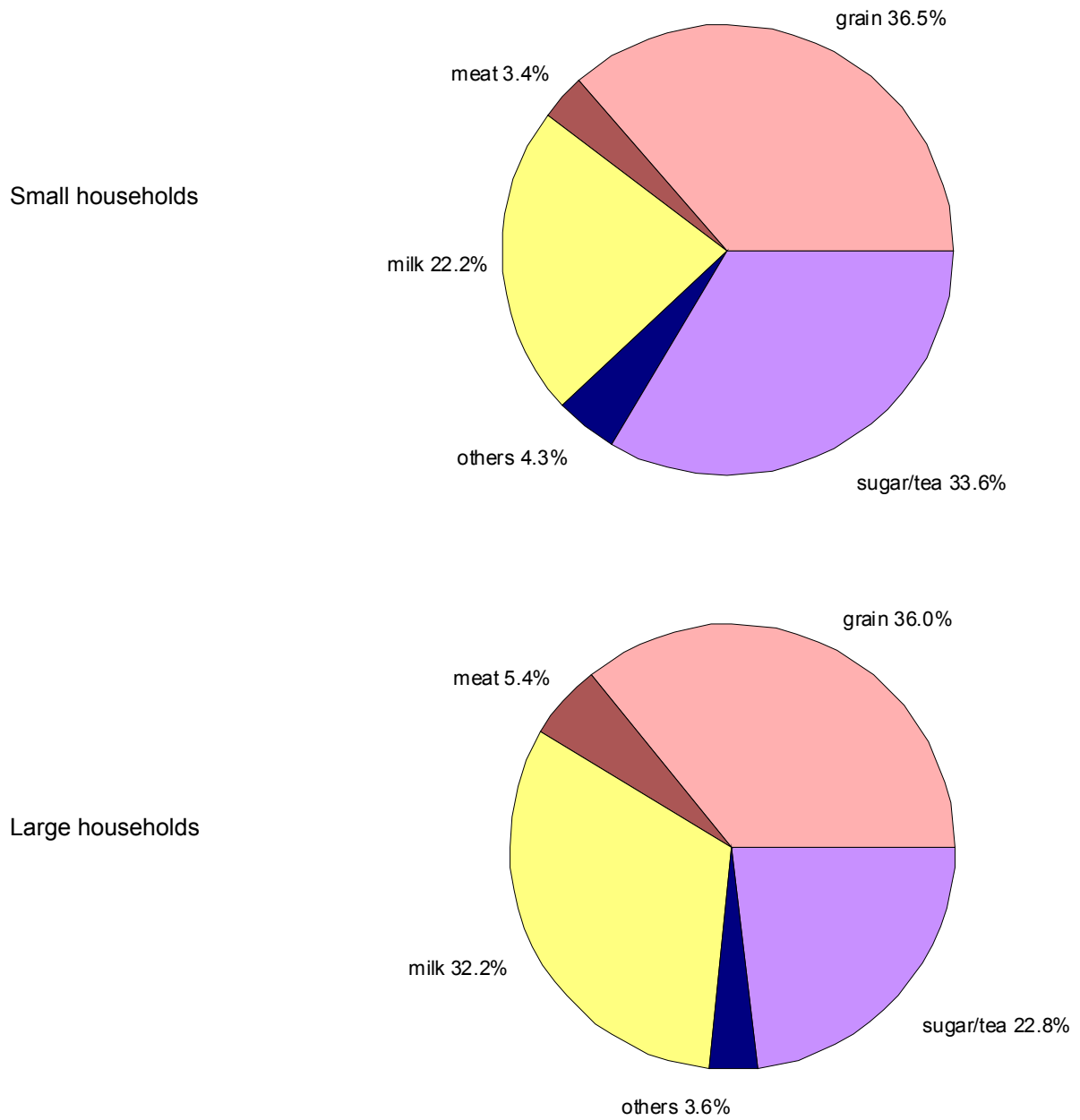
Throughout the year the quantities of milk and grain consumed vary according to season. Typically, milk is plentiful during the main gu rains when the pasture and browse are lush, and offspring are born. Later in the year as the jilaal dry season progresses, the teenage boys and young men take camels to remote browsing areas. The camel herders rely almost totally on camels' milk for the dry months and supplement their diet with wild fruits or occasional meat from an animal that has died. At this time of year it is easy to see why camels are so revered by Somalis and why the camel population of Somalia and the SNRS has been estimated at more than 7 million head (more than any other region in the world according to FAO, 1991). When other livestock are suffering from lack of water a single camel will continue to produce around 6 litres of milk a day (Mekonnen, 1994) - two camels will meet the daily calorific needs of three active adult men³. Camel milk is also rich in group B vitamins and contains three times the vitamin C content as cow milk.

Agropastoralism is common in higher rainfall areas such as the former East Hararghe. In these areas communities are more sedentary and rely on both crop and livestock production. Cattle tend to be reared in favour of camels. In agropastoral areas, home production of grain may account for around 50-80% of household food requirements.

² A Tropical Livestock Unit is usually defined as an animal of bodyweight 250kg i.e. around 10 adult sheep or goats.

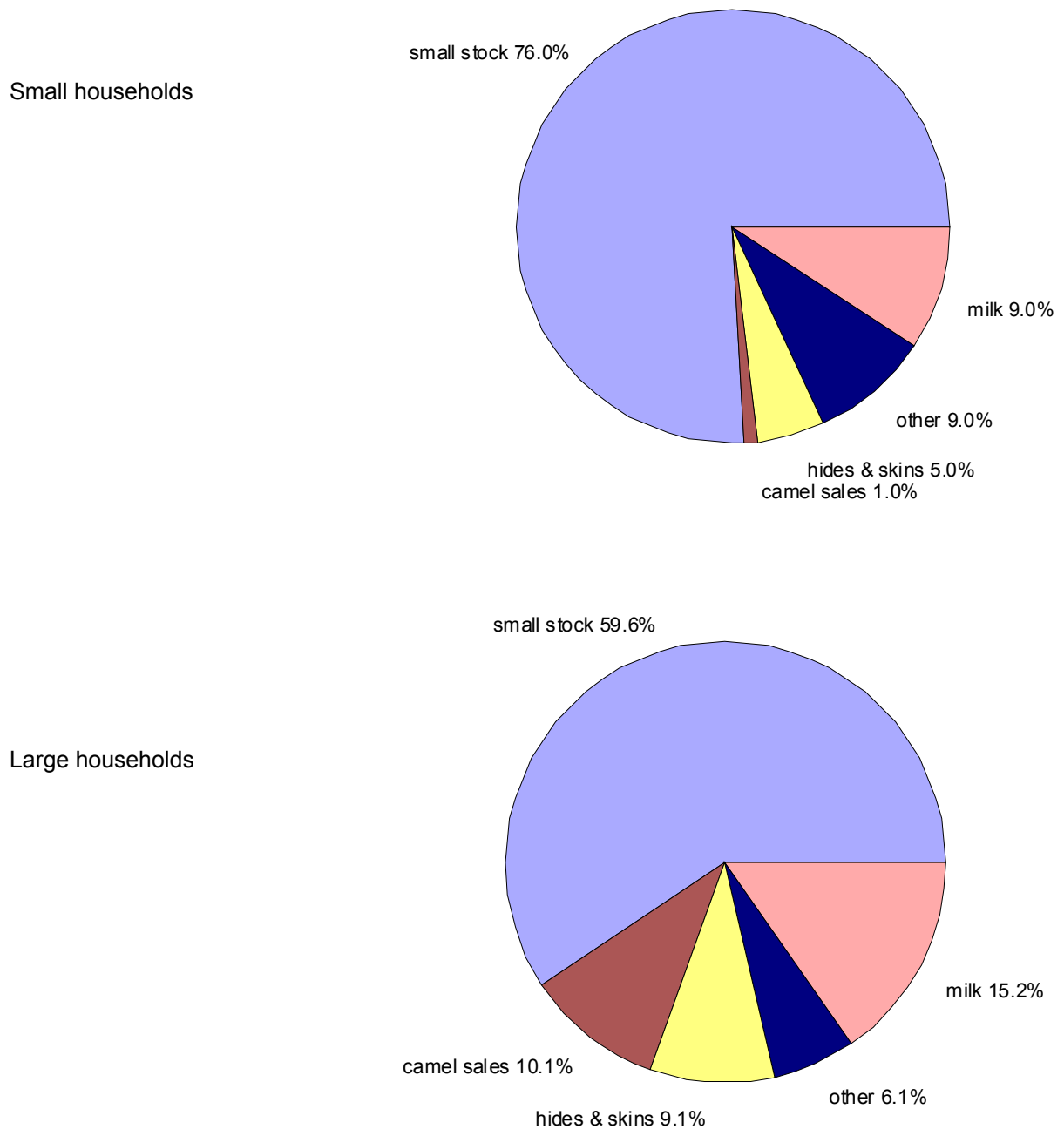
³ Based on adult daily energy requirement of 2530 kcal and camel milk energy content of 70 kcal/100g.

Figure 1
Sources of food for Somali pastoralist households (Abdullahi, 1993)



Note
Based on Tropical Livestock Units per Active Adult Male Equivalent (TLU/AAME). Small households averaged 3 TLU/AAME and therefore, reared fewer animals than larger households, which averaged 8 TLU/AAME.

Figure 2
Sources of income for Somali pastoralist households (Abdullahi, 1993)

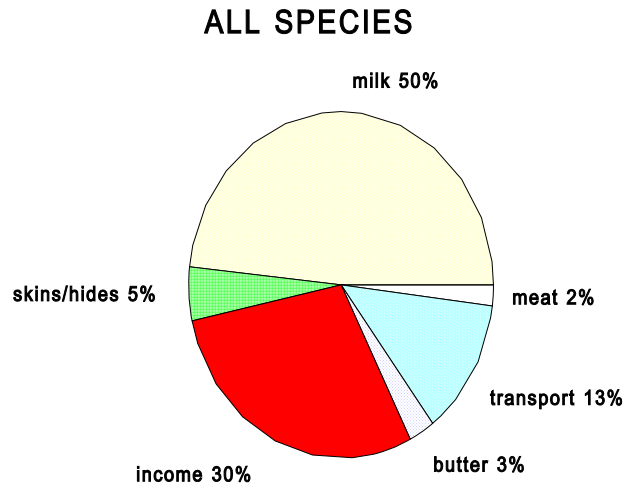


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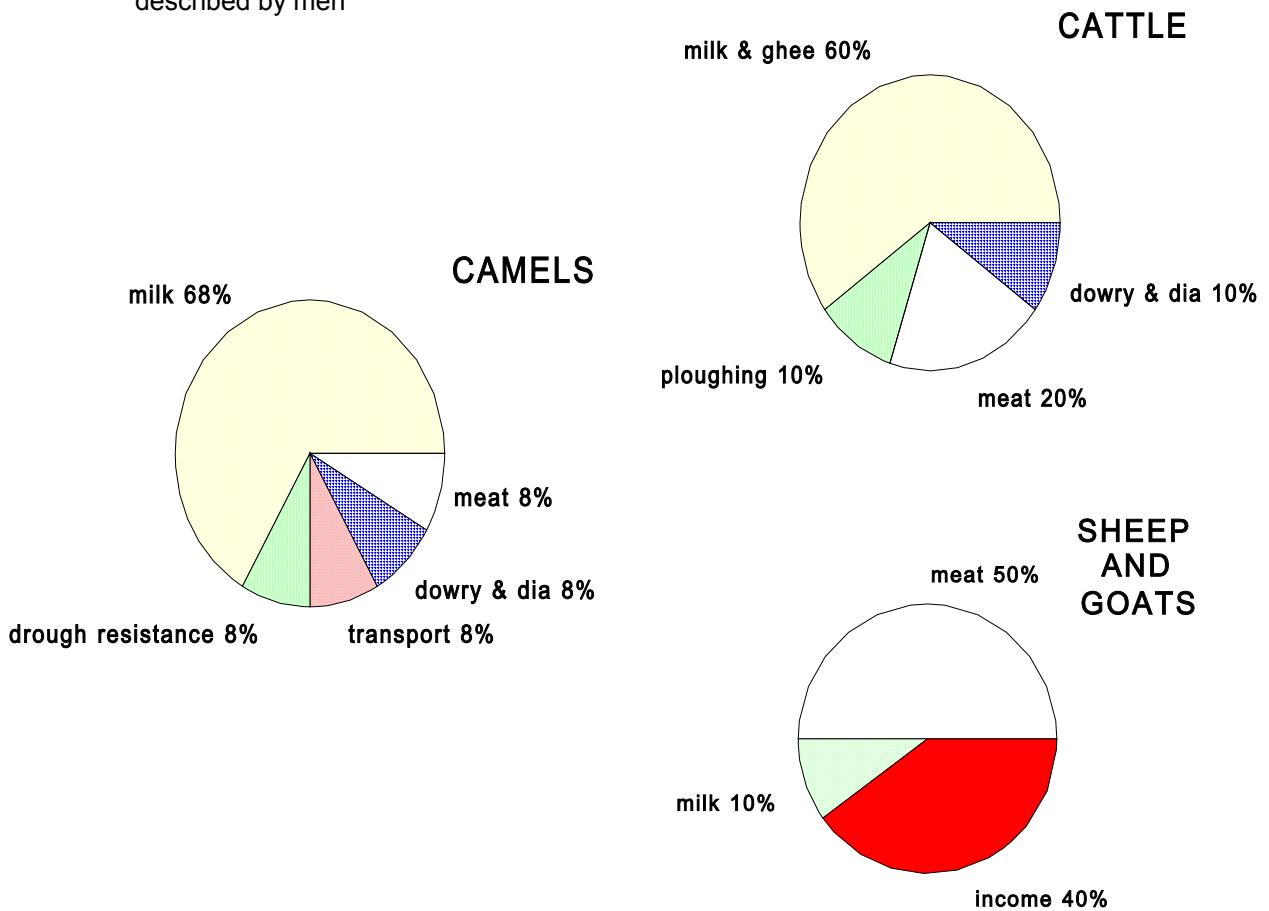
The recent stakeholder workshops on veterinary services in the SNRS included discussions on the benefits which livestock provide the relative importance of these benefits, as shown in Figure 3.

Figure 3
Local perceptions of the benefits of livestock ownership in the SNRS

a. Livestock-derived benefits described by women



b. Livestock-derived benefits described by men



3.2 Trends in pastoral and agropastoral systems in the SNRS

Pastoralism can be viewed as a dynamic system that responds to external influences - pastoralists are opportunistic and will diversify their means of acquiring food or income according to circumstance. Perhaps the most significant change in livestock production systems in the SNRS relates to the increasing market opportunities for livestock exports via Somalia and therefore, a shift from subsistence to a market-orientated economy. As quoted previously, livestock exports from northern Somalia alone in 1994 were valued at \$112 million and a considerable proportion of these animals originated in Ethiopia.

Years ago when you were travelling on foot and arrived at a homestead, the pastoralist would immediately slaughter an animal for you. They were very hospitable and always treated guests in this way. Nowadays he thinks twice and prefers to buy some rice for you rather than kill one of his sheep - now he knows the real value of his animals (Dr.Mohammed Sh.Said).

This change in behaviour in response to market forces was also recorded in Somalia before the war. In Bay region, herders gradually changed the composition of their herds according to market opportunities which were driven by the demand for Somali livestock in the Gulf States (Al-Najim, 1991). Anecdotal reports indicate that in parts of the SNRS, the demand for Somali sheep is encouraging herders to rear sheep in favour of other types of livestock. In addition to these trends, in the SNRS a process of increasing sedenterisation is occurring with clearance of rangeland in order to establish agropastoral farms. The sustainability of these changes could be questioned considering that in some areas (e.g. Warder) rainfall is less than 300mm per annum.

Although agropastoral and sedenterisation is often supported as a means of improving services for pastoral communities, there are examples of mobile services which already exist (e.g. the koranic schools, *duksis*) or which are being developed (e.g. community-based animal health workers). In addition, there may be opportunities for developing inter-sectoral services such as combined, community-level human and animal health workers.

Looking specifically at veterinary service delivery, the shift towards market-orientated production systems indicates that the private good nature of curative and preventive veterinary services may become easier to define. In other words, as livestock acquire an obvious financial value so do veterinary medicines and vaccines. Recent accounts of veterinary privatisation in Somalia clearly describe the economic, private good aspects of animal health care (Löhr, 1997).

4. IMPORTANT LIVESTOCK DISEASES IN THE SOMALI NATIONAL REGIONAL STATE

This section aims to summarise information on some of the most important livestock diseases in the SNRS. The information provided should be read with consideration to the poor veterinary diagnostic facilities in the region and consequently, the limited capacity of the MoA or SERP to confirm diagnoses of disease. Despite this problem, a reasonable assessment of major disease problems can be based on SERP and MoA reports on numbers of animals treated or vaccinated, the opinions of veterinary staff (many of whom have extensive field experience) and the views of livestock owners.

Additional information is based on reports and published papers from neighbouring regions in Ethiopia and Somalia. In particular, there is considerable movement of livestock between the SNRS and Somalia due to seasonal grazing movements and livestock trading. Therefore, the livestock disease situation in the SNRS is very closely linked with that in Somalia. The Somali names for diseases and parasites are shown in parentheses.

4.1 Protozoal and rickettsial diseases

Trypanosomiasis (*dhukaan* or *gosh*) is probably the most important livestock disease in the SNRS and is known to affect both camels and cattle. In camels, the disease is mainly due to *Trypanosoma evansi* and the parasite is mechanically transmitted by Tabanids (*dhuug*) and Hippoboscids (*takar*) flies. Estimations of *T.evansi* prevalence in camels in the Ogaden, East Hararghe, Somalia and southern Ethiopia are summarised in Table 2 and vary according to diagnostic method and location. In the SNRS it was noticeable that even when a relatively insensitive diagnostic method was used (direct blood smears), prevalence was still 6.8% (Getachew, 1995). Recent research conducted by

SERP indicates that trypanosomiasis is also a serious problem in Shinile, Jijiga and Degehabur zones in the SNRS (Table 3). In these areas *T.vivax* was infecting cattle although no tsetse flies were detected. The mechanical transmission of *T.vivax* has been described previously in Ethiopia (Roeder et al., 1978) and therefore further studies on the epidemiology of both *T.evansi* and *T.vivax* infections, including assessments of fly populations, are recommended.

Table 2
Prevalence of trypanosomiasis in camels in Somalia, south-east Ethiopia and southern Ethiopia

Location	Prevalence of <i>T.evansi</i> (method of diagnosis)	Source
Southern Ethiopia	36.5% (mouse inoculation)	Pegram and Scott, 1976
Kismayo	10% - 20% (blood smears)	Dirie, 1984
Bay, Bakool, Gedo, Lower Shabelle - Somalia	3.0-18.5% (MHCT, mouse inoculation)	Dirie et al., 1989.
Hiraan, Galgadud, Mudug, Nugul, Togdheer - Somalia	1.0% (MHCT, mouse inoculation)	Dirie et al., 1989
Central regions of Somalia	1.7% (blood smears) 7.2% (MHCT) 56.4% (antibody ELISA)	Baumann and Zessin, 1992
Southeast Ethiopia	6.8% (blood smears)	Getachew, 1995

Somali herders are very familiar with the trypanosomiasis in camels and have detailed knowledge on the clinical signs, seasonality and vectors. For example, in northern Somalia the British Veterinary Team concluded that,

...the best diagnostic tool was probably the camel owners own opinion. This is not something to be dismissed lightly because a camel owner knows his animals and the disease intimately (Edelsten, 1994).

Certainly there is a very high demand for both prophylactic and curative trypanocides in the SNRS.

Other than trypanosomiasis, confirmations of protozoal or rickettsial disease in the SNRS are rare. Heartwater is probably sporadic and its distribution is limited by the presence of *Amblyomma* ticks in the relatively high rainfall areas in the north of the region. The disease was not considered to be important by veterinary teams working in Jijiga area and adjacent areas of northern Somalia in the early 1970s (Anon, 1971; Edelsten, 1994). Babesiosis was also thought to be a relatively minor disease in these areas but this finding contrasts with a high demand for acaprine among herders in some parts of the region at the present time.

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Table 3
Prevalence of *T.evansi* and *T.vivax* in camels and cattle in Shinile, Jijiga and Degehabur zones, SNRS

Livestock species	Zone	Prevalence (number +ve/number tested)	Prevalence (%)
Camels	Shinile	19/125	15.2
	Jijiga	11/110	10.0
	Degehabur	8/98	8.2
	all 3 zones	38/333	11.4
Cattle	Shinile	8/60	13.3
	Jijiga	7/90	7.7
	Degehabur	3/40	7.5
	all 3 zones	18/190	9.5

(source: Dr.Mohammed Ali Farah, SERP)

Notes:

- Wet and thick blood films were examined for diagnosis; examination of Geimsa-stained thin films were used for trypanosome speciation.
- All trypanosomes in camels were identified as *T.evansi*; all trypanosomes in cattle were identified as *T.vivax*.
- 30 goats, 15 sheep and 10 donkeys were also tested but with negative results.

Considering the low incidence of tick-transmitted protozoal or rickettsial disease in the SNRS it might be assumed that a reasonable level of enzootic stability to these diseases exists in the region - the vast majority of livestock are indigenous types. If assumptions regarding enzootic stability are correct, there seems to be no justification for intensive tick control in the region. The tick-transmitted Nairobi sheep disease virus should be controlled by vaccination rather than vector control (see section 4.3). There appears to be some justification to use acaricide to reduce heavy tick burdens at certain times of year and control physical damage caused by ticks (see section 4.5).

4.2 Bacterial and mycoplasmal diseases

Both anthrax (*kud*) and blackleg (*garabgoye or iteyse*) continue to cause livestock deaths in the SNRS. Disease incidence tends to be seasonal and vaccine supplies are organised accordingly. However, as explained in section 5.4 vaccination is usually conducted in response to disease outbreaks rather than as a comprehensive preventive measure aimed at developing the immunity of the regional population. Vaccination against pasteurellosis is also conducted.

Bovine and caprine contagious pleuropneumonia (*sambab*) are well known by Somali herders. Although outbreaks are now relatively uncommon and have certainly reduced in the last twenty years or so, these diseases continue to be ranked highly by both veterinary staff and livestock owners.

Brucellosis is mentioned as a priority disease due to its zoonotic significance and the requirement for export stock (from Somalia to Saudi Arabia) to be tested free of the disease. Private Somali veterinary associations are using the Rose Bengal test in and around the main ports in Somalia.

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Brucella prevalence in small ruminants has been reported at 2.06% to 2.79% for group sizes varying from 3400 to 62,000 animals (Stockton and Chema, 1995). It should be noted that many of these export stock originate in the SNRS and that brucellosis in small ruminants can be caused by either *Brucella melitensis* or *Brucella abortus*. Recent reports from Somalia suggest that the standard of brucellosis testing is variable and that antigen quality and test conditions could be improved. Also, the diagnosis of *B.melitensis* by the Rose Bengal test is not particularly reliable under conditions of low disease incidence, such as those in Somalia (Blasco et al., 1994). The testing of export sheep and goats for brucellosis seems to have provided the private veterinary associations in Somalia with a lucrative source of income. Regarding brucellosis in camels, the few studies which have been conducted indicate that the disease is not maintained for longer than four years in nomadic herds (McGrane and Higgins, 1986; Baumann and Zessin, 1992).

Other bacterial diseases in the SNRS include dermatophilosis (in higher rainfall areas) and bovine tuberculosis. The non-existent meat inspection activities in the region render the post mortem diagnosis of bovine tb unlikely. In Dire Dawa slaughter house in the early 1970s the condemnation of bovine carcasses with tb was 1.35% from cattle of Jijiga origin (Anon, 1971). The high incidence of human tb in the SNRS and the frequent consumption of raw milk are indications that further research on bovine tb in the region is warranted.

4.3 Viral diseases

A disease thought to be Nairobi sheep disease was reported in Harshin, Kochar, Kebribeyeh and Hartisheikh areas of the SNRS as early as 1971 and mortality reached 90% (Anon, 1971). Epidemics of NSD were later confirmed in adjacent areas of northern Somalia and the tick *Rhipicephalus pulchellus* (*garabcad*) was cited as a possible vector (Edelsten, 1975). It was noted that the differential diagnosis of NSD based on clinical signs and post mortem examinations was unreliable - babesiosis, heartwater and pasteurellosis were also diagnosed in outbreaks of *hulumbe* either as pathogens per se or in dual infections with NSD. The haud area crosses the Ethiopia-Somalia border and can be considered as one ecological and grazing zone. In the SNRS today reports of *hulumbe* are frequent but in the absence of adequate laboratory facilities, confirmation of disease is problematic. Until proper investigations into *hulumbe* are conducted, it should be noted that Edelsten reported reduced mortality in NSD outbreaks following treatment with tetracyclines; this result was attributed to the control of secondary pasteurellosis in affected animals. The epidemiology of NSD is such that intensive tick control between disease outbreaks is unlikely to be beneficial - *the best form of prevention would be vaccination* (Edelsten, 1994).

In May 1997 a team from SERP and the MoA investigated a serious outbreak of disease in goats in Fik zone called *kalidi cune*. Samples and live animals were submitted to the National Veterinary Institute and peste des petits ruminants was confirmed. The outbreak is reported to be continuing around Babile area.

Rabies is well known in the SNRS and is called *ruquus* and other names. In camels the disease usually occurs in its dumb form and is characterised by progressive hind limb paralysis. There are a considerable number of hyena and jackals in the region and it is assumed that these predators are the main source of the disease for livestock and man. One report states that up to 30% of lambs in the Harshin area were bitten by jackals (Anon, 1971).

Following successful JP15 and Pan African Rinderpest Campaign activities, rinderpest or *dabakaruub* is no longer a serious problem in the SNRS. However, the disease remains prominent in the minds of herders and is often cited as an important concern. The difficulties of conducting serosurveillance in the region, particularly in the far south, and the civil disorder in Somalia are indications that continued vigilance is required.

4.4 Endoparasitic diseases

Endoparasitic diseases, particularly haemonchosis, are among the most widespread diseases in the SNRS and Somalia (Anon, 1971; Heuer, 1993; Edelsten, 1994). All types of livestock are affected and demand for anthelmintic for the disease called *caal* is high during the main rainy season and at the end of the dry season. Cysticercosis and hydatidosis continue to be detected in Jijiga abattoir.

4.5 Ectoparasitic diseases

The most important ectoparasites of livestock in the SNRS are ticks or *shillin*. Herders recognise that ticks transmit disease (such as *hulumbe*) but also, that they cause physical damage to livestock. In dryland areas tick-associated lameness can prevent livestock reaching watering points and even minor skin blemishes and wounds can affect the sale value of stock. A study on indigenous knowledge of ticks showed how herders identify and name different types of ticks by their physical characteristics and sites of attachment to the host (Hirad, 1994). Other important ectoparasitic diseases in the SNRS include mange (*cadho*), particular in goats and camels.

4.6 Diseases of unknown aetiology

The recent epidemic of respiratory disease in camels in Awash, the SNRS, Borena, northern Kenya, Somalia and Djibouti was characterised by high morbidity and low mortality. The precise cause of the disease remains unknown although an aetiology involving a primary viral infection (e.g. a morbillivirus) followed by a secondary bacterial infection (e.g. *Streptococcus equi* subspecies *equi*) has been suggested (Yigezu et al., 1997).

Regarding the views of livestock keepers, the recent stakeholder workshops included numerous opportunities for ranking and scoring of livestock diseases. A summary of diseases mentioned is provided in Table 4 and indicates close correlation between the views of veterinarians and those of livestock keepers with respect to the main disease of importance.

Table 4
Livestock diseases prioritised by women, livestock owners and traders during stakeholder workshops

Number of times disease mentioned by stakeholders during ranking or scoring exercises:					
6x	5x	4x	3x	2x	1x
Surra Tick-associated disease	Helminthiasis CBPP CPPP	Foot and mouth <i>Soo guduud</i>	Anthrax Blackleg Mange Rinderpest Respiratory disease in camels	Pox diseases	Abscess <i>Shimbir</i>

Notes for Table 4

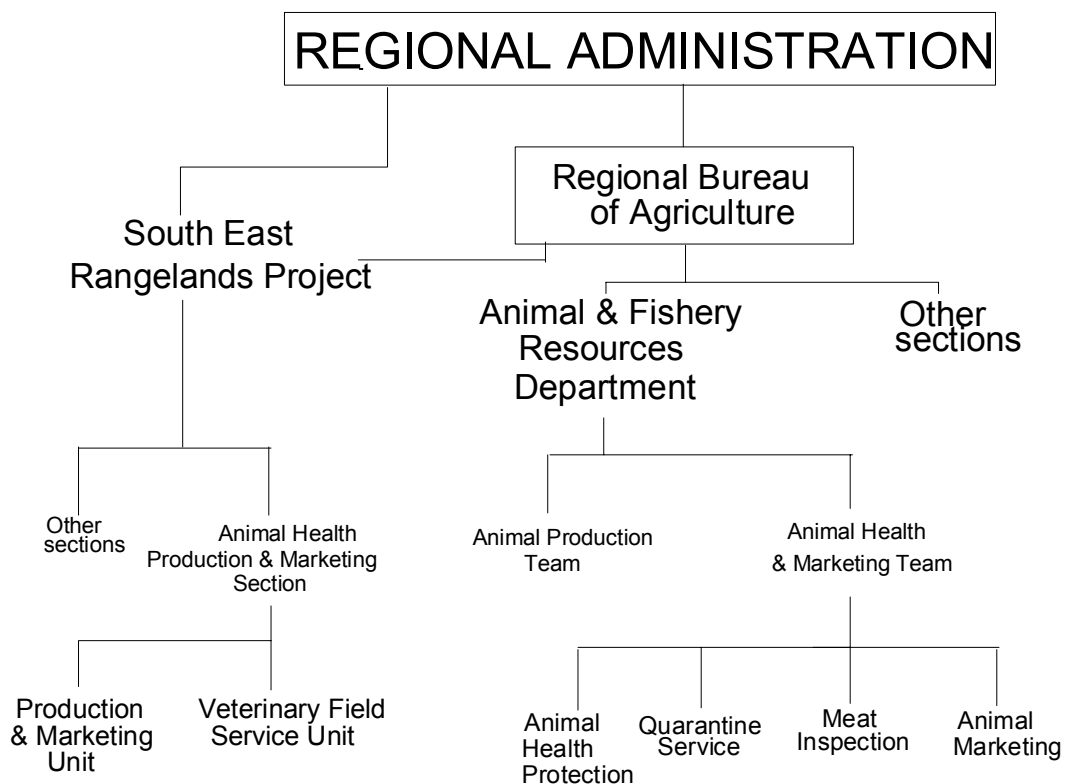
1. Tick-associated disease includes tick-borne disease such as *hulumbe* and physical damage caused by ticks.
2. *Soo guduud* is a recent and unknown disease causing jaundice, alopecia and skin cracking in cattle, sheep and goats. The disease may be a plant poisoning.
3. *Shimbir* refers to neurological signs of disease in livestock such as those associated with heartwater.
4. Respiratory disease in camels refers to both the recent epidemic of disease in camels of unknown aetiology and various pre-existing respiratory diseases in camels called *laxawgal* and *dhugato*.

5. GOVERNMENT VETERINARY RESOURCES AND ACTIVITIES IN THE SNRS

5.1 Organisational structure

In the SNRS there are currently two providers of government veterinary services, the Ministry of Agriculture (MoA) and SERP. The MoA veterinary services are organised under the Animal and Fisheries Resources Department in the Regional Bureau of Agriculture. The veterinary activities of SERP are organised under the Animal Health Production and Marketing Section. SERP is a joint African Development Bank (ADB)/Federal Government of Ethiopia project and began operations in 1990. The initial project period was six years although the project has now been extended until around June 1998.

Figure 4
Organisational structure of government veterinary services in the Somali National Regional State



5.2 Veterinary manpower

All levels of government veterinary staff - veterinarians, animal health assistants, laboratory technicians and animal health technicians - are currently working in the SNRS, mostly with the MoA and SERP. The latter has recently reduced veterinary staff numbers from 91 to 49 as part of a restructuring process. Table 6 and Figure 5 relate veterinary manpower in the SNRS with the livestock population and compares regional data with Ethiopia as a whole and the situation in Somalia prior to the civil war. The use of "Veterinary Livestock Units" (VLU) enables a comparison of veterinary manpower resources between regions or countries but also, with recommended staffing levels. However, recommended veterinary staffing levels vary according to the source of the recommendation as summarised in Table 5.

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Table 5
Some recommended veterinary manpower requirements in relation to livestock population

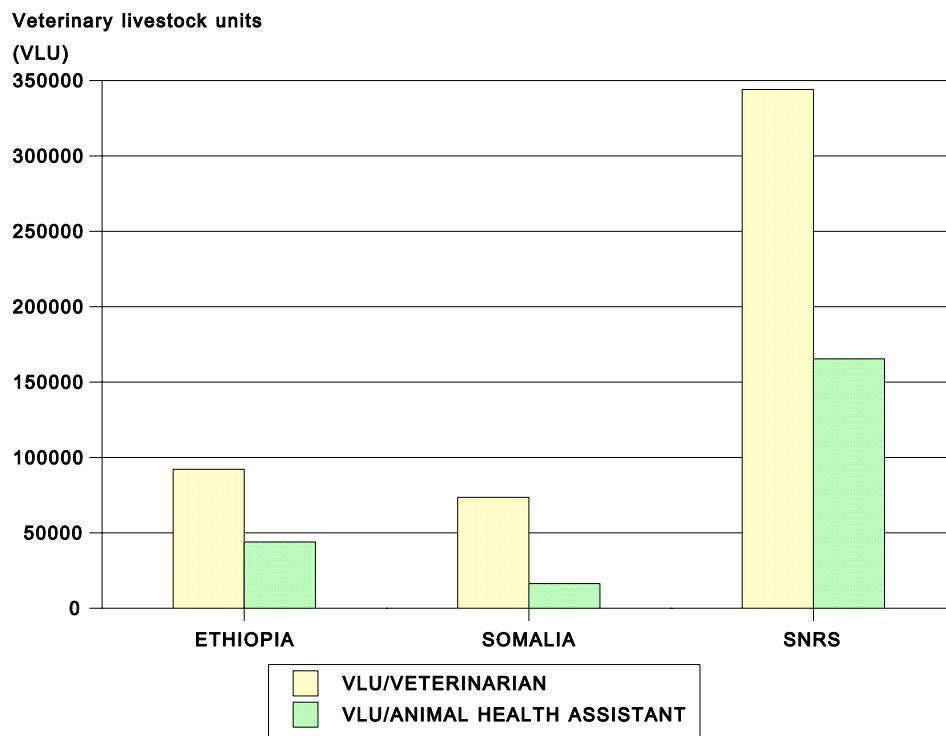
Source	Livestock production system	Level of veterinary service required	VLU ¹ /veterinarian	VLU/veterinary assistant
SEDES/GTZ	Nomadic and sedentary systems	Preventive	240,000	12,500
FAO	Modern dairy or feedlot system	Preventive and curative	5,000	not stated
FAO	Traditional	Preventive and curative	30,000	not stated

(adapted from de Haan and Nissen, 1985)

Notes:

¹ 1 VLU is equivalent to 1 cow, 1 camel, 10 small ruminants or 100 fowl.

Figure 5
Livestock numbers per veterinarian and per animal health assistant in Ethiopia, Somalia and the Somali National Regional State



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Using the SEDES/GTZ veterinary manpower levels from Table 5 as the most lenient manpower recommendation, the staffing levels in the SNRS (Table 6) fall far below the required level. VLU per veterinarian in the SNRS are 1.4 times the recommended level but more seriously, VLU per animal health assistant are 13.2 times the recommended level. The number of animal health technicians in the SNRS is approximately 300.

Table 6

Veterinary manpower in relation to livestock populations in Ethiopia, the Somali National Regional State and Somalia

Country/region	Species	Number	VLU
ETHIOPIA¹	Cattle	35,000,000	35,000,000
	Camels	1,000,000	1,000,000
	Sheep & goats	42,000,000	4,200,000
	Equids	7,000,000	3,500,000
	Fowl	53,000,000	<u>530,000</u>
			total VLU

Number veterinarians = 480, therefore VLU/veterinarian = 92,146

Number veterinary assistants = 1006, therefore VLU/veterinary assistant = 43,966

Number vaccinators >2000, therefore VLU/vaccinator <21,615

Somali National Regional State²	Camels	1,500,000 ³	1,500,000
	Cattle	6,000,000	6,000,000
	Sheep & goats	11,000,000	<u>1,100,000</u>
			total VLU

Number veterinarians = 25⁴, therefore veterinarians/VLU = 344,000

Number veterinary assistants = 52, therefore veterinary assistants/VLU = 165,385

SOMALIA⁵	Camels	6,294,240	6,294,290
	Cattle	4,636,230	4,636,230
	Sheep & goats	31,297,440	<u>3,129,744</u>
			total VLU

Number veterinarians = 191, therefore VLU/veterinarian = 73,614

Number veterinary assistants = 856, therefore VLU/veterinary assistant = 16,425

Number vaccinators 566, therefore VLU/vaccinator = 24,841

Notes

¹ Source: draft Livestock Development Programme, Ministry of Agriculture, Addis Ababa (January 1997) and Veterinary Service Delivery in Remote Areas, Ministry of Agriculture, Addis Ababa (November 1995).

² Combines MoA and SERP veterinary personnel as of July 1997.

³ Note discrepancy with camel population for Ethiopia as a whole, which according to livestock professionals in the SNRS, is an under-estimation.

⁴ Two veterinarians currently overseas.

⁵ Source: MLFR/GTZ Somali Livestock Statistics 1989/1990.

On a more positive note, the majority of veterinarians in the SNRS are native Somali speakers who possess some knowledge of local conditions and culture (even if they are not always willing to spend time in the field). A number of non-ethnic Somali staff are also Somali speakers and have long experience in the SNRS. This situation contrasts with many other remote areas of Africa where government veterinary staff have limited understanding of the language or knowledge of pastoral communities. The other key experience of veterinarians in the SNRS relates to the situation in Somalia immediately before the civil war when the Somali government began to liberalise veterinary drug supply. As a result of this policy change, private individuals began to import veterinary drugs and some veterinarians currently working in the SNRS already have experience of managing and selling drugs on a private basis. Clearly, veterinary personnel in the SNRS are an important resource for the region.

Regarding current budgets for veterinary staff in the SNRS, SERP has budgeted Eth.birr 917,265 to cover the salaries (plus hardship allowance) and per diems of staff in the Animal Health, Production and Marketing section until June 1998. The budget for MoA veterinary staff had not been agreed at the time of writing but can be estimated at approximately Eth.birr 1-1.2 million.

Non-governmental veterinary manpower included a large number of community-based animal health workers (CAHWs) or 'paravets'. This resource is discussed in section 6.2.

5.3 Veterinary infrastructure

The MoA has constructed six purpose-built veterinary clinics in the SNRS. Some diagnostic equipment and reagents have been procured for these clinics but as further procurement is in progress, these items have not yet been distributed to the clinics. Contracts for the construction of a further four clinics have been agreed. All buildings comprise two large rooms which can be used as laboratory rooms, particularly for parasitology.

In Jijiga town SERP veterinary activities are organised from a purpose-built veterinary clinic with offices, laboratory rooms, store and a large open area for the treatment of livestock. At present diagnostic facilities are limited to basic parasitology and haematology as the new laboratory rooms await the connection of a water supply. Laboratory equipment has been procured for use in these rooms but reagents have not been procured and are currently in short supply.

Outside of Jijiga town, SERP veterinary activities are based in 26 'Development Centres' in seven out of nine zones in the region (not Liben or Shinile zones). The development centres are multipurpose units from which various SERP activities are organised e.g. extension, land use and veterinary activities. As the development centres are not designed specifically for animal health activities, their veterinary use in most areas tends to be restricted to storage of veterinary drugs.

SERP also possess two mobile field laboratories. One of these laboratories operates from the Jijiga clinic and the other operates from Gode. The Jijiga mobile laboratory is active and most recently has conducted field work on trypanosomiasis in Shinile, Jijiga and Degehabur zones. The Gode laboratory is less active and reported to be constrained by lack of reagents and in some areas, insecurity. Although the zonal MoA veterinary clinic in Gode (which is less than 1km from SERP) has some basic laboratory reagents, resources are not shared between the two facilities. Therefore there were no functioning veterinary diagnostic facilities in the south of the region at the time of writing. UNHCR have recently procured veterinary laboratory reagents for SERP.

5.4 Vaccination and treatment of livestock

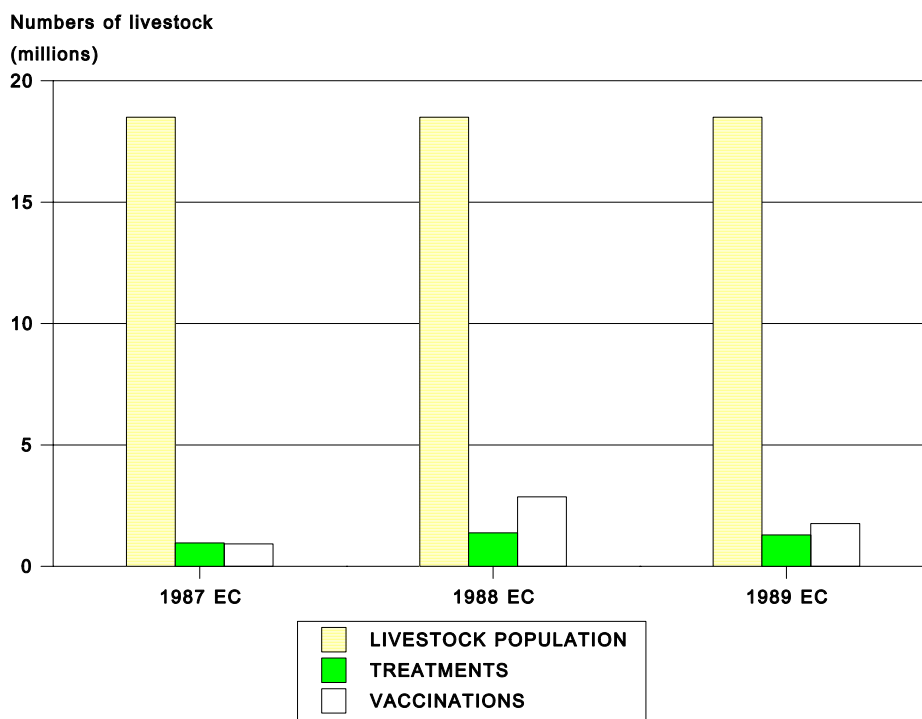
Livestock are vaccinated against anthrax, blackleg and pasteurellosis. Vaccine is obtained free of charge from the National Veterinary Institute and there is no cost to the livestock owner. Vaccination is conducted in response to disease outbreaks and therefore can be regarded as a damage limitation exercise rather than regular annual campaigns which aim protect a significant proportion of the livestock population. Vaccination activities for the MoA and SERP are provided in Figure 6.

Vaccination figures indicate that approximately 84.5% to 95.0% of livestock remain at risk of serious but preventable diseases each year. The current vaccination programmes are launched in response to disease outbreaks and therefore they are a disease control measure rather than an attempt to develop the immunity of the regional herd.

Regarding the number of animals treated by the MoA and SERP during the last three years, the figures for each disease should be compared with estimates of disease incidence and prevalence in order to assess the actual coverage versus the required coverage. Unfortunately, these figures are only available for trypanosomiasis and even then, the sample sizes used to assess disease prevalence were relatively small.

Estimates of trypanosomiasis prevalence in camels and cattle in the SNRS range from 6.8% to 15.2% in camels and 7.5% to 13.3% in cattle (see section 4.1). Assuming a camel population of 1.5 million and cattle population of 6.0 million in the SNRS, the number of doses of trypanocide required each year ranges from 540,000 to 1,026,000. This compares with a range of joint MoA/SERP treatments of 236,493 - 386,979 i.e. 44%-72% coverage for a minimum prevalence estimation and 23%-38% coverage for a maximum prevalence estimation.

Figure 6
Combined MoA and SERP treatments and vaccinations of livestock in the Somali National Regional State, 1987EC to 1989EC



Estimates of the demand for other livestock treatments are more subjective. Participants in the recent stakeholder workshops considered the existing MoA/SERP veterinary service to be relatively unimportant (Table 7) while also stating the need for improved availability of modern drugs. Veterinarians with experience of private practice in Somalia confidently predict a considerable but unmet demand for veterinary drugs in the SNRS.

5.5 Coverage of government veterinary services

Coverage of government veterinary services in the SNRS might be measured by assessing geographical coverage and the proportion of livestock owners who have access to the service.

If overlap between MoA and SERP veterinary facilities is considered, there are 30 sites in the SNRS where government veterinary services should be available. If these clinics and drug stores are compared with the area of the region (approximately 350,000km²), each government veterinary facility should cover an area of around 11,667km² i.e. a circular area of radius 61km for full coverage. Without vehicles and adequate incentives for veterinary staff to travel on foot, it can be assumed that

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each veterinary clinic or store has an effective operating radius of around 10km in terms of capacity to visit sick livestock. By extrapolation of an approximate 10km clinic working radius, the government veterinary service covers up to 9,420km² or around 2.7% of the region. However, the following points should also be considered:

- There is a concentration of facilities and manpower around regional-level offices in Jijiga. For example, ten out of 25 veterinarians in the region are based in Jijiga town and there are only four veterinarians currently based in the southern zones of the region.
- Even if veterinary staff were willing to walk to livestock, they cannot function without drugs. Throughout the region there are complaints of drugs shortages.
- Table 6 shows treatment of 1.38 million animals in 1988EC but the majority of treatments involved either animals which were walked to the clinics, or, drugs such as anthelmintic or acaricide that were dispensed to livestock owners.

Further information regarding the coverage of the government veterinary service was obtained from the stakeholder workshops. Using ranking and scoring tools, different stakeholder groups were able to explain the various options for treating their livestock (Table 7).

Table 7

Relative importance of current options for treating livestock among stakeholder groups in Jijiga, Degehabur, Shinile and Fik zones

Option for treating livestock	Ranking of options by stakeholder groups					
	Women		Livestock herders and traditional healers		Livestock traders	
	Jijiga and Degehabur	Fik and Shinile	Jijiga and Degehabur	Fik and Shinile	Jijiga and Degehabur	Fik and Shinile
Use of koran	1st	1st	1st	1st	nm	nm
Traditional methods	3rd	2nd	2nd	2nd	2nd	nm
Private drug sellers	2nd	3rd	4th	4th	1st	1st
Government service	nm	nm	3 rd	3rd	3rd	2nd

Notes:

1. nm = not mentioned or ranked by informants
2. Traditional methods include plant-based medicines, cautery, and soups/broths (see section 6.1).
3. Government service = SERP or MoA veterinary facilities.

Further discussion with informants on this topic provoked comments such as:

Veterinarians make little effort to medicate the livestock until they get transport

The veterinarians are not willing to walk to the places where diseases break out

We need to select the paravets who can walk to the far places to treat the animals

As mentioned in section 5.7, each clinic records the name and "address" of the person who either brings animals to the clinic or buys drugs from the clinic. In theory, an examination of clinic daybooks from the last few years would reveal detailed information on the number of people who had used the

government service and their approximate distribution. However, the current system of collating daybook information into summarised monthly reports is such that all this data remains at field level. Therefore, measurement of the impact and coverage of the veterinary services continues to be based on numbers of animals vaccinated and treated. Such measurements are of limited value unless reliable livestock population and disease prevalence figures are available.

5.6 Management and supply of veterinary drugs

The management of veterinary drugs by both the MoA and SERP has been based on revolving fund systems. Theoretically, such systems can be self-sustaining if drugs are sold at cost price and all drug sale revenue is collected and used to purchase further drug supplies.

In the case of the MoA until recently veterinary drugs requirements were defined at central level and drug sale revenue was deposited in a general MoA account. This system resulted in insufficient quantities of drugs being supplied and on some occasions, inappropriate drug types e.g. a large consignment of flukicide was received in 1996 although fascioliasis is a rare condition among Somali livestock.

SERP has been operating a revolving fund system for veterinary drugs since June 1992. Some of the constraints faced by the SERP veterinary drug revolving fund are outlined below though some of these problems might also apply to the current MoA system:

- At its inception SERP was organised under the government's Third Livestock Development Project and consequently, it inherited well established but outdated accounting systems. Finance personnel were not accustomed to managing revolving fund systems and some of the new accounting procedures required did not feature in the accepted system of the time. It proved extremely difficult to force a change in the financial bureaucracy.
- Since 1992 to the present time, the official sale price of most drugs has been below cost price. Inevitably, this approach means that drug assets suffer a reduction in value between the supplier (whether government stocks, NGOs or private) and SERP stores. Therefore, it becomes impossible for the project to collect sufficient revenue to replace drug stocks.
- According to government accounting systems at the beginning of the project, all income (regardless of source or future use) was deposited in a single bank account (GOV 50). This system encouraged the use of drug sale revenue for other purposes.
- A various times, SERP has suffered cash flow crises due to delays in the release of funds from the African Development Bank. These delays increased the risk of alternative uses of drug sale revenue that was deposited in the GOV 50 account.
- Livestock owners were not well informed about the official sale price of the drugs and some veterinary staff were working in remote areas; staff salaries were low and often, payment of salaries and per diems was delayed. In this situation, the temptation to sell drugs at greater than the official selling price must have been considerable.
- Infrastructure and communications in the SNRS are extremely weak. Adequate follow-up of veterinary drug distribution and reporting proved to be problematic, if not impossible.

During the last two years SERP has improved the management of the revolving fund by opening a separate bank account for drug sale revenue and developing a quarterly financial reporting system for drugs which were supplied by SCF(UK). Although it is possible that improvements in the management of the fund will continue, after five years of the revolving fund system the combined capital assets and cash assets of the fund (approximately Eth.birr 1.5 million) fall far below the estimated veterinary drug requirements for the region of value Eth.birr 9.3 million (according to SERP estimate). In addition, almost all of SERP's drugs have been provided by aid agencies, most notably Oxfam UK/I (~Eth.birr 62,000), UNHCR (~Eth.birr 4.8 million) and SCF (~Eth.birr 2.9 million). RRC have also provided drugs to SERP.

At present there are no links between the MoA and SERP veterinary sections with respect to

veterinary drug supply in the SNRS. Each works independently and to date, there are no joint discussions on veterinary drug requirements or supply systems. Although each section aims to implement a revolving fund system, there are no agreements on pricing policies and exchange of information between the two sections on this issue is limited. This situation can cause confusion, particularly for livestock owners who may be faced with differing prices for the same drug.

An example of conflicting pricing systems between SERP and MoA is the current situation in Gode regarding 20% oxytetracycline injection. In the zonal MoA store the selling price of this drug is Eth.birr 60 whereas in the SERP store the selling price is Eth.birr 16. Although the MoA drug is virtually unsaleable at its current price, there is no formal collaboration with SERP and no system for adjusting the prices to a reasonable level. Consequently, it is likely that the MoA drug will expire before a solution to the problem is reached. In this example, the low price of the SERP drug was based on a recent donation from the Ethiopian government Relief and Rehabilitation Commission (now the Disaster Prevention and Preparedness Bureau) and initially, a condition that the drug should be distributed free of charge. This condition seemed to contradict government policy on cost-recovery at the time.

Considering the uncertain future of SERP after June 1998, the rate of progress in terms of revolving fund development and the continuing high demand and willingness to pay for veterinary drugs among the rural population, the role and sustainability of the revolving fund must be seriously questioned. There are few if any examples of successful government-operated revolving fund systems for veterinary drugs in Africa and therefore both SERP and the MoA might be better advised to support alternative approaches. The SERP budget for veterinary drugs for the present year is Eth.birr 580,000 whereas the recurrent MoA budget for veterinary drugs is Eth.birr 200,000.

5.7 Disease surveillance and reporting

At present SERP and MoA veterinary facilities collect information on incidents of livestock disease as entries into daybooks. This data is collated on a monthly basis and summarised according to treatment and vaccinations carried out. Although clinic daybooks contain details of suspected diagnoses and locations of affected animals, this and other information tends to be lost in the collation process because the summarised reports are based on format headings such as 'Number of treatments for internal parasites' and 'Number of miscellaneous treatments'. These are poor measures of disease incidence or prevalence, not least because some treatments are used prophylactically. The lack of diagnostic facilities means that confirmation of diagnosis is rare. The reliance on clinical diagnoses tends to result in clinical signs such as diarrhoea being incorrectly recorded as 'helminths' or 'coccidiosis'.

Monthly reports from SERP and the MoA are summarised on a quarterly basis and forwarded to the Ministry of Agriculture in Addis Ababa. However, SERP animal health reports are not copied to the SNRS Regional Bureau of Agriculture and consequently, compiled reports which combine MoA and SERP animal health activities (other than this report) do not exist.

5.8 Public health activities

Public health activities are restricted to Jijiga town where the zonal-level authorities conduct meat inspection. The main causes of condemnations during 1988EC and 1989EC were cysticercosis, hydatidosis, pneumonia and fascioliasis.

6. INFORMAL AND NON-GOVERNMENTAL VETERINARY RESOURCES IN THE SNRS

6.1 Traditional veterinary practice

Traditional systems for treating sick humans and animal are well established in Ethiopia (Mesfin and Obsa, 1994). In Somalia, traditional healers also exist and provide an important service to rural communities (Sameulsson et al., 1991; this report Table 7).

The ethnoveterinary knowledge of Somali herders has been recorded since colonial times when it was noted that camels were fed on special salt bushes, watered at salty wells or fed salt-rich soil called *carro* (Hunt, 1940). Some years later these activities were noted again along with descriptions of

traditional methods of vaccinating cattle against contagious bovine pleuropneumonia and the use of cautery and broths to treat livestock ailments (Mares, 1951; 1954a; 1954b). In the SNRS some traditional methods of tick control were described by Hired (1994) and descriptions of 136 veterinary medicinal plants were collected by SERP's Range Monitoring and Evaluation Unit (Catley et al., 1996). Other accounts of traditional livestock treatments include work by Schinkel (1970), Guillaumet (1972), Catley and Mohammed (1996a; 1996b) and Mohammed and Hussein (1996).

The recent stakeholder workshops on veterinary services in the SNRS included discussions with traditional healers on the role of indigenous Somali methods of treating livestock disease (Veterinary Services Support Project, 1997). The main findings from these discussions were:

- All treatment of livestock, whether modern or traditional, involved the use of Koranic prayers or verse in combination with the medicine. Plant remedies, cautery and soups were very widely used by pastoralists; every area had its own traditional healers.
- The informants recognised both the value and limitations of traditional treatments. For some diseases it was thought that modern drugs were more effective than traditional methods. For other diseases e.g. twisted neck syndrome in camels, the traditional treatments were more effective.
- Despite their extensive knowledge on traditional livestock remedies, the informants welcomed any system that would improve the availability of modern veterinary drugs. The concept of private veterinary drug suppliers was easily understood and supported.

6.2 Community-based animal health workers

Community-based animal health workers (CAHWs) have been widely used in Africa in an attempt to improve the coverage and sustainability of basic veterinary services. Some key features of CAHW projects are outlined in Box 2. Most recently, there have been calls for a combined community-based/privatised approach to delivery of veterinary services (Mariner and van't Klooster, 1994; Leyland, 1997).

In Somali areas there are examples of successful CAHW projects, most notably the GTZ Pastoral Animal Health Auxiliary programme in the central rangelands of Somalia before the civil war. The high level of indigenous knowledge among Somali herders, the mobility of pastoral herds and the large size of the SNRS render the region highly appropriate for CAHW-type approaches. In addition, herders prioritise animal health, are usually willing to pay for veterinary drugs (see section 7.0) and veterinary professionals are relatively few in number (section 5.2).

As part of a joint SCF(UK)-SERP project in 1995-96, veterinary staff in the SNRS were exposed to community-based approaches via training in participatory rural appraisal and study tours to CAHW projects in pastoral areas of northern Kenya. The project then designed a participative training course and trained an initial 45 CAHWs. SERP continued with CAHW training in 1996 and there are now also 164 SERP-trained CAHWs in the region. The MoA also trained 204 CAHWs between 1987EC and 1989EC, and assisted with training of a further CAHWs via the Ethiopian Social Rehabilitation Fund. Save the Children Federation USA are reported to have trained 24 paravets in Liben zone though the current status of these workers is unknown. This brings the total number of CAHWs in the SNRS to 609 and demonstrates that neither SERP nor the MoA had reservations regarding CAHW training.

However, training is only one component of a functioning CAHW system and a number of other components have been given very limited attention:

- Apart from the joint SCF(UK)-SERP project, in most cases it seems that zonal administration staff were responsible for organising CAHW selection. In some areas, "Community Development Committees" were also involved in the selection process but despite this, the involvement of true community-level forums was probably minimal.
- Although government and SERP stores currently hold stocks of drugs, there is no official system for releasing drugs to non-government employed personnel such as CAHWs. A small number of CAHWs obtain government drugs via informal links with veterinary staff who acquire drugs on their behalf. There are also reports of CAHWs travelling to private pharmacies in Harar and Dire Dawa to obtain drugs. At the time of writing it can be assumed

that only a minority of CAHWs are able to work.

- Neither SERP or the MoA have established proper systems for establishing CAHW activities. Therefore, although 609 CAHWs have been trained the impact of this training remains unknown.

The lack of drugs and poor monitoring of CAHW should be regarded as serious lapses that need to be corrected before further CAHW training is considered. Drug supply and CAHW monitoring tend to be closely linked because the main point of contact with mobile CAHWs is the source of drugs. Without drugs most of the CAHWs will cease to function and communication between them and the project will be lost. In terms of developing CAHW capacity, there is also a need to coordinate SERP and MoA training courses and define a training curriculum and approach which is used by all parties.

Box 2

Key features of community-based animal health worker (CAHW) projects

Where are CAHW projects appropriate?

- In areas where a government or private veterinary service does not exist. For example, the area may be a war zone or recovering from conflict.
- In areas where a government or private veterinary service exists but does not extend into more remote or marginalised areas. Commonly, veterinary services are restricted to urban centres.
- In areas where livestock owners prioritise animal health and are ready to pay for veterinary medicines. Payment may involve sale of livestock.

What is a CAHW?

- A CAHW is a part-time animal health worker who ideally, owns livestock and in the case of pastoral communities, is able to travel with herds to remote grazing areas. The CAHW aims to treat diseases which are prioritised by the community.
- The precise role of the CAHW can vary. Some communities will want their paravet to diagnose diseases and offer advice. Other communities will feel more confident in their own ability to diagnose disease and may want a CAHW mainly as a source of veterinary drugs.
- The definition of community is important. It may vary between a permanent settled village to an *ad hoc* group of pastoralists who happen to be sharing resources at a particular time.
- A CAHW is a private worker who receives incentives from the community, sometimes in the form of a surcharge on veterinary drugs. CAHWs should not be government employees but they can be linked to state systems e.g. for reporting disease outbreaks.

6.3 The private sector - pharmacies, vendors, black market

The recent stakeholder workshops in Jijiga highlighted the important role of private veterinary drug suppliers in the SNRS (Table 7). The livestock traders who participated in the workshops tended to use private sources of veterinary drugs rather than the MoA or SERP. Trading links between the SNRS and Somalia are well established and inevitably, some drugs in the region originate from private veterinary associations or traders in Somalia. Sometimes these drugs are of reasonable quality and are recognised by herders as being effective - one trader explained how a pastoralist had entered his store and demanded *But I want the oxo from France!* However, there are also traders who are selling poor quality or expired veterinary drugs and when presented with only one inferior option, herders have little choice but to buy what is available.

At the time of writing there was one private veterinary pharmacy in the centre of Jijiga town and one private veterinary clinic on the outskirts of Jijiga town. It is thought that these are the only licensed outlets for veterinary drugs in the SNRS and therefore, there is a need to improve licensing procedures for the private traders in markets such as Hartisheik. The issuing of licences could be preceded by a training of traders programme in order to inform traders about drug usage, quality and storage requirements. The idea of this type of training was supported by the participants of the stakeholder workshops and would provide an opportunity for veterinarians to develop links with traders.

7. LOCAL PERCEPTIONS ON THE VALUE OF VETERINARY SERVICES IN THE SNRS

When considering the options for veterinary service reform, a key issue is the willingness and ability of livestock owners to pay for the service. When veterinary services are seeking or rely on aid donations, pronouncements such as *Our people are too poor to pay* are common though rarely supported by data. Box 3 summarises the experience of various projects in Somalia and the SNRS.

Box 3

Can Somali herders afford to pay for veterinary medicines?

When we started the vet programme in Somalia we were assured by many parties that livestock owners were too poor to pay for veterinary services. Livestock owners were used to free or subsidised drugs and service..... This situation changed profoundly when livestock owners saw demonstrations of what clinical veterinary services could achieve and more so when they realised that free or subsidised drugs were no longer available. They pay for services, mainly for drugs with a mark-up for services, not during drought but after rains have arrived and livestock are not putting on condition as expected. This is a remarkably rational behaviour (Löhr, 1997).

In Arabi and Kebribeyeh meetings were held with community elders in order to discuss the activities of the paravets, problems faced by the paravets and opportunities for improving the system. In both sites the paravets were thought to be working well but were constrained by limited supplies of drugs and a large coverage area. There were no complaints about the cost of the drugs (Save the Children(UK), 1997).

.....the sale of one sheep to buy medicine to treat a sick camel was often cited as a fair price for the medicine. One herder explained that this was similar to a local remedy which involved the slaughter of a goat to make a broth for a sick camel. Even herders with relatively small herds of around 40 sheep and goats seemed ready to purchase medicines at much higher prices than those proposed by the NGO Committee (elders) when the project began (Catley, 1996).

Establishing veterinary pharmacies in livestock markets would provide drugs commercially and could also give technical advice. Nomads did not demand free hand-outs but wanted the availability of supplies and services (Nathanail and Hussein S.Nur, 1993).

Other accounts of the willingness of Somali pastoralists to buy veterinary drugs can be found in Al-Najim (1991) and Mares (1954b).

Livestock owners in the SNRS are already paying for veterinary drugs due to reasons such as those outlined in section 5.5. The recent stakeholder workshops on veterinary service delivery in the SNRS included three sessions with pastoralist informants to discuss the question *Can 'poor' herders pay for veterinary services?* The discussion facilitators were an experienced Somali community development worker from SCF(UK) and an Somali extension worker from SERP. The discussions included Somali definitions for different wealth groups based on livestock ownership, as summarised in Table 8.

Table 8
Definitions of wealth and poverty among Somali pastoralists

Wealth category	Livestock holdings		
	Sheep & goats	Cattle	Camels
Rich (<i>malqabeen</i> , 'can donate' e.g. livestock)	>100	>80	>100
Medium (<i>danyar</i> , 'self-sufficient')	60-90	15-30	20-35
Low (<i>sabool</i> , 'needy')	<50	<10	<15
Lowest (<i>barlaawe</i> , 'asks others for help')	<10	<5	<10

When the workshop participants considered the lowest wealth group *barlaawe*, the following "fair" prices for medicines were suggested: Eth.birr 5-10 to treat a camel; Eth.birr 5 to treat a cow; Eth.birr 1birr to treat a sheep or goat. The workshop also revealed some traditional systems that were used to assist less wealthy people, such as alms giving, loans and gifts of livestock and commodities between relatives. It was suggested that these systems would also be used to obtain drugs and that the relative benefit of treating sick livestock increased as livestock holdings decreased. Regardless of numbers of animal owned, herders were ready to buy veterinary drugs and the value or "fair price" of drugs for specific diseases could be calculated. This information should be viewed in the context of limited government services in much of the SNRS and the existence of private systems for many key resources and services. Resources such as livestock, water and rangeland are either privately owned or subject to inter-clan contracts; traditional Koranic teachers receive payments of livestock for their service and in many areas, herders buy water from private *birkads*.

The stakeholder workshops also assessed the value of veterinary drugs or vaccines in terms of the loss in sale value of an animal that might occur for specific diseases. As indicated in section 3.1, purchases of grain by pastoralists are dependent on sales of their livestock, most commonly small ruminants. The key informants for these discussions were livestock traders and results are summarised in Table 9. Reductions in livestock value due to disease ranged from 10%-80% of the original value, depending on the disease in question. This information implies a high cost-benefit for curative and preventive services.

Table 9
Traders' perceptions of reductions in livestock value as a result of disease

Livestock type	Value (Eth.birr)	Main diseases affecting value	Reduction in value (Eth.birr)	Reduction in value as %
Cattle	1000	Bovine ephemeral fever	400	40%
	1000	Foot rot/foot injury	300	30%
	1000	Foot and mouth disease	150	15%
Camels	1200	Respiratory disease	700	58%
	1400	Trypanosomiasis	600	43%
	800	Helminthiasis	300	37%
	1200	Abscesses	300	25%
	1200	Mange	120	10%
Sheep & goats	200	Tick-associated disease	160	80%
	150	Helminthiasis	75	50%
	200	Foot rot/foot injury	60	30%
	200	Pox diseases	20	10%

A review of literature and reports on veterinary projects in Somalia and the SNRS reveals no constraints associated with lack of readiness to buy veterinary drugs among livestock owners. The clear message from the workshop discussions was that livestock owners prioritised animal health and were ready to pay for drugs and vaccines.

8. DISCUSSION

In view of the importance of livestock in the SNRS the delivery of effective veterinary services is a priority issue. Although livestock owners understand the effectiveness of modern veterinary drugs and are willing to pay for curative services, efficient veterinary drug supply systems do not exist in most of the region. Neither veterinary professionals, paraveterinarians or CAHWs are able to function properly.

In order to improve the availability of veterinary drugs and basic services to the livestock owner, privatisation of veterinary services has been suggested. A privatisation process is dependant on a review of public and private sector responsibilities and a clear government policy which removes unfair competition and allows government employees the option of transferring to the private sector. In addition, private services will only survive if consumers, in this case livestock owners, value the service and are ready to pay for it. But do these conditions exist in the SNRS?

This report has demonstrated that in terms of economic theory, curative veterinary services in the SNRS are clearly a private good rather than a public good. Livestock have an obvious economic value which is recognised and herders are already paying for veterinary medicines, albeit at apparently subsidised rates in some cases. The demand for Somali livestock in the Middle East has led to a gradual transition towards market-orientated production systems in Somalia and the SNRS and this trend is likely to continue. The stakeholder workshops highlighted overwhelming community-level support for private systems. In terms of regional policy on veterinary service delivery, the formulation of such a policy will require senior regional government officials to make difficult decisions regarding the revised structure and role of the veterinary sections in the MoA and SERP. The following issues and suggestions are intended to inform the decision-making process.

8.1 Comparison of existing government budgets with estimated profits from private veterinary drug sales.

The employment of veterinarians, animal health assistants and various other staff (storekeepers, watchmen, drivers) in the SNRS consumes approximately Eth.birr 2 million per year of government budget. Table 10 provides estimations of gross profit from veterinary drug sales in the SNRS which might be achieved in a privatised system.

A minimum estimate forecast indicates a gross profit of Eth.birr 2.2 million while a moderate forecast predicts profits of Eth.birr 4 million. Assuming a network of 18 private pharmacies (two pharmacies per zone) and mean annual pharmacy overheads of Eth.birr 15,000/pharmacy, mean net profit before tax for each pharmacy will range from Eth.birr 107,222 to Eth.birr 207,222 per year. This very approximate financial analysis indicates that a privatised system of veterinary drug supply could provide veterinary staff with a more lucrative form of livelihood than government employment while simultaneously, freeing some of the regional government's budget.

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Table 10
Estimates of gross profits from veterinary drug sales in the SNRS

a. Minimum estimate

Treatment	Number of animals treated/year	Gross profit/animal treated (Eth.birr)	Total gross profit (Eth.birr)
Trypanocide:			
- camels and cattle	387,000	2	774,000
Anthelmintic:			
- camels and cattle	200,000	1.5	300,000
- sheep and goats	300,000	0.5	150,000
Acaricide:			
- camels and cattle	100,000	0.5	50,000
- sheep and goats	200,000	0.25	50,000
Miscellaneous:			
- camels and cattle	200,000	2	400,000
- sheep and goats	300,000	1	<u>300,000</u>
			total 2,024,000

b. Moderate estimate

Treatment	Number of animals treated/year	Gross profit/animal treated (Eth.birr)	Total gross profit (Eth.birr)
Trypanocide:			
- camels and cattle	750,000	2	1,500,000
Anthelmintic:			
- camels and cattle	750,000	1.5	1,250,000
- sheep and goats	1,140,000	0.5	570,000
Acaricide:			
- camels and cattle	750,000	0.75	562,000
- sheep and goats	1,140,000	0.35	399,000
Miscellaneous:			
- camels and cattle	300,000	2	600,000
- sheep and goats	400,000	1	<u>400,000</u>
			total 4,032,250

Notes:

1. Estimates based on minimum and moderate estimated demands for different drug types and conservative predictions of profit margins for each type of treatment. Minimum estimates are based on combined MoA/SERP activities 1987EC to 1989EC as detailed in Table 6. Moderate estimates are based on the treatment of 10% of livestock for trypanosomiasis, helminths and ticks per year.
2. Gross profit = sales receipts - (drug cost + wages)

8.2 Restructuring of regional state veterinary services

When considering options for restructuring the SNRS veterinary services, it is essential that the regional government fully understands and accepts its role and responsibilities. In addition to defining regional policy on public and private sector activities, the recent FAO conference suggested that:

In principle, veterinary tasks delivered by the private sector will be justified and offered when (i) financial conditions permit; (ii) enabling legislation reduces apprehension by would-be entrants; (iii) competition by the public sector is removed; and (iv) capital is available for new investors. The first three items are directly under control of the government and require enlightened management by the public veterinary service, the transition team and by concerned government bureaux, such as legal advisers.removal of unfair competition by the public sector is crucial to the early viability of private practices (FAO, 1997).

Regarding the last point about unfair competition, at some stage the SNRS authorities will need to decide how to manage government drug supplies in the face of emerging private pharmacies. A review of government-managed drug supply systems indicates limited capacity to enforce pricing policies (if any) and therefore, the option of selling government drugs at commercial rates has to be questioned. A more pragmatic approach would involve the use of government drugs in "kickstarts" for private veterinarians. Kickstart agreements could be guaranteed according to traditional credit systems which are used in the SNRS.

Another key issue facing the SNRS authorities is likely to be the procedure for releasing government staff from their posts so they are free to work privately. Any transition from a permanent government post to a private livelihood will entail risk and the transfer process needs to be clearly defined. One veterinarian in Gode stated,

You know, we have what you can call a mental disease. Some of us feel that we will die if we don't receive the government salary!

According to FAO, governments should "reduce apprehension of would-be applicants" of privatisation programmes. In the SNRS, the MoA and SERP should consider a gradual release of veterinary personnel who wish to engage in private practice. Such a system might involve a six-month period during which the veterinarian continues to receive a salary but works privately. After the six-month period, the veterinarian is released from his/her post.

If privatisation is fully supported in the SNRS, all veterinary drugs should be handled by private operators. In this situation, it becomes necessary to redefine the roles of the regional state veterinary service. Instead of providing drugs and vaccines, state veterinarians might focus on the public good aspects of veterinary services such as disease surveillance, drug regulations and licensing, research and public health activities, and training and education. A revised structure would require far fewer veterinarians than are currently employed by the region. A minimum requirement might be:

<u>Post</u>	<u>Duties</u>
1 Regional Veterinary Officer	Head of SNRS Regional State Veterinary Service; management and coordination of regional state veterinary activities, including vaccination.
1 Regional Veterinary Epidemiologist	Disease surveillance and reporting; Group A disease reports.
1 Regional Veterinary Public Health Officer	Control of zoonoses; food hygiene.
1 Regional Veterinary Investigation Officer	Management of diagnostic facility in Jijiga; investigation of disease outbreaks.
1 Veterinary Investigation Officer	Veterinary investigation; based in Gode.
1 Veterinary Research Officer	Research and field-based veterinary investigation

duties.

1 Regional Veterinary Liaison Officer

Drug regulation; monitoring of private veterinary facilities; refresher training and monitoring of CAHWs.

The above structure assumes that the veterinary drug store in the SERP clinic in Jijiga can be privatised. The laboratory rooms should be maintained as a Regional Veterinary Investigation Centre (RVIC) under the control of the Regional Bureau of Agriculture. The mobile laboratory should also remain under government management. The RVIC would house six of the seven regional government veterinarians. The Regional Veterinary Investigation Officer and Veterinary Research Officer would be supported by at least three Laboratory Technicians. Vaccination campaigns would be contracted-out to private veterinary teams operating from the pharmacies and clinics.

This revised structure, although radical, could be introduced gradually as veterinarians move from public to private sectors. In the long-term, there would be savings in salaries and drug budgets or budgets could be reallocated to cover the operational costs of the RVIC, mobile laboratories and research activities. There is no reason why private veterinarians cannot undertake some public sector or joint public-private sector activities while continuing to manage their own private clinics or pharmacies.

8.3 The role of private veterinary clinics, pharmacies and community-based animal health workers

The main role of private veterinary facilities should be to supply curative veterinary services to livestock owners. The service should include the provision of veterinary drugs, clinical examination of livestock and basic laboratory examinations (e.g. confirmation of trypanosomiasis). The private facilities should also develop links with communities and community-based animal health workers. As suggested by Leyland (1997) at the recent OAU Livestock Ministers' Meeting, private veterinarians can enter into agreements with communities:

There are two driving forces behind these agreements:

- *The livestock owners perceive that one of the major problems they face in life is animal disease. They are therefore willing to pay for animal health services.*
- *A veterinary doctor seeks to make a living from providing animal health service to the people who request it.*

The agreements consist of the following basic terms:

The veterinary doctor agrees to remain in regular contact with the livestock owners and their leaders. He agrees to train, monitor (supervise) and supply a group of livestock owners who will provide vaccination and clinical services for their communities. These people are often called community-based animal health workers (CAHWs). They live and move with the livestock owners. The veterinarian agrees to use his or her professional training and ethical standards to ensure appropriate and cost effective medicines are supplied to the client.

The veterinarian makes a living from the profit made on the medicines and vaccines which s/he sells to the CAHWs. In some countries governments contract such private vets to provide vaccination using CAHWs within their practice area against diseases which threaten the public good e.g. rinderpest.

The community agree to select individuals whom they trust and respect to be trained as CAHWs. They agree to utilise the trained CAHWs' services. They agree to pay for those services. They advise which diseases are a problem to them and which they are willing to pay for the control of. They agree on how and when to address them. For example the time of year and place for vaccination can be agreed upon and closely coordinated. Details such as ear notching policy and labour provision can be agreed in advance.

The livestock owners gain through the increased livestock production and reduced mortality

that results from regular and appropriate use of veterinary medicines and vaccines.

The pastoralists gain because they have participated organisationally in establishing a delivery system that is based on real economic factors and which is sustainable. This organisation input can be further built on in terms of developing other sectors such as conflict resolution and marketing of livestock.

The community-based animal health worker agrees to be trained, to provide specified vaccination and clinical services at agreed prices and to work under the professional supervision of the veterinarian. The CAHW gains from having developed a skill and their status. They have a means of making a living from the profit they make from the treatments and vaccinations they provide. They can continue to keep livestock and move with their communities.

Conditions in the SNRS are well-suited to the development of curative veterinary services based on private veterinarians working together with communities and CAHWs. Most veterinarians are ethnic Somalis and they should be able to establish CAHW networks which are supplied from private pharmacies and clinics.

8.4 Veterinary professional associations

In Ethiopia, the Ethiopian Veterinary Association (EVA) is the professional body which represents veterinarians in the country and EVA members are included in the Regional Veterinary Privatisation Management Committees of the on-going PARC project. However, few veterinarians in the SNRS are EVA members and hence there is a need to facilitate the enrolment of veterinarians in the EVA, or, support the formation of a complimentary regional body. Again, according to FAO (1997):

Where (national) veterinary professional associations do not exist they need to be established as a necessary pressure group for rational delivery of veterinary services and as a vehicle for continuing education and professional improvement. Veterinary associations can take a credible advocacy role for the public interest. Governments and economies cannot operate well nor develop fully without the input of the collective contribution of the veterinary profession.

Veterinary associations serve as a forum for communication based on common socialisation between public service veterinarians and their peers in private practice and industry. Meetings of the national association provide the occasion for discussion among the various interest groups.

Likewise, the veterinary professional association can formulate a common stand on issues affecting the association's members but which also have wider public interest. Finally, the professional association has a critical role to play in maintaining and upgrading the technical competence of its members through continuing education.

The above benefits of associations do not apply to veterinarians alone. Animal health assistants, technicians and auxiliaries are also vital members of the animal health care delivery system. They need to be included in the veterinary association or form their own associations in close collaboration with veterinarians.

8.5 Options for supporting traditional veterinary practice in the SNRS

This report and recent stakeholder workshops have highlighted the importance of traditional veterinary practice in the SNRS. Indigenous knowledge systems are receiving much attention from development organisations and traditional veterinary practice or 'ethnoveterinary knowledge' is now featuring in the development literature (e.g. McCorkle et al., 1996). Many modern pharmaceuticals are derived from plants and consequently, the use of local herbal remedies should not be dismissed simply as folklore.

To their credit, Ethiopian veterinarians are already evaluating the effectiveness of some of the more commonly used plant remedies and veterinary services in the SNRS should follow this example.

The traditional healers who participated in the stakeholder workshops had different views regarding the need to support local systems of veterinary practice. For example:

If the modern drugs prove to be more effective than the traditional ways then it doesn't matter if the traditional knowledge is lost. We will change and will benefit from the new system.

and

We can manage the preservation of the traditional knowledge. Every area has people who know the traditional medicines and these people pass their knowledge to their children - the knowledge will not disappear. There is a medicinal plant on the ground right in front of us - can you see it? You do not know it but everyone of us knows it even if we choose not to mention it to each other.

Other informants felt that traditional knowledge should be written down and distributed to others. It was also suggested that district-level associations for traditional healers should be formed and that private pharmacies should provide information on local plant remedies (e.g. by posters).

8.6 The need for better information on the use of veterinary drugs

In a privatised veterinary service, consumers are more likely to benefit if they are well-informed about different drugs types and know how to store and use drugs properly. The more knowledgeable the livestock owner, the more difficult it becomes for dishonest traders to sell poor quality drugs. This issue is already being addressed in the south of the region through an International Committee of the Red Cross (ICRC) pastoralist training programme and options for expanding the programme should be considered. In addition to the need to help herders make choices about veterinary drugs, there are at least three other key reasons for supporting this type of activity:

- Mass information campaigns using short, focused training programmes and devices such as leaflets in local languages, are a relatively inexpensive method of improving knowledge about livestock treatments.
- Unlike some extension programmes for pastoralists, messages about the use of veterinary drugs tend to be well-received *because herders want to know how to use the drugs properly.*
- A sizeable proportion of the Somali population have access to daily news and other messages via the BBC Somali Service. Short radio programmes on veterinary drugs (e.g. "How to check the expiry date" or "How to store drugs") have the potential to reach pastoralists in all corners of the SNRS.

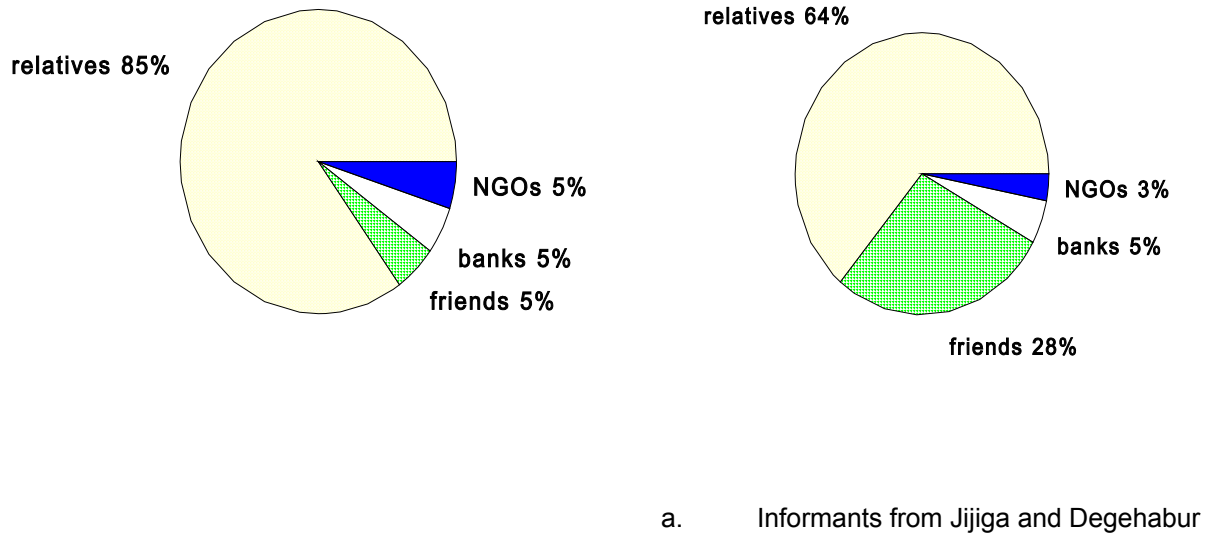
8.7 Veterinarians and access to credit

The stakeholder workshops on veterinary service delivery included discussions on the credit options for veterinarians in the SNRS might wish to open a private pharmacy or clinic. The different types of credit were scored using proportional piling as shown in Figure 7.

Banks were considered to be a relatively unimportant source of credit due to the collateral and equity conditions associated with bank loans. Somalis may have livestock assets but livestock are not insurable in Ethiopia and therefore cannot be offered as security on a loan.

Figure 7

Relative importance of types of credit available to veterinarians in the SNRS



The informants suggested that traditional Somali loan systems i.e. borrowing from friends and relatives, would be available to veterinarians and it would be better for vets to open their own businesses rather than take 1200 birr per month as a government salary - *"The vets should approach the wealthy people to combine their technical knowledge with the traders' wealth"*.

Some features of the traditional loan system were:

- According to Islamic law, all loans were interest-free.
- The loan recipient may require guarantors such as respected elders or wealthy business people.
- In the event of failure to repay the loan, a committee of elders was formed to solve the problem. Sometimes the debtor's guarantors or relatives agreed to repay the loan, the repayment period might be extended, or rarely, the debtor would be taken to court.

The size of the loan depends on the wealth and willingness of the creditor, though approximate sums of 5,000 to 10,000 birr per creditor were mentioned. A borrower might approach several creditors at the same time, thereby increasing the size of the loan by up to five times or more.

9. CONCLUSIONS

1. Reform of veterinary services is underway in many African countries and recent Federal Government of Ethiopia policy encourages veterinary privatisation.
2. Influential bodies such as the FAO and PARC are advocating increasing use of community-based approaches to veterinary service delivery. In pastoral areas where there may be a high demand for veterinary services and a willingness to pay for services, private veterinarians can act as sources of drugs and advice for CAHW or "paravet" networks. Such systems can improve the coverage and sustainability of services. The concept of paravet networks has been fully accepted by the MoA and SERP but paravet selection needs to be improved,

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refresher training is required and most essentially, paravets need reliable access to veterinary drugs.

3. The existing state veterinary services in the SNRS are providing curative treatments and vaccinations but with limited coverage and poor sustainability. Communication and coordination between the two government veterinary service providers - MoA and SERP- needs to be improved. Infrastructure should only be created if there is a clear strategy and agreed long-term budget for the provision of staff and equipment.
4. Although government veterinary resources in the SNRS are limited in terms of manpower, infrastructure and veterinary drugs, these resources are divided and managed under two separate institutions. This system is unlikely to be cost efficient because each of the two veterinary teams require their own administrators and other support staff.
5. In economic terms, curative and preventive veterinary services in the SNRS are a private good that can be delivered effectively by the private sector. In Somali areas, a gradual shift from subsistence to market-orientated livestock production strategies has been in progress for a number of years, mainly in response to markets in the Middle East.
6. Existing veterinary drug supply systems operated by the MoA and SERP provide some subsidised drugs and some drugs which are priced at rates higher than market rates. Although the quantities of drugs supplied are thought to be insufficient in terms of the regional demand, even small quantities of subsidised drugs will undermine the private sector.
7. The development of efficient government-operated revolving funds at regional level would require very radical institutional change. Considering the past performance of SERP and MoA revolving funds, the reliance on aid agencies and the clear private good nature of curative veterinary services, revolving funds should not be regarded as a long-term option for the supply of veterinary drugs in the region.
8. The concept of private curative veterinary services is easily understood and very strongly supported at community-level. The monetary value of livestock and the importance of livestock disease are readily discussed by livestock owners.
9. The state should play a prominent role in any transition from public to private sector veterinary activities. Stakeholders recognise the important role of government in drug regulation and quality control.
10. Research on at least two important livestock diseases is required as a matter of urgency viz. trypanosomiasis and Nairobi sheep disease. There is also a need to consider zoonotic diseases, particularly tuberculosis.
11. Traditional veterinary practice is an important service in Ethiopia and may be the only option for the majority of livestock owners in the SNRS. Although indigenous medicines are relatively inexpensive, traditional healers recognise that modern drugs are more effective for some diseases. Livestock traders are already obtaining veterinary drugs from private sources.
12. Traditional systems of credit are well-established and efficient in the SNRS. Veterinarians have access to these systems but private activities are considered to be risky while regional government policy on veterinary services remains unclear.

10. RECOMMENDATIONS

1. The Steering Committee on Veterinary Service Delivery in the SNRS should formulate a clear policy statement on public and private sector veterinary services in the region. The policy statement should reflect national policy and also address key issues such as competition between state and private operators and the transfer of personnel from public to private sectors.
2. Regarding private-public sector competition, it is recommended that through the MoA and SERP, the Steering Committee promote conditions that will not inhibit the work of private veterinarians in the region. In particular, the Steering Committee should ensure that MoA and SERP:
 - a. Set and enforce prices for government veterinary drugs which will not undermine the private sector.
 - b. Coordinate MoA and SERP veterinary activities and develop a clear policy regarding the acceptance and use of drug donations from aid agencies . The continued provision of free or subsidised veterinary drugs as aid inputs is likely to undermine the performance of the private sector.
 - c. In areas where private veterinarians wish to work, consider a gradual cessation of curative veterinary services by government.
 - d. Fully investigate the possibilities for a reallocation of existing government drug stocks to private ownership on a kickstart or credit basis, possibly with community elders and business acting as guarantors.
3. The Steering Committee on Veterinary Service Delivery in the SNRS should support the establishment of a regional veterinary professional association for veterinarians, animal health assistants and animal health technicians.
4. The Steering Committee on Veterinary Service Delivery in the SNRS should carefully reconsider the rationale for the management of a relatively small public veterinary resource by two separate bodies (MoA and SERP).
5. In the event of a gradual hand-over of curative veterinary services to the private sector, a reformed regional state veterinary service could be based on a small number of regional-level veterinarians with very specific responsibilities. Activities such as vaccination, research and veterinary education can be contracted-out to the private sector.
6. In relation to support to community-based systems (paravets), the government veterinary service in the SNRS should appoint (or realign) a veterinarian who would have specific responsibilities for the training, coordination and monitoring of CAHWs (paravets).Crucially, no more paravets should be trained until proper monitoring and drug supply systems are in place.
7. Links between CAHWs and private veterinarians should be encouraged. Combined CAHW-private vet systems might be based on agreements between private veterinarians and paravets and have the potential to develop into a very wide drug distribution network in the region. The MoA should prepare a register of paravets that details their location and level of training.
8. Support to the private veterinary sector should not ignore or alienate traders who are currently handling veterinary drugs. Training of traders can improve the quality of informal drug supplies and facilitate links between veterinary professionals (who have technical expertise) and traders (who have business expertise).
9. Traditional veterinary practice in the SNRS is well-documented but testing of plant remedies is required in order to assess their safety and efficacy. Such activities are underway in other parts of Ethiopia and it is recommended that the regional authorities promote similar work in

the SNRS.

10. Activities that aim to inform livestock owners about the correct use of veterinary drugs should be fully supported. In particular, the MoA and SERP should join forces and lobby the BBC Somali Service for a series of programmes on veterinary issues.

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