

An Assessment of the Economic Viability of Private Animal Health Service Delivery in Pastoral Areas of Kenya

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ABBREVIATIONS and ACRONYMS

AHA	Animal Health Assistant
ALRMP	Arid Lands Resource Management Programme
ASAL	Arid and Semi-Arid Lands
CAHW	Community-based Animal Health Worker
CAPE	Community-based Animal Health and Participatory Epidemiology Unit
CBO	Community-based Organisations
CIFA	Community Initiatives Facilitation and Assistance
COOPI	International Co-operation
DDC	District Development Committee
DFID	Department for International Development
DPA	District Pastoral Association
DVS	Director of Veterinary Services
ELCK	Environmental Liaison Centre, Kenya
FARM- Africa	Food and Agricultural Research Management Africa
GPI Ltd	Global Providers International Ltd
GTZ	German Technical Corporation
IRR	Internal Rate of Return
ITDG	Intermediate Technology Development Group
KARI	Kenya Agricultural Research Institute
KCB	Kenya Commercial Bank
K-MAP	Kenya Management Assistance Programme
KVAPS	Kenya Veterinary Association Privatisation Scheme
KVB	Kenya Veterinary Board
LDC	Location Development Committee
LPA	Local Pastoral Association
LSP	Livestock Service Providers
LUA	Livestock Users Association
MAHWG	Meru Animal Health Workers Group
NGO	Non-Governmental Organisation
NPHC	Nomadic Primary Health Care
NPV	Net Present Value
OAU/IBAR	Organisation of African Unity/Inter-African Bureau for Animal Resources
PA	Pastoral Association
PACE	The Pan-African Programme for the Control of Epizootics
PISP	Pastoral Integrated Support Programme
PSC	Pastoral Steering Committee
PV	Present Value
RAS	Rapid Appraisal Survey
SNV	Netherlands Development Organisation
SARDEP	Semi Arid Rural Development Programme
WASDA	Wajir South Development Association

EXECUTIVE SUMMARY

GENERAL OBSERVATIONS

1. The importance of livestock to the Arid and Semi-Arid Lands (ASAL) pastoral communities goes beyond economic values. The survival, lifestyles, livelihoods and even some cultural rituals and activities are livestock-based. However, livestock production and productivity is low because of various factors. Animal health services are major felt needs of the ASAL pastoral communities and the lack of them tends to cripple the very hand that feeds the community.

2. Animal health services delivery in pastoral areas has been a major challenge to all providers in light of policy shift towards privatisation. Implementing the animal health privatisation policy in pastoral areas requires a radical change from the conventional approach prescribed for high/medium potential areas of the country. The challenge is greater, considering the conditions in pastoral areas such as insecurity, poor infrastructure, low cash economy, high cost of service delivery, vastness of the areas, lack of veterinary personnel, among others.

3. The existing policy and legal framework has been less responsive to the needs of ASAL/pastoral communities. It is, however, anticipated that the on-going policy/legal review, that the Department of Veterinary Services (DVS) and the Kenya Veterinary Board (KVB) are spearheading, will be more responsive and will accommodate the needs of ASAL pastoral communities. The stakeholders hope that this review will recognise all animal health service providers including community animal health workers (CAHWs) and animal health assistants (AHAs).

4. Due to inadequate or lack of animal health services in ASAL/pastoral areas, various service delivery initiatives, including community-based animal health service delivery systems, have emerged as an alternative option. This system is yet to pass the test of time on sustainability and viability.

5. The initial community-based animal health service delivery plan was designed to offer basic animal health care service to the community by community-selected animal health workers (commonly referred to as CAHWs). Occasionally, this was done on a voluntary basis, hardly sustainable beyond the lifespan of the supporting projects. There is now a felt need to re-package community-based animal health service delivery initiatives within the privatisation framework to make them sustainable and economically viable.

1. INTRODUCTION

Livestock keeping is an essential component of the economic well-being of people in sub-Saharan Africa. It provides food, manure, traction, hides and skins, wool and economic security and also contributes to the cultural and social standing of the livestock owners. Researchers have said the following on the subject: -

> In most of the sub-Saharan Africa, including Kenya, the public sector has been the major or exclusive provider of veterinary services until the last quarter of the 1980s. Direct state involvement was then justified not on economic ground but on grounds of social equity and the fact that the private sector was still very weak in these countries (Holden et al, 1996; Ross, 1992; Umali et al, 1992 and Jarvis, 1998).

However, the government can no longer offer these services because of budgetary constraints and fiscal deficits resulting in structural adjustment programs. As a result, the availability and quality of veterinary services has declined. This has necessitated a change of policy allowing the private sector to participate and promote the delivery of animal health services.

The role of the private sector as an alternative to government veterinary service delivery is gaining recognition. The government aims to reduce the financial burden and ostensibly improve the efficiency of service delivery through the private sector. Consequently, the state hopes that owing to the economic nature of veterinary services, farmers who enjoy direct services such as artificial insemination (AI), dipping, drug delivery, among others, will pay for them. The riding factor has been the question of public good against private good.

The need for improved delivery of animal health services in the ASAL has been high because: -

- Kenya's ASAL accounts for 50% of cattle, 70% of shoats, and 100% of camels (Brown, 1994).
- The economic base of pastoral Kenya depends on livestock and livestock products. To this end, 60% of their incomes mainly accrue from the sale of livestock and livestock products (Chenyalew and Suleiman, 1996).
- The nomadic lifestyles of the pastoralists render conventional delivery of animal health services inappropriate and ineffective.
- Harsh climatic conditions, poor infrastructure, weak monetary economy and risky, conflict prone environmental conditions have made the Kenyan ASAL less attractive to the private veterinarians and para-veterinarians.
- Improved delivery of animal health services including disease control is critical and mandatory to facilitate the marketing of livestock and livestock products in the ASAL.
- Livestock production and productivity depends on animal health. Improved delivery of animal health services means improved livestock production and productivity.
- The risk of contracting zoometric diseases such as anthrax, rabies, brucellosis and Rift Valley fever and others is relatively high in pastoral areas. Public health concerns on the issue calls for improved delivery of animal health service as a strategy to minimise the risk.

Community-based animal health delivery systems are popular forms of service delivery that are effective in the ASAL and pastoral areas for nearly two decades, yet this system has not been recognised within the existing legal and policy framework. However, in the last three years, significant progress has been made in gaining broad acceptance of this system. The Kenya Veterinary Board (KVB) and the Department of Veterinary Services (DVS) have worked with relevant stakeholders to review and update livestock sector policy. The new policy now calls for

partnership in service delivery involving the government, the private sector and the beneficiaries thus recognising the role of the various animal health service providers.

Stakeholders, including NGOs, KVB and DVS have produced a standardised training curriculum for the community-based animal health workers (CAHWs). They are now looking into ways of regulating and supervising the service delivery system further. Despite these positive developments, two main issues remain a challenge to the stakeholders thereby limiting the total application of this system. These are: -

- The supporting NGOs and bilateral organisations heavily subsidise these systems putting into question their long-term sustainability.

- Designs of the community-based animal health delivery systems vary depending on the conditions in a given pastoral area. Application and replication elsewhere is a difficult task.

Because of these challenges Departmen of Veterinay Services, the CAPE Unit of the Pan-African Programme for the Control of Epizootics (PACE), OAU/IBAR in collaboration with SNV, VSF-Belgium, Oxfam, CIFA/COOPI, ALRMP and Farm-Africa commissioned this study to investigate and assess the economic potential of the various CAHW delivery models in Kenya.

1.1 The Study Objectives

The purpose of this study was to: -

- Assess the economic viability of different models of privatised pastoral animal health service delivery in Kenya, bearing in mind the development policy and legislative environment and variables in geographical location, local economies, access to markets, infrastructure, cultural practices and local demands

- Produce guidelines on the way forward to privatisation of existing and new community-based animal health delivery systems in pastoral areas including the development of business plans for the different systems

1.2 Definition of Tasks

The detailed terms of reference for the study are contained in *Annex I*. In this study, the consulting team defined economics as a science of making choices in the allocation of scarce resources to produce human wants (goods and services). They noted, though, that economic principles and methods have been used extensively in analysing losses from livestock disease outbreaks and cost benefit analysis of intervention strategies.

Two main economic principles used to assess the efficiency of any preferred strategy are: -

- **The opportunity cost:** This is the benefit that is foregone by not selecting the best alternative course of action.

- **The marginal principle:** It examines what happens at the margins by comparing the extra benefit that will result from the shift and the opportunity cost of the extra resources.

The economics of private delivery of animal health services, if assessed from a national or societal level, is seen in terms of cost-benefit analysis, that is, looking at the cost of providing the services and returns obtained. However, most people prefer the financial analysis economic principle when assessing projects for farms, institutions and drug shops owned by individuals. The consultants chose to use financial analysis where the profitability of the practice reflects the views of the individual practitioner investing in the services and sharing the financial rewards.

As a requirement in the financial analysis, the study team has prepared practice level cash budgets for each model from which they have calculated the net cash flow and financial rate of returns. This method, unfortunately, does not assess the chances of survival of the practices in the market as business units and the future sustainability of these models, since it concentrates only on the financial variables and ignores other attributes. The attributes include the existing support institutions, the personal drive of the practitioners, the external and internal environment of the market and other opportunities for diversification to ensure sustainability.

Because of limitations, the team used the Durham Business Model developed by the Durham University Business School in the United Kingdom, to assess the weakness in each delivery model and to present areas for future intervention if the delivery systems have to be sustained. The team has explored the following areas of business: -

- Bases for start-up and survival
- Base potentials for growth
- The external environment
- The internal environment
- The future options for diversification

The consulting team preferred this model because: -

- It has been successfully applied in the development of the Kenya Veterinary Association Privatisation Scheme (KVAPS).

- The Kenya Management Assistance Programme (K-MAP) uses it to promote small businesses in Kenya. (For the diagrammatic presentation of the model, *see Annex II*).

2.0 METHODOLOGY

The consultants developed an informal survey using a topical outline and a formal survey using structured questionnaires. They used an informal or rapid appraisal survey (RAS) as a quick way of collecting useful qualitative information on community-based animal health delivery systems from NGOs, CAPE partners, project staff, community-based organisations (CBOs) and relevant government departments. As a cost-effective tool for collecting information, this approach enabled them to understand the various community-based animal health delivery initiatives well.

During the RAS, the team visited the district veterinary offices in Turkana, Marsabit, Moyale, Wajir, Kajiado, Loitoktok, Meru Central and Meru South. It also visited and held discussions with field staff of the following projects: -

- VSF-Belgium, the Netherlands Development Organisation (SNV), the Intermediate Technology Development Group (ITDG), and the Arid Lands Resource Management Programme (ALRMP) in Turkana District
- Oxfam-GB, ALRMP, Voluntiers sans Frontiers (VSF)-Switzerland, Wajir South Development Association (WASDA), and Nomadic Primary Health Care (NPHC) in Wajir District
- SIFA/COOPI, ITDG, German Technical Cooperation (GTZ) in Marsabit District
- Farm-Africa in Meru District
- The Kenya Agricultural Research Institute (KARI) in Muguga
- Semi Arid Rural Development Programme (SARDEP) in Loitokitok sub-District (Kajiado District)

These RAS surveys yielded useful information on the objectives, achievements, lessons learnt and perceived strengths and weaknesses. The list of these organisations and the key informants is provided in A*nnex VI.*

On the structured interviews, the team developed the business performance and the livestock owners' perception questionnaires (*see Annex III A&B*). It used the business performance questionnaires to interview practitioners including CAHWs, private veterinarians, animal health assistants (AHAs), *duka* owners, association's drug shop attendants and open-air veterinary drug peddlers. The team was then able to compile data on turnovers, prices of various products as charged by different players, main drug sources, the gross profit margins at various levels of each model and break-even sales volumes/ case-load for every practitioner interviewed. The information was used to prepare ideal cash budgets for each model to establish the comparative net cash flow, net present values and internal rate of returns.

3.0 CURRENT FINANCIAL PERFORMANCE AND TRENDS

The detailed financial performance reports for each district are presented in *Annex V (a-f)*.

Table 1: Summary Financial Performance

	MODEL	Average monthly turnover Vet. Drugs	Average gross profit margin	Total monthly overhead costs	Monthly Break-Even sales volumes	Percent contribution by drug sales activity	Supplementary activity if any
Wajir	**DPA**	**295,300**	**14%**	**28,033**	**60,064**	**30%**	**Water activity**
	LPAs	10,000	Data Gap	D/G	D/G	-	Water activity
	VETS	D/G	D/G	D/G	D/G	D/G	-
	AHA	D/G	D/G	D/G	D/G	D/G	-
	CAHWS	6,826	Data Gap	D/G	-	-	-
	DUKAS	**86,640**	**26%**	**12,710**	**36,769**	**75%**	**Clinical services**
	(Wajir Vet Centre)						
Turkana	*AHA:*						*buying and sellir*
	. VSFB-Loima/Turkwel	*71,050.*	*13%*	*46,552*	*322,285*	*100%*	*cereals*
	. SNV-Lokichar	*136,200.*	*26%*	*62,477*	*240,296*	*100%*	*general provisic*
	. SNV- Kakuma	*34,970.*	*15%*	*27,708*	*184,720*	*100%*	*shop*
	CAHWS:						
	.SNV	*2,708*	*11%*	*drawings Ksh1,500*	*13,636*	*100%*	
West Pokot	AHA	Data Gaps	D/G	-	-	-	
	CAHWS	*11,750.*	*10%*	*18,000*	*12,851*	*100%*	
	DUKAS (Agrovets)	*15,000*	*14%*	*3,700*	*26,428*		
Marsabit	**AHA:**						
	-Mifugo	**75,000**	**20%**	**13,433**	**67,166**	**100%**	N/A
	-AHCS.	*25,000*	*24%*	*10,643*	*44,346*	*100%*	*N/A*
	-Karare Assoc.	*10,000*	*31%*	*4,133*	*13,332*	*100%*	*N/A*
	-Artha I.D. Assoc.	*3,500.*	*11%*	*3,244*	*29,490*	*100%*	*N/A*
	-Yaagara LDG Assoc.	*3,500*	*13%*	*3,500*	*26,923*	*100%*	*N/A*
	CAHWS	*4,000*	*24%*	*1,500*	*6,250*	*100%*	
Meru Central	Private Veterinarians						
	-Meru Vet Clinic	**50,000**	**30%**	**56,384**	**28,196**	**15%**	AI (45%), Clin
	-Chuka Vet Services	*60,000*	***20%***	*29,230*	*73,075*	*50%*	(40%)
	AHA's						
	- Giaki Location	*12,000*	*36%*			40%	
	- Muthambi Location	**10,000**	**36%**	**7058**	**7,842**	**40%**	
	-Thimangiri Location	**10,000**	**76%**	**20,912**	**4,182**	**20%**	
	CAHWs	2,000	79%	1,500	1,185	100%	
Kajiado	**Pukoret Agrovet**	**280,000**	12%	21,530	**184,150**	100%	
	Sinken Agrovet	**300,000**	11.2%	59,302	**59,482**	100%	
	Kamco Agrovet	*260,000*	*19%*	*66,312*	*349,010*	*100%*	
	Hossana Agrovet	**160,000**	25%	29,550	**118,200**	100%	
	Lekenga Agrovet	*119,000*	*25%*	*39,880*	*159,520*	*100%*	
	Malel	**120,000**	21%	15,000	**71,429**	100%	

(**bold = profit making**, *italic =loss making*, normal =insufficient data D/G= data gap)

From the above table, direct drug sales account for the highest proportion of the total monthly turnover except in Meru South and Meru Central districts where clinical treatment contributes substantially to the total monthly receipts.

The Association Model operating in Wajir District seems not to have been established to operate commercially but as a service to the community. This explains the following trends: -

- The overhead costs are low and emphasis is on charity services to the community.

- Little attention has been given to professionalism, for example, 75% of the Local Pastoral Association (LPA) stores that the team visited are handled by semi-literate clerks.

- Only PAs in Mansa and Wajir Bor applied reasonable margins and structured their sales prices to supply the CAHWs with products at fair rates allowing them to apply reasonable margins while selling the same to livestock owners. Other PAs sold the drugs to the CAHWs and livestock owners at purchase price.

- The association's drug shops in Marsabit District, on the other hand, applied reasonable margins but because of the poor drug supply line, all of them were incurring losses. The future survival of the rural association drug shops in Marsabit is in jeopardy unless the stakeholders improve the drug supply line and set up proper institutional linkages with wholesale drug dealers in Meru and Isiolo districts.

- It is only in Marsabit and Meru districts that the consultants found working AHA operated drug shops. The Turkana District AHA figures are based on projections should the AHAs now working for VSF and SNV decide to venture into private practice.

A comparative analysis on the margins for AHAs in Meru and Marsabit districts exhibits the following characteristics: -

- Direct drug sales for Meru-based AHAs account for only 40% or less of the total turnover. Over 50% of the monthly receipts are registered from clinic services. In Marsabit District, on the other hand, selling drugs is the main business line.

- Marsabit-based AHAs apply lower profit margins than their counterparts in Meru although AHAs in Marsabit procure drugs from Meru, over 250kms away, because Meru-based AHAs use drugs for clinical services hence volume sales is of little importance.

- Average monthly drug sales turnover is lower for Meru-based AHAs than their counterparts in Marsabit District. However, most AHA managed business concerns are making profits and are likely to survive in the market.

- Project turnover for the proposed AHA drug shops in Turkana District are higher than the actual turnover of AHA managed drug shops in Meru and Marsabit districts, though the anticipated margins are much lower. The projected sales compare favourably with the actual turnovers for *dukas* or privately managed agrovets in Wajir, Kajiado and Turkana districts.

- AHA and veterinarians in the ASAL prefer direct drug sales as a source of income and clinical treatment of animals only becomes significant at the CAHW level.

- Direct drug sales in the ASAL is a business of volumes, and AHAs and private veterinarians wishing to venture into this business must target high sales and reduced gross profit margins. This is what the private drug shops in Kajiado, Makutano, Kitale and Meru districts are doing. In Kajiado, for example, the most successful *duka* operates on a gross margin of 11.2%.

- Vaccination does not feature as an important activity. It is mainly a function of the veterinary department occasionally involving the community-based delivery systems.

Each model has been developed under a different business environment hence the success or failure of one model in a particular pastoral environment does not necessarily imply the same in another.

3.1 Main Product lines and Prices

Table below provides a summary of main drug brands and prevailing prices in different service delivery systems in the ASAL

Table 2: Drug Prices in Different Service Delivery Systems in the ASAL-(Kshs.)

	WAJIR		MARSABIT		TURKANA		MERU		KAJIADO
PRODUCT	**DPA**	**LPA**	**AHA**	**ASSOCIATION**	**AHA**	**CAHW**	**VET**	**CAHW**	***DUKAS* (ZINKEN)**
BROAD SPECTRUM ANTIBIOTICS									
Position	2	3	1	2	1	1	2	2	1
Brand	Alamycin 10%	Alamycin 10%	Alamycin 10%	Alamycin 10%	Alamycin 20%	Alamycin 20%	Tetracycline 10%	Diseptoprim	Adamycin
Packs	50mls	50mls	100mls	100mls	100mls	100mls	100mls	Tabs	100mls
Buying price (Kshs)	80	99	188	235	320	360	125	10	200
Selling price (Kshs)	90	120	250	260	360	400	170	30	230
Source	Nairobi	Nairobi	Meru	Meru	Nairobi	AHA	Metrovet Nairobi		Assia Pharm. Nrb
TRYPANOCIDALS									
Position	3	2	-	1	3	2			
Brand	Triquin	Triquin	-	Novidium	Ethidium	Ethidium			
Packs	15ml vials	15ml vials	-	Tabs	Tabs	Tabs			
Buying price (kshs)	200	200	-	40	35	40			
Selling price (Kshs)	220	230	-	50	40	45			
Source	Nairobi	Nairobi		Meru	Agrovet	AHA			
ANTIHELMINTHICS									
Position	1	1	2	3	4		2	1	
Brand	Wormicid	Vermitan	Wormicid	Wormicid	Tramasol	Albenol	Albezol	Wormicid	
Packs	Bolus	152mg tabs	120mls	1lt	1lt	1lt	100mls	1lt	
Buying price (Kshs)	10	9	120	850	950	1100	68	750	
Selling price (Kshs)	11	16	140	1000	1100	1300	100	1000	
Source	Nairobi	Nairobi	Meru	Isiolo	Agrovet	AHA	Metrovet	VET	
ACARICIDES									
Position	4		3	4	2				2
Brand	Triatix		Triatix	Steladone	Triatix				Triatix
Pack	100mls		100mls	100mls	100mls				100mls
Buying price (Kshs)	150		151	165	192				170
Selling price (Kshs)	180		200	180	220				180
Source	Coopers (Nrb)		Meru	Dirre Pharm Isiolo	Agrovet Nrb				Coopers Nrb.

The following conclusions can be drawn from the table: -

- The veterinary drugs commonly used in the ASAL are acaricides, anthelmitics, trypanocidals and broad-spectrum antibiotics.

- The broad-spectrum antibiotics take a lead, followed by anthelminthics then trypanocidals. However, the demand for drugs differs from one region to another in the same district.

- The above information is critical for efficient business planning especially when the Pareto principle (80 % of the output is always realised from 20% of the input) is taken into account. Each business unit must establish its top five fastest moving products. From the list, the business owner/manager must then allocate the highest percentage of working capital to the fastest moving product. The consultants recommend that the number one product should take 50% of the working capital while the number two product line gets 30%.

- The most successful agrovets are those that have adopted the volume sales strategy. The successful *duka* aims at low gross profit margins but huge volume sales. The drug suppliers and pharmaceutical companies also encourage this strategy by allowing discounts on volume purchases. Because of this scheme, AHAs and veterinarians working in the ASAL must target a few product lines as their core business for success. They must consider the Pareto principle and push for volume sales but continually monitor demand trends and adjust accordingly.

3.2 Sustainibility of the Systems

The consultants and the stakeholders agreed that future sustainability of any of the four service delivery systems will wholly depend on the extent to which the system can be fully commercialised and managed as profit centred units. The consulting team applied the Durham Business Model at each business level of every system to assess its sustainability. The results of the assessment are summarised below.

3.2.1. Association Model: Wajir District

This has three levels namely, CAHWs, District Pastoral Association (DPA) and Local Pastoral Association (LPA).

3.2.1.1. The CAHW Business Level

The team established that various organisations have trained up to 300 CAHWs in wAJIR district, and they are currently working as the grassroots link in distributing veterinary drugs and in offering animal health services.

Motivation and commitment

Table 3: Dynamism of CAHWS in seven Local Pastoralist Associations (LPAS)

Name of LPA	Total trained	Active	Inactive
Wajir Bor	19	8	11
Riba	18	10	8
Khorof-harar	26	15	11
Hungai	18	4	14
Mansa	14	6	8
Griftu	7	5	2
Wagalla	7	3	4
Totals	**109**	**51**	**58**
Percentage	100%	47%	53%

Only 47% of the trained CAHWs are active. When the consultants asked them to state the major problems limiting their drive, 87% of the CAHWs cited lack of incentives. The livestock owners corroborated these claims by prioritising lack of incentives in form of salary, commissions or allowances as the key constraint to improved performance. This confirms the premise that motivation and commitment as primary ingredient in sustaining CAHWs as business units is still lacking. DPA and stakeholders need to take the following steps to motivate CAHWs and improve their commitment.

- They should develop a selection process that ensures that each CAHW enjoys the support of the community and is committed from the onset.

- The CAHW and the community should contribute equally to the drug kit to enhance the CAHW's commitment and enlist community support.

- The DPA and the management committee should agree on a standard commission package that the LPA would adopt. This package should state the share for the DPA, LPA and the CAHW.

- KVB is currently exploring modalities of issuing certificates to the CAHWs to motivate them.

Other factors that DPA and other stakeholders should consider include:-

- providing identification cards to CAHWs
- offering training in modular units and allowing each CAHW to aim higher. The modalities for this can also be drawn from the experience of ITDG in Turkana District.
- improving the working relationship between the CAHWs, LPAs and livestock owners by-:
    - developing clear transaction systems between the members and the LPAs on the one hand, and CAHWs and the LPAs on the other
    - developing a differentiated price structure to:-
        - assist CAHWs to obtain drugs from the store cheaply
        - assist LPA members to procure drugs directly from their stores at the same rates as they would pay to the CAHWs
        - charge non-members higher prices to encourage membership and strengthen the LPAs

Ability and experience

Although the ability and experience base of CAHWs is still wanting, the absence of an alternative animal health care delivery system will allow them to survive in the market. This is why the CAHWs and the livestock owners are urging for more refresher courses. Besides, the harsh environment under which the CAHWs operate provides an unchallengeable market niche.

Idea base

Animal health services present a real need in the ASAL. It is a business idea that draws substantial demand and most livestock owners are willing to pay for it. Out of those interviewed, 65% described the services that CAHWs render as excellent and the prices charged fair.

Resource base

Currently, transport and communication limit CAHWs' services. The stakeholders should consider a credit arrangement of approximately Kshs. 7,000 for each CAHW that would allow them to purchase camels, in the short-run, and motorbikes in the long-run. However, frequent subsidies that some NGOs extend to livestock owners, through CAHWs, adversely distorts the market forces, destabilising the stakeholders' sustainability efforts. There should be a policy that any future emergency interventions involving subsidised drugs should be channelled through the local PAs. A provision allowing the PAs to extend services to livestock owners on credit, political interference not withstanding, should be established.

Base potentials for the CAHWs business Units' growth

Considering the level at which the CAHWs in Wajir District are now operating, it is not yet opportune to assess their growth potentials but all efforts should be directed towards instilling the required business acumen amongst the CAHWs.

The internal environment

The internal environment of the CAHWs business unit is still weak and needs to be improved. The various organisations should direct efforts at developing transaction systems between CAHWs and LPAs and also between CAHWs and livestock owners. This will involve developing communication, stock control and business recording systems, amongst other internal factors.

Socio-cultural factors

Most communities in the ASAL have closely-knit family systems that are strongly influenced by socio-cultural factors. In Wajir District, for example, the need to support other members of the community is always a priority with little regard to individual needs. CAHWs are thus expected to extend their services to meet the needs of the community. With the current dynamic environment influenced by education, the community now finds itself unable to sustain these socio-cultural expectations. This requires that time and resources are devoted to create awareness among community members on the changing role of the CAHWs.

3.2.1.2 DPA/Local PA Level

The table below gives a summary analysis of the DPA and the local PA level on the requirements in the Durham Model:

Table 4: Assessment of the Effectiveness of DPA/LPA Based on the Durham Model

Model elements	Level	Strong	Weak
A. BASES FOR STARTUP AND SURVIVAL			
Motivation and commitment	DPA-PA	-	√
Ability and experience	DPA-PA	-	√
Idea base	DPA-PA	√	-
Resources	DPA-PA	√	-
B. BASES FOR GROWTH			
1. Leadership	DPA-PA	√	-
2. Production/service delivery base	DPA-PA	-	√
3. Marketing base	DPA-PA	-	√
4. Customer base	DPA-PA	√	
5. Management control base	DPA-PA	-	√
6. Procurement base	DPA-PA	-	√
C. ENVIRONMENT			
1. Internal			
➢ General management	DPA-PA	-	√
➢ Communication	DPA-PA	-	√
2. External environment			
➢ Institutional framework	DPA-PA	√	-
➢ Policy and legal framework	DPA-PA	-	√
➢ Competition	DPA-PA	-	√
➢ Infrastructure	DPA-PA	-	√
➢ Socio-cultural factors	DPA-PA	√	-
➢ Technological factors	DPA-PA	-	√
D. OPPORTUNITIES FOR DIVERSIFICATION	DPA-PA	-	√
		√	-

Bases for start-up and survival

As the table indicates, the DPA and PAs have a weak start-up and survival base especially in motivation, commitment, ability and experience despite the support they have received from Oxfam-GB and other donors. Out of the 26 DPA members, only 10 are active. The PAs and DPAs have limited ability and experience in procuring drugs. This is evident from depletion of stocks of popular drugs from the PA and DPA inventories. Stock control is weak, stock cards missing, and drug re-order levels lacking. Transaction is based purely on trust. However, the DPA-PA structure represents a strong base for sustaining animal health services in pastoral areas. The stakeholders should devote resources and time in strengthening the DPA in the next four years. The DPA intends to recruit a veterinarian and a bookkeeper through support from Oxfam-GB and other agencies. Although the association has been active for only three years, it has achieved the following: -

- involved beneficiaries and livestock owners, through the PAs, in decision-making as a precursor to future sustainability of the animal health delivery in the district

- extended services to remote areas of the district through the PA, DPA and CAHW system enabling the district to achieve better control of disease outbreaks in camels

- diversified its activities to include the supply of spare parts for water pumps currently contributing to 67% of the total monthly turnover. The DPA expects to use profits accruing from the activity to strengthen the animal health delivery system through the trickle-down process

The weak experience base for PA and DPA became evident when VSF-Switzerland introduced subsidised drugs in the market. The management committees of the two associations could not react promptly to alleviate the problem. As a result, a large portion of drugs expired in the stores.

Bases for growth

Though the PA and DPA system presents a strong leadership and customer base, other bases for growth like service delivery, marketing, management control and drug procurement is weak. Supporting the PA and DPA to employ skilled officers will improve their operations and strengthen the bases. This objective will also provide an exit strategy for Oxfam-GB and other donor agencies.

3.2.2 The Animal Health Assistant (AHA) Model: Turkana District

This model functions at AHA and CAHW levels.

3.2.2.1 CAHW level

Unlike the Association Model in Wajir District, the commission for CAHWs in Turkana District under the AHA Model is in-built in the system to maintain motivation. The selection and requirement that the *adakar,* a committee charged with decision-making responsibility, contributes 40% of the cost of the drug kit ensures community and institutional support without individual commitment from the CAHWs. To ensure individual commitment of the CAHW, they should each contribute to the drug kit. Other base ingredients that should be improved are given below.

Ability and experience

In the absence of alternative animal health service, CAHWs are the best alternative. Livestock owners are satisfied with the services though the CAHWs need to improve their ability and widen their experience base through modular training.

Idea base

The demand for an efficient and sustainable animal health delivery system exists and the CAHWs present the best alternative. KVB and the Director of Veterinary Services are working to legalise the CAHW system.

Resource Base

The AHA and CAHW have a weak drug supply line. The single CAHW drug shop that the team visited was an individual initiative. To ensure that CAHWs access drugs easily, each *adakar* should own a drug shop. SNV and VSF-Belgium should identify a motivated, competent and

committed CAHW, through the modular training approach, to eventually run the shop. The CAHW should contribute Kshs. 6,000 as equity while his *adakar* contributes another Kshs. 6,000 amounting to Kshs. 12,000. SNV and VSF-Belgium should then provide a drug kit of up to Kshs. 30,000 being the inverse proportion of the equity contribution. Another three to five CAHWs for each *adakar* should then be trained and prepared to access drugs from this store. Their initial kit should be valued at Kshs. 12,000 with owner equity of Kshs. 2,400 and an *adakar* contribution of Kshs. 2,400 bringing the total contribution to Kshs. 4,800.

Pricing

A margin of 12% will be shared between the drug shop owner and the CAHWs providing clinical services. Alamycin 20% in 100mls pack, for example, costs Kshs. 360 when purchased from the AHA for the *adakar*-based drug shop. The selling price to the CAHW should be Kshs. 378 (5% margin). The CAHW will then sell the product to the livestock owner at Kshs. 403 thus maintaining a 12% margin. Livestock owners who wish to buy directly from the drug shop should pay Kshs. 403 to encourage them to buy drugs from the CAHWs.

Bases for growth

Currently, it is difficult to assess the variables for growth at the AHA and CAHW levels because data is missing. The team hopes that SNV and VSF-Belgium will refocus their programme activities to target small business management training. This will improve service delivery and management control systems such as budgeting and periodical variance analysis between the budgeted and actual figures. These business training packages will improve the internal environment while allowing for appropriate response to changes in the external environment. The *adakars* should be encouraged to participate and offer a strong institutional support to the CAHWs at the grassroots. SNV and VSF-Belgium expect to extend their projects for a further three years to continue supporting the animal health system. The two NGOs emphasise the following: -

- Systematic handing over of responsibilities to the AHA to wean them off by the end of 2003. SNV and VSF-Belgium can jointly consider an initial issuance of a drug kit guarantee arrangement between themselves, on the one hand, and Norbrook on the other. This would allow Norbrook to supply drugs directly to AHAs, maintaining a ceiling of Kshs. 200,000 with a 30-60 days credit period.

- For this system to work, subsidies and payment, in kind, to livestock owners should be discouraged. NGOs should buy drugs from the *adakar* stores to avoid clogging the system. With encouragement, livestock owners are willing to sell their animals through the existing livestock-selling yards and use the proceeds to purchase drugs. This method has been used successfully by the Kakuma Livestock Users Association Drug Store.

The team hopes that all NGOs in Turkana District will collaborate to strengthen the AHA model. The stakeholders should strive to revitalise the moribund Livestock Providers' Forum (LSP).

3.2.2.2 The Animal Health Assistant (AHA) Model: Marsabit District

From mid 1990s, GTZ, Farm-Africa, and most recently, CIFA/COOPI envisaged an animal health delivery system, whereby an AHA is supported at the district level; supervised by the government veterinary officer; and linked to the community-managed rural drug shops. Each drug shop would

then have a number of community-based animal health workers extending services to the pastoralists. Unfortunately, this system did not work as imagined. Below is the analysis of the weaknesses, based on the Durham Business Model, and suggestions on the way forward.

Base ingredients for start-up

It is apparent that the impact of the CAHWs has not been felt in the district. This brings to question the availability of base ingredients for start-up by the CAHWs, for example: -

- Were the CAHWs motivated and committed to the challenges?
- Were they provided with the relevant skills?
- Was the idea of using them as agents in the delivery system appropriate, bearing in mind that most pastoralists in the district are used to treating their own animals?

Answers to these questions were provided partly by GTZ and CIFA/COOPI.

CAHWs in the animal health delivery system are identified as a community-felt need but the selection is wanting. The community selected individuals from influential families but overlooked their commitment hence the high dropout rate. The NGOs have since revised the selection process, giving priority to age (18-40 years), stock ownership and willingness to work locally.

Other challenges in selecting the CAHWs are: -

- **The Social System:** Most communities in the district still strongly believe in the extended family system that demands a lot of voluntary service from the male.

- **Relief:** Marsabit District has been a major recipient of NGO and government relief services. This has created a high dependency syndrome that has further distorted the market forces adversely affecting the livestock drug market.

- **Group approach to providing services:** Most NGOs working in this district promote the group approach to issues. Although community support is critical to the success of any intervention, group activities do not necessarily allow the growth of individual initiative and drive that are pre-requisites to sustainability.

The following factors can be applied to improve the start-up base for community animal health workers as business units.

- ***Age:*** The age bracket for CAHWs should be between 18-40 years. In addition, they must own cattle and at least a beast of burden for transportation. This will indicate that the CAHW is taking up livestock farming as a lifelong career and also ensure that he/she is not footloose.

- ***Gender:*** NGOs should target men and women for training as CAHWs. The women should be prepared to own and manage rural drug shops as the men provide clinical services. NGOs prefer women in the ownership and management of rural drug shops for three main reasons.

    - Businesses managed by women tend to survive better in the market than those managed by men because women are more committed and better managers of the working capital.

- The social system among the communities in Marsabit does not demand a lot from women compared to men. The women can then plough-back profits into the business and also reduce credit sales since the community abhors taking credit from women.

- In the pastoral communities, women care for calves and sick animals thus the management of rural drug shops would appropriately fit within their roles.

- ***Equity Contribution:*** To ensure that CAHWs are motivated and committed, owner-contribution in cash and kind should be mandatory. CAHWs ear-marked to manage drug shops should construct the drug store as part of their contribution. Their kick-start drug kit should be pegged at Kshs. 20,000. Their counterparts providing clinical services should contribute 40% of the drug kit value but not exceeding Kshs. 10,000 because the prevailing average gross profit margin is 24% when drugs are sold directly to the pastoralists. To maintain this spread, the CAHWs managing drug shops should have two price levels: one for direct sales to the pastoralists (at 24% margin) and the other to the CAHWs (at 12% margin). If the CAHWs apply a 12% margin on sales to pastoralists, given the monthly overhead cost of Kshs. 4,000 for the shop owner and Kshs. 2,000 for the clinical CAHWs, the break-even sales volume for the drug shop is Kshs. 33,000, while that of the CAHWs practising clinical treatment becomes Ksh.16, 600. If we assume that each of these CAHWs will procure drugs twice a month, then a kick-start kit of Kshs. 20,000 and Kshs. 10,000, respectively, will provide them with bare-bone start-up drug kit level.

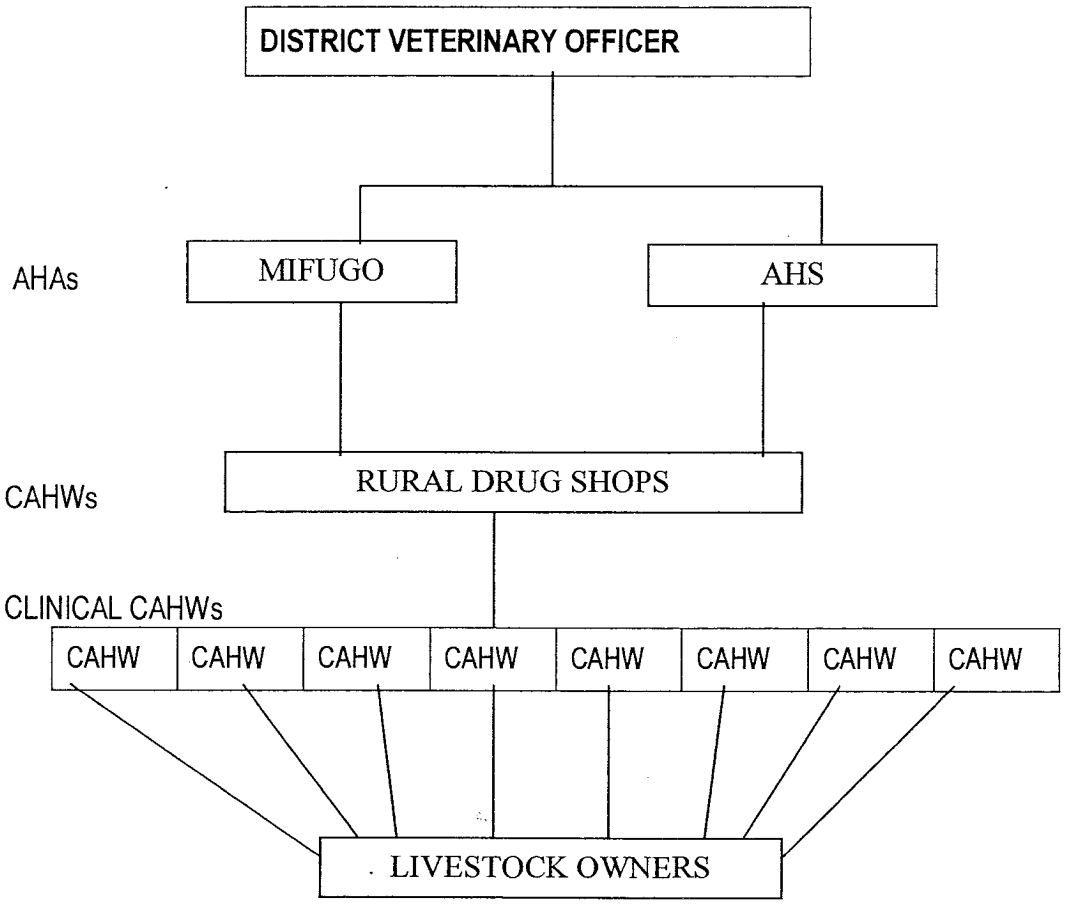
- ***Community Support:*** The community should be involved, as much as possible, in selecting CAHWs. The members should know, right from the onset, that the services will be offered as business units and not as conduits for relief aid.

- ***Emergencies:*** NGOs should offer vouchers or coupons to livestock owners during emergencies when relief is necessary. The people would present these coupons to CAHWs in exchange for drugs. The CAHWs, in turn, would present the coupons to the relevant NGOs for payment thus reducing the negative impact of drug subsidies while strengthening the structures and ensuring that the animal health system is sustainable.

- ***Barter trade:*** Livestock trading is big business in ASAL, and livestock traders are some of the wealthiest people in the region. It is in everyone's interest that the ASAL communities are encouraged to enter into a fully-fledged cash economy. Each pastoralist should be encouraged to sell livestock to the traders and use the proceeds to buy drugs instead of leaving the animals with CAHWs. If CAHWs accepted livestock in exchange for drugs, the system would soon stagnate because of the additional responsibility of disposing of the livestock. The Kakuma Livestock Users Association in Turkana District has successfully used this approach.

The consulting team recommend that the model for Marsabit be re-instituted as in diagram I on the next page:

Diagram I: Recommended model – Marsabit District



3.2.3 The Private Veterinarian Model

The animal health delivery system that Farm-Africa supports in Meru Central and Meru South districts is an excellent representation of the Private Veterinarian Model. The team noted the following points on applying the Durham Business Model.

Motivation and commitment

The AHAs, CAHWs and veterinarians are fairly motivated and committed. The current profit margins realised across the board also help enhance these people's personal drive.

Ability and experience

Although the AHA and private veterinarians have adequate skills, the experience base of CAHWs is grossly inadequate, especially in Meru District where skilled manpower is abundant. Further, the participating CAHWs are not trained to administer injectable drugs thus limiting the scope of their clinical work. Unemployed AHAs and veterinarians, and livestock owners are aware of these shortcomings thus threatening the survival of the CAHWs and rendering this model ineffective.

The idea base

There is demand for the services of AHAs and private veterinarians in the drier parts of Meru District. The idea of the animal health delivery system is right and there is need for these services through the recommended model. However, the target clientele may not be attractive to a veterinarian. It is not surprising that the veterinarians are concentrating on the high potential areas and diversifying into artificial insemination without paying attention to the needs and requirements of the AHAs and CAHWs in the target areas.

The team hopes that the recently established Meru Animal Health Workers Group (MAHWG) will help in refocusing the veterinarians towards the needs of the AHAs and CAHWs in the system, and eventually improve the drug supply line in the arid areas of Meru Central and Meru South districts. Efforts of Farm-Africa in creating this model are commendable. The NGO should take time to work on the necessary institutional linkages while emphasising courses and business training for veterinarians.

Resource base

The Meru Private Veterinary Model presents valuable lessons, especially on resource use. The collateral system that requires beneficiaries to pledge sufficient security, including third party guarantees, and to contribute substantial owner-equity in the business is a recipe for sustainability. The loan sizes for AHAs, CAHWs and veterinarians are modest and bare-bone enabling beneficiaries to pay back in time.

Growth factors

There is every indication that the model has potential for growth. The AHAs, CAHWs and veterinarians see the business units as their lifelines, and they strive to conduct transactons under a strong leadership base. A Thimangiri-based AHA in Meru District has registered tremendous growth in two years employing a younger sister, a recent AHA graduate, as his assistant. AHAs and veterinarians who use motorbikes have reduced their operational costs becoming more efficient.

The external environment

Farm-Africa has provided a strong institutional support to this model. It has restricted its operations to providing technical advice and loan guarantee. The day-to-day management of the business units is in the hands of the stakeholders.

3.2.4 The *Duka* Model: Kajiado District

The availability of profit-making, privately owned drug shops in Kajiado District is an indicator that the ingredients for start-up and survival are available. However, the institutional support for these individual initiatives is lacking. This is evident from the absence of serious organisations in the district addressing the issue.

4.0 SWOT ANALYSIS OF EACH SYSTEM AND RECOMMENDED MEASURES FOR EFFECTIVE SERVICE DELIVERY

This section examines the strengths, weaknesses, opportunities and threats to each model, giving recommendations for improving service delivery.

4.1. Strengths

4.1.1. The Association Model

- The DPA, PAs and *daryelles* are CAHWs structures that have link with institutions such as government departments, pastoral steering committees and others. Institutional support and strong links sustains these community structures.

- Membership benefits such as lower drug prices, access to group assistance, among others has enhanced membership drive without extra effort from the association. Increased membership means increased subscription fee collection.

- The performance of the animal health component of DPA and PAs depends on the use of veterinary drugs by *daryelles* and livestock keepers and also on the premise that there are no other suppliers of drugs.

- The private veterinarians apply higher profit margins compared to the DPA. The average profit margin for drugs, for instance, is 14% for the DPA while the Wajir Veterinary Center and Clinic maintains a 26% profit margin. This gives the DPA a marketing edge.

- The prevailing overhead costs are lower at the association level compared to the three private drugs shops visited though the break-even sales volumes for the association and private shops are lower than their prevailing monthly average sales volume. This is an indicator that the DPA and the Wajir Veterinary Center and Clinic are operating at profitable margins.

- Although external support is useful and desirable, the people must change from the culture of dependence to that of "development for the community by the community." The PA and DPA are channels of bringing the people together to discuss problems and find solutions.

4.1.2. Animal Health Assistants (AHA) Model: Turkana and Marsabit districts

- In Turkana District, the community-based animal health service delivery system handled up to Kshs. 31,000 worth of drugs, monthly, for each CAHW during periods of drug subsidy. This demonstrates the immense capacity and potential inherent in the system.

- The presence of SNV and VSF-Belgium in the district is an advantage because the animal health delivery system could take the opportunity to improve because 60% of small businesses fail within the first six months of operation except where there is strong institutional support. SNV and VSF-Belgium should allow the AHAs to be independent. This move will enable the two NGOs to offer the required institutional support to the AHAs for a minimum of two years after the inception.

- In Marsabit District the AHA drug stores, Mifugo and Animal Health Services, are running successfully. The animal health technicians who own these drug stores offer limited clinical service delivery within the town and the surrounding areas. The two shops have developed a sound drug procurement strategy and are sourcing drugs from Meru Town, approximately 300km away, efficiently.

4.1.3 The Private Veterinarian Model

The Private Veterinarian Model is well established in Meru South and Meru Central districts though the two are not representative of the ASAL. The existing policy and legal framework mainly supports the veterinarian-supervised delivery system but the ASAL has not been attractive to veterinarians. Government veterinarians are working closely with the participating NGOs. Save for their current budgetary constraints, they are willing to fill the void. The proposed veterinarian managed drug shop in Makutano in West Pokot District may help improve the veterinary drug supply to remote areas like Alale. If the proposed business is located in Makutano, the veterinarian will have an added advantage of diversifying by offering clinical and artificial insemination services.

4.1.4 The *Duka* Model

Most drug shops in Kajiado and West Pokot districts are making profits hence higher chances of surviving. However, the stakeholders have made little attempt to link these drug shops to the livestock owners through a formal institutional framework. Shop owners have made attempts to extend their services to livestock owners, living in remote places, by taking merchandise to them on market days. The farmers have become accustomed to this trend, adversely affecting the financial performance of the drug shops located in the interior, since livestock owners come to purchase drugs from the open-air market that offers drugs at cheaper rates. Open-air drug peddlers in the remote areas are also major drug shop owners in the townships. Since their major sales strategy is based on volume, they can afford to lower their margins and cut off the rural-based retailers. Livestock owners, on the other hand, purchase drugs in volumes on market days, by-passing the rural-based shop owners. As a result, many rural-based drug shops have closed down.

The immediate intervention, by NGOs and the government, to correct the above anomaly should aim at achieving the following suggested outputs:-

- identify the key drug shop owners in towns and potential rural herders willing to set up drug shops, and sensitise them on the need to collaborate
- develop links that is acceptable to both parties
- train the community-based animal health workers and selected drug shop owners
- encourage the shop attendants to participate
- develop, test and implement an appropriate business training program for the CAHWs, shop attendants and shop owners

- plan and carry out farmer-training field days covering basic topics on the most common diseases and their identification, relevant drug types and their dosage, the effects of under dosage and over dosage, and the need to support the drug shop linkages

- enforce, through the legal system, the drug supply regulatory laws to discourage and eventually eliminate open-air drug peddling

4.2 WEAKNESSES

4.2.1 The Association Model

The concept of voluntary service in the animal health service delivery under the Association Model is good but has shortcomings in the long run. The *daryelles* are dissatisfied and have complained of fatigue. They need incentives to keep them on "track." The PAs must devise ways of keeping the *daryelles* in business otherwise they will fall by the way side. These people can get commission or bonus depending on their performance or they should be allowed to make small profit from drug dispensation. In nearly all the PA areas that the team visited, respondents cited the small *daryelle* population and ignorance as some of the critical areas where the government needs to intervene. The PAs, with advice from the DVO's office, should conduct a census to determine the number of *daryelles* they need to work with then seek support for training programmes if the number is below what is required. The DPA can co-ordinate this exercise and also take a lead in seeking support for training programmes on behalf of PAs.

The training programme should incorporate a refresher component for practicing *daryelles*. Once trained, they will require frequent advice and technical monitoring. The monitoring will identify weaknesses that can be addressed during refresher courses. The current monitoring and advisory system is weak and lacks proper co-ordination. The DVO, DPA, PAs and implementing organisations need to agree on methods of setting up monitoring and advisory systems and resources for this purpose. The *daryelles* are not recognised or licensed by the government to practice and they fear harassment by police and other authorities if found in possession of large quantities of drugs. The relevant authorities are already looking into this matter and, hopefully, the effort will come to bear.

Since the *daryelles* are the technical and operational arms of PAs, there is need to strengthen linkages between them and the management committee of the association. The PA management committees must devise ways of monitoring the activities of *daryelles* while the latter should report, regularly, to the PA management.

In Marsabit the picture is bleaker; the details are discussed below.

- The number of CAHWs that CIFA and Farm-Africa trained were 124 (Farm-Africa – 89, CIFA – 35). The active ones are 75, giving a drop out rate of 39.5% (49 CAHWs being non-active). The four women CAHWs that Farm-Africa trained are among the active ones and have established their own drug stores. Based on this experience, the 35 CAHWs that CIFA trained include 18 women.

- The Pastoral Development Programme of Farm-Africa assisted in setting up seven drug stores under the management of groups of CAHWs but only one functions fully while another one operates partially. The other stores have collapsed. Similarly, community managed drugs

stores such as the Manyatta Jillo Drug Store that the Goro Jilla Livestock Self Help Group operated have not been successful although they benefited from free drug supplies donated under the El Nino Rehabilitation Programme. These drug stores have failed because of mismanagement, lack of trust and lack of proper monitoring mechanisms.

- Drug stores, such as Mifugo and Animal Health Services of Marsarbit Town, set up with the assistance of some NGOs and managed or owned by animal health technicians are functioning. The animal health technicians who own these stores are also involved in limited clinical service in the town and the surrounding areas. They source drugs from Meru Town.

- CIFA intends to assist CAHWS to set up and manage group drug stores at Dukana and Kalacha. The move, though well intended and meriting, must consider lessons learnt from similar previous ones. The management of drugs stores by groups often lack personal or individual commitment and initiative. Management problems and mistrust riddle these ventures.

- Further, CIFA has made a provision in their strategic plan to support an AHA in setting up a drug store linking him with CAHWs. The CAHW will provide the necessary drug outlet as the AHA provides some back-up service to CAHWs. However, the AHA has to link up with an assured drugs supply line or system. It is appropriate to link already existing AHA shops with CAHWs before making new attempts along the same line.

4.2.2 The Animal Health Assistant (AHA) Model

The AHA models exhibited the following weaknesses: -

- Direct employment of AHAs has not provided the environment required for them to become independent businessmen.

- The drug procurement process and the pricing system are in the hands of SNV and VSF-Belgium project management. This has limited the ability of the AHAs to gain the necessary procurement and pricing experience. SNV and VSF-Belgium must start delegating some of the responsibilities to the AHAs within two years when the AHAs will be independent.

- In Marsabit the two AHA shops have shown signs of success but the drug turnover is too low because of weak institutional linkage with the CAHWs and, by extension, the livestock owners. The participating NGOs should aim at strengthening the institutional linkages in Turkana and Marsabit districts as a primary objective in the next two years.

4.2.3 The Private Veterinarian Model

The survival of this model in a pure ASAL environment is still questionable due to the following reasons: -

- Environmental conditions in ASAL are less attractive to veterinarians

- High animal health service delivery costs due to poor infrastructure, frequent conflicts, low margins and low sales volumes due to a weak monetary economy do not provide attractive returns to veterinarians' investment

- Existence of a very limited pool of indigenous veterinarians to take up the challenge

- Limited options for diversification to supplement the low income from the animal health services delivery

4.2.4. The *Duka* Model

The *duka* model seems to operate more efficiently than other systems. As an initiative of an individual decision-making the model is faster and responds to farmers' needs promptly but shows the following weaknesses.

- The *dukas* lack legal recognition making supervision difficult

- They could serve as black markets and a conduit for selling counterfeit drugs

- Most *duka* attendants lack technical training and cannot give quality advice to livestock owners

4.3 OPPORTUNITIES AND THREATS

Following are the opportunities and threats for the animal health service delivery in pastoral areas.

4.3.1 Opportunities

Opportunities under the *duka* model include the following: -

- Animal health needs are a priority in all the ASAL districts making the demand for veterinary drugs and animal health services delivery high.

- CAHWs are currently the most appropriate animal health service delivery agents in ASAL. This business niche, if nurtured and commercialised, will create self-employment for the youth and women. Women CAHWs could be encouraged to manage rural based drug shops while the men provide clinical services enhancing the incomes of the women, through a trickle down process, and benefiting the ASAL families.

- Currently, vaccination is a function of the veterinary department and occasionally involving the community-based delivery systems. Issuing of sanitary mandates as a government policy, if encouraged, is likely to improve the financial base of the community-based delivery systems, ensuring sustainability.

- The presence of a large number of NGOs is an advantage providing a strong institutional support for CAHW delivery system.

4.3.2 Threats

- Poor infrastructure, conflicts and the nomadic lifestyles of the ASAL communities make the delivery of animal health services difficult and expensive. This threatens the survival of delivery systems as business units.

- The existing policy and legal framework envisages a veterinarian supervised service delivery system yet the veterinarian finds the ASAL environment unattractive. The presence of few government veterinarians could have filled the void but their operations are hampered by the current budgetary constraints.

- Frequent drought and famine calling for periodical relief intervention in subsidised veterinary drugs impact negatively on the commercialisation efforts of the community-based delivery systems.

5.0 THE ROLE OF DISTRICT VETERINARY AUTHORITIES

Within the animal health policy framework, which in essence appreciates the roles of various animal health service providers, the district veterinary authorities have a responsibility to: -

- ensure that animal health services are available in the district
- provide overall leadership including co-ordination, supervision, monitoring and evaluation of animal health services
- provide policy direction and regulatory mechanisms to ensure delivery of quality animal health services

Thus the responsibility of the district veterinary authorities covers government and private sector animal health services. The participation of the district veterinary authorities in setting up and developing these systems is crucial in ensuring that the standards of the services offered are technically acceptable.

5.1. Specific Roles

The district veterinary authorities play a major role in setting up and developing the delivery of animal health services by the private sector in pastoral areas.

The responsibilities include:

- training CAHWs, including conducting refresher courses
- advising and guiding all players on policy issues
- monitoring the performance of CAHWs in collaboration with other players, and when necessary, advising on required corrective action
- spearheading the creation of contact or interactive forums for exchange of information
- advising on methods of involving CAHWs in sanitary mandate activities
- advising on ways of involving CAHWs in disease surveillance activities

In collaboration with other key players, the district authorities perform the following tasks:-

- setting up structures to ensure that the CAHWS use only quality drugs
- ensuring that fake and inferior drugs are eliminated
- ensuring, through existing structures and control systems, that veterinary drugs are handled and used properly

5.2. Capacity of the District Veterinary Officers

The district veterinary authorities lack the capacity to carry out the stipulated roles as indicated below.

- The district veterinary officers are only partially involved in the community-based animal health service delivery systems. After training the CAHWs their involvement is minimal and their commitment is erratic and wanting.

- The officers lack resources to supervise or monitor activities of CAHWs. They can only participate when assisted by NGOs

- The district veterinary authorities do not have adequate legal mandate to deal with misuse and abuse of veterinary drugs.

5.3 Recommendations

In view of the above limitations the consulting team recommends that: -

- Community-based animal health service delivery system incorporates the district veterinary authorities as a close partner, from the onset

- Though the role of the district authorities is facilitating the health delivery systems, a component of the district veterinary authorities may be built in. On the other hand, the district veterinary authorities must set aside part of their meagre resources for the purpose. They also need to highlight their supervisory responsibility in this direction, when requesting for funds from the head office.

- Training programme for CAHWs must also incorporate training of trainers focusing on the participating district veterinary authorities.

- The KVB, DVS and other key players need to push for an appropriate legal framework that will allow the District Veterinary Officer to deal with abuse and misuse.

The roles and responsibilities of district veterinary authorities in establishing and developing community-based animal health service delivery systems need to be included in their schedule of duties.

6.0 WAY FORWARD

The consultants recognise livestock owners as the ultimate recipients of the services delivered through the community-based animal health workers system. Most livestock owners welcome any interventions that would result in improved service delivery systems. Areas that require immediate attention if the delivery of the animal health services is to improve include: -

- The drug supply line
- The motivation and commitment of CAHWs
- The institutional linkage and support framework

The models below suggest ways of improving each system. On the basis of the projected cash budgets, the net present values (NPV) and the internal rate of returns (IRR) have been calculated to establish the relative profitability of the model.

6.1 The Association Model

The most promising Association Model is that for Wajir District. The following points are important when discussing this model.

- **Technical staff:** A veterinarian and a bookkeeper should be employed to improve the management of the model. The expected results include:-
    - Thirty percent increase in monthly sales turnover. In Wajir, for example, high season sales turnover will increase from the current Kshs. 295,300 to Kshs. 385,890 while the low season sales could increase to Kshs. 354, 360.
    - The current receipts from water activity will be maintained at Kshs. 680,000 to enhance the income of the DPA.
- **The annual subscription fee:** If introduced at the PA and livestock owner level, will augment the current membership fee. The amounts to be paid can be agreed upon at each level. However, based on the Mansa PA experience, each member or livestock owner should pay an annual subscription fee of Kshs. 200 and Kshs. 10,000 annual subscription fee for the DPA. This will improve income for the associations, consequently improving service delivery. The DPA and LPA will thus make a deliberate effort to recruit more members to strengthen their tasks. The livestock owner will demand better services on this account. Assuming that the entire 27 member LPAs in Wajir remit Kshs. 10,000 each, in subscription to the DPA by February 2002, the DPA and LPA will have raised Kshs. 270,000.
- NGOs and potential partners should donate a motor vehicle, as logistical support to the DPA, for distributing drugs and water spares to the LPA. The grant support for the projected cash budget is valued at Kshs. 2,000,000. Oxfam-GB could spearhead this venture.
- The DPA should assume the responsibility of meeting all recurrent expenditure and reduce dependency on donor support. These structures have been operating as conduits for donor funds. The financial position of Wajir DPA is strong enough to meet the recurrent expenses.

Currently, the DPA is keeping Kshs. 687,166 in cash in three bank accounts, namely, Kulmiye account (Kshs. 234,164), water spares current account (Kshs. 46,202) and drug sales account (Kshs. 306,800). Besides, the PAs owe the DPA Kshs. 1,163,181. The consulting team hopes that 50% of the amount (Kshs. 581,590) will be fully repaid by February 2002. The current stock value by July 2001 (drugs and water spare parts) was estimated at Kshs. 5 million. These liquid assets should form the DPA's contribution to the business to finance the following:-

- Drug and water spares procurement (Kshs. 777,300) in month one
- Salaries (veterinarian -Kshs. 25,000, accounts clerk- Kshs. 10,000 and two store-keepers at Kshs. 5,000 each)
- Vehicle running costs (Kshs. 70,000 per month)

The resulting projected cash budget is presented in Table 5 while the net present value (NPV) and the internal rate of return (IRR) are presented in Table 6.

IThe Wajir DPA model is profitable but it may not be possible to replicate in other districts of the ASAL because of the length of time and the amount of resources required to build up the system.

Table 5: The Projected Cash Budget Association Model (Kshs.)

	FEB 2002	MAR	APRIL	MAY	JUNE	JULY	AUG	SEP	OCT.	NOV.	DEC	JAN 2003
Months	1	2	3	4	5	6	7	8	9	10	11	12
CASH IN-FLOWS: Grant	2,000,000											
DPA Contribution	6,268,756											
SALES: Drugs	295,300	295,300	295,300	383,890	383,890	383,890	354,360	354,360	354,360	425,232	425,232	425,232
Water spares	680,800	680,800	680,800	680,800	680,800	680,800	680,800	680,800	680,800	680,800	680,800	680,800
Annual subscription	260,000	-	-	-	-	-	-	-	-	-	-	-
Total cash in-flow	**9,504,856**	**976,100**	**976,100**	**1,064,690**	**1,064,690**	**1064690**	**1,035,160**	**1,035,160**	**1,035,160**	**1,106,032**	**110,632**	**1,106,032**
OUT-FLOWS Depreciation of equipment	13,000	13,000	13,000	13,000	13,000	13,000	13,000	13,000	13,000	13,000	13,000	13,000
Vehicle	2,000,000	-	-	-	-	-	-	-	-	-	-	-
Drug purchases	255,800	255,800	255,800	330,145	330,145	330,145	304,750	304,750	304,750	365,700	365,700	365,700
Water spare purchases	521,500	521,500	521,500	521,500	521,500	521,500	521,500	521,500	521,500	521,500	521,500	521,500
Salaries	45,000	45,000	45,000	45,000	45,000	45,000	45,000	45,000	45,000	45,000	45,000	45,000
Mgt. Committee sitting allowances	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,,000	3,000	3,000	3,000	3,000
Vehicle running costs	70,000	70,000	70,000	70,000	70,000	70,000	70,000	70,000	70,000	70,000	70,000	70,000
Telephone	10,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Computer	80,000	-	-	-	-	-	-	-	-	-	-	-
Total out-flow	**2,998,300**	**910,300**	**910,300**	**984,645**	**984,645**	**984,645**	**959,250**	**959,250**	**959,250**	**1,020,200**	**1,020,200**	**1,020,200**
Net cash-flow	6,506,556	65,800	65,800	80,045	80,045	80,045	75,910	75,910	75,910	85,832	85,832	85,832
Withdrawals	-	-	-	16,000	16,000	16,000	15,100	15,100	15,100	17,100	17,100	17,100
Opening balance	-	6,506,556	6,572,356	6,638,156	6,702,201	6,766,246	6,830,291	6,891,101	6,951,911	7,012,721	7,081,453	7,150,185
Closing balance	6,506,556	6,572,356	6,638,156	6,702,201	6,766,246	6,830,291	6,891,101	6,951,911	7,012,721	7,081,453	7,150,185	7,218,917

Table 6: The Net Present Value (Kshs.): DPA (Association Model)

Year	Initial cash outlay	Projected net cash-flow @5%	PV factor @ 10%	PV factor @ 12%	PV of Projected Net cash flows	
					10%	12%
0	-9,504,856	-	1	1	-9,504,856	-9,504,856
1		73,63,517	0.909	0.893	6,693,437	6,575,621
2		9,427,793	0.826	0.797	778,747	751,406
3		989,933	0.751	0.712	743,440	704,832
4		1,039,431	0.683	0.636	709,931	661,078
5		1,091,401	0.621	0.567	677,760	618,824
		Net present value =			98,459	-193,095

Initial cash outlay: Kshs. 9, 504,856 (based on the projected cash budget)
Projected period: 5 years
Expected growth rate: 5% per annum
Discount rates: 10% and 12%

The Internal Rate of Return (the discounted cash-flow yield)

$$10\% + \left\{ \frac{98459}{98459 + 193095} \times (12\%-10\%) \right\} = 10.7\% = 11\%$$

6.2 The Veterinarian Model

Three approaches are presented for this model. In the first approach, the veterinarian engages in drug supply and participates in additional business opportunities in the area, such as livestock trade (Table 7). In the second approach, the veterinarian is engaged purely in the supply of drugs without the livestock trade. The third approach also involves the sale of drugs, primarily, but employs the *duka* model strategy emphasising the volume sales with lower profit margins (Table 8)

All these approaches are based on Dr. Benson Ririmpoi's proposed pastoral veterinary systems business to be located in West Pokot District. However, the following assumptions have been made:

- **Drug sales:** It is assumed that four AHAs will be set up in the following areas:-
  - Kacheliba-Alale
  - Chepareria-Ortum
  - Sigor
  - Kapenguria

- Each AHA will operate on a monthly turnover of over Kshs. 100,000, minimum.

- **Stock trade:** To supplement the income from drug trade, and with the assistance of the four AHAs, the veterinarian will purchase ten shoats per week, at Kshs. 600 each, then sell the animals at Kapenguria Town at Kshs. 1,200 each. This applies only to the first approach.

- **Owner contribution:** It is assumed that in addition to providing owner equity of Kshs. 100,000, the veterinarian will also undertake to renovate the business premises at Kshs. 20,000, as part of his contribution.

- **Loan size (Kshs. 650,000):** The Veterinarian Model assumes that start-up funds will be obtained from KVAPS to be used as follows:-

  - Toyota pick-up Kshs. 450,000
  - Drugs Kshs. 300,000
  - Personal computer Kshs. 60,000
  - One refrigerator Kshs. 24,000
  - Telephone installation Kshs. 13,000

  KVAPS should not have difficulties processing this loan application because the targeted practice location in Makutano is in the high potential areas.

- The model further assumes that the veterinarian will have a working linkage with drug suppliers like Norbrook Ltd. The firm is willing to supply drugs to the veterinarian as a consignment worth Kshs. 100,000 giving him drugs valued at Kshs. 400,000 at start-up.

- **Loan repayment:** This is based on the current commercial bank rate of 24%, composed of a base rate of 17% and 7% points margin.

- **Drawings:** The owner-manager will be allowed a very modest salary in the cash flow. To supplement this income, he will draw funds for personal use at the rate of 15% of the net cash flow after the fourth month. No drawings will be made during periods of negative net cash flow. This will ensure that the owner-manager does not adversely overdraw from the working capital.

The net present values and the internal rate of returns of the three approaches are presented in tables 9, 10 and 11.

Table 7: Projected Cash Budget (Kshs.): Private Veterinarian Model-2002

	Jan 2002											Dec2002	
onths	1	2	3	4	5	6	7	8	9	10	11	12	Total
ASH IN-FLOWS													
rug sales	60,000	138,000	180,000	312,000	280,000	340,000	415,000	490,000	540,000	610,000	735,000	825,000	4,825,000
tock trade	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	576,000
wner contribution	120,000	-	-	-	-	-	-	-	-	-	-	-	
oan	650,000	-	-	-	-	-	-	-	-	-	-	-	
otal cash in-flow	878,000	186,000	228,000	260,000	328,000	388,000	463,000	538,000	588,000	658,000	783,000	873,000	5,401,000
UT-FLOW													
VD vehicle	450,000	-	-	-	-	-	-	-	-	-	-	-	
old chain (2)	24,000	-	-	-	-	-	-	-	-	-	-	-	
hone installation	13,000	-	-	-	-	-	-	-	-	-	-	-	
ersonal computer	60,000	-	-	-	-	-	-	-	-	-	-	-	
hop rent	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	
rade license	9,120												
ostage and telephone	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	
rugs	180,000	121,440	158,400	186,560	246,400	299,200	365,200	431,200	475,200	536,800	646,800	726,000	
lectricity	400	400	400	400	400	400	400	400	400	400	400	400	
ffice stationery	2,500	1,500	1,400	1,200	1,000	1,000	800	900	950	450	350	350	
vestock purchase	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	
ransport	20,000	15,000	15,000	9,000	8,500	10,000	12,000	7,500	8,000	13,000	12,000	9,500	
/ages	12,800	12,800	12,800	12,800	12,800	12,800	12,800	12,800	12,800	12,800	12,800	12,800	
oan repayment	17,100	17,100	17,100	17,100	17,100	17,100	17,100	17,100	17,100	17,100	17,100	17,100	
otal out-flows	820,020	199,340	23,6200	258,160	317,300	371,600	439,400	501,000	545,550	611,650	720,550	797,250	
et cash-flow	57,980	(13,340)	(8,200)	1,840	10,700	16,400	23,600	37,000	42,450	46,350	62,450	75,750	352,980
rawings (15%)	-	-	-	276	1,605	2,460	3,540	5,550	6,368	6,953	9,368	11,363	
pening balance	-	57,980	4,4640	36,440	38,004	47,099	61,039	81,099	112,549	148,631	188,028	241,110	
losing balance	57,980	4,640	3,6440	38,004	47,099	61,039	81,099	112,549	148,631	188,028	241,110	305,497	

Table 8: Projected Cash Budget (Kshs.): Private Veterinarian Model

Months	1	2	3	4	5	6	7	8	9	10	11	12
CASH IN-FLOWS												
Sales	340,000	610,000	735,000	92,500	925,000	925,000	925,000	925000	925,000	925,000	925,000	925,000
Owner equity	120,000	-	-	-	-	-	-	-	-	-	-	-
Bank loan	650,000	-	-	-	-	-	-	-	-	-	-	-
Total cash in-flow	1,110,000	610,000	735,000	925,000	925,000	925,000	925,000	925000	925,000	925,000	925,000	925,000
Transport	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24000	24,000	24,000	24,000	24,000
Equipment	24,000	-	-	-	-	-	-	-	-	-	-	-
Rent	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5000	5,000	5,000	5,000	5,000
Purchases	400,000	536,800	646,800	814,000	814,000	814,000	814,000	814000	814,000	814,000	814,000	814,000
Wages	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22500	22,500	22,500	22,500	22,500
Licenses Postage and telephone	11,100	21,00	2,100	2,100	2,100	2,100	2,100	2100	2,100	2,100	2,100	2,100
Office stationery, electricity	4,400	400	3,400	400	3,400	400	400	3400	400	400	3,400	400
Loan repayment	17,100	17,100	17,100	17,100	17,100	17,100	17,100	17100	17,100	17,100	17,100	17,100
Total out-flows	1,031,100	607,900	724,900	885,100	888,100	885,100	885,100	888100	885,100	885,100	888,100	885,100
Net cash-flow	78,900	2,100	10,100	39,900	36,900	39,900	39,900	36900	39,900	39,900	36,900	39,900
Personal Drawings (15%)	-	-	-	-	5,535	5,985	5,985	5535	5,985	5,985	5,535	5,985
Opening balance	-	78,900	81,000	91,100	131,000	162,365	196,280	230195	261,560	295,475	329,390	360,755
Closing balance	78,900	81,000	91,100	131,000	162,365	196,280	230,195	261560	295,475	329,390	360,755	394,670

Table 9: The Net Present Value (Kshs.)

Year	Initial cash outlay	Projected net cashflow @5%	PV factor @ 36%	PV factor @ 40%	PV of Projected Net cash flows	
					36%	40%
0	-770,000	-	1	1	-770,000	-770,000
1		352,980	0.735	0.714	259,440	252,028
2		370,629	0.541	0.510	200,510	189,021
3		389,160	0.398	0.364	154,886	141,654
4		408,618	0.292	0.260	119,316	106,241
5		429,049	0.215	0.186	92,246	79,803
		Net present value =			+56,398	-1,253

Initial cash outlay: Kshs. 770,000 (i.e. Kshs. 120,000 owner contribution and Kshs. 650,000 loan).
Project period: 5 years
Expected growth rate 5% per annum
Discount rate: 36% and 40%

From the above calculations, the internal rate of return (IRR)

$$= 36\% + \left\{ \frac{56398}{(56398 + 1253)} \times (40\%-36\%) \right\} \qquad = 39.91\%$$

The high internal rate of return is mainly due to the lucrative shoat business. Assuming that the stock trade does not take off and the veterinarian relies purely on drug sales then the net present values above will change as presented below.

Table 10: The Net Present Value (Kshs.): Private Veterinarian
(excluding the stock trade activity)

Year	Initial cash outlay	Projected net cash-flow @5%	PV factor @ 2%	PV of projected net cash-flow discount @ 2%
0	-770,000	-	1	-770,000
1		64,980	0.980	63,680
2		68,229	0.961	65,568
3		71,640	0.942	67,485
4		75,222	0.924	69,505
5		78,984	0.906	71,560
		Net present value =		-432,202

Initial cash outlay: Kshs. 770,000
Projected period: 5 years
Expected growth rate: 5% p.a.
Discount rate: 2%

The negative net present value at 2% implies that the IRR is below 2%.

Table 11: The Net Present Value (Kshs.): Private Veterinarian/*Duka* Model Strategy

Year	Initial cash outlay	Projected net cashflow @5%	PV factor @ 12%	PV factor @ 36%	PV of Projected Net cash flows 12%	
0	-770,000	-	1	1	-770,000	-770,000
1		441,200	0.893	0.735	393,991	324,282
2		463,260	0.797	0.541	369,218	250,623
3		486,423	0.712	0.398	346,333	193,596
4		510,744	0.636	0.292	324,833	149,137
5		536,281	0.567	0.215	304,071	115,300
		Net present value =			+968,440	+262,930

Initial cash outlay: Kshs. 770,000 (see projected cash budget)
Projected period: 5 years
Expected growth rate: 5% per annum
Discount rates: 12%

The internal rate of return is above 36%

The first approach, though profitable, takes away the veterinarian from the core business thus "the provision of animal health services." The second approach is extreme, where the linkages between the veterinarian and other community-based animal health providers (AHA and CAHWs) are weak and the average monthly drug sales turnover is below Kshs. 200,000. This scheme reflects what happened to Mifugo Agrovet in Marsabit District. During inception, the agrovet was registering monthly sales figures of over Kshs. 200,000 – with the support of the participating NGOs. At the time of the study, this linkage had weakened and the average monthly sales turnover had reduced to Kshs. 75,000.

The third approach assumes that the veterinarian will adopt the *duka* strategy aiming for volume sales with lower gross profit margins. Table 11 shows that this approach registers an internal rate of return of over 36%, well above the cost of capital (market interest rate of 24%). This approach is the ideal situation for the ASAL but may not be feasible, at the moment, because of the attitude of the veterinarians about working in the region. This approach, however, is ideal for major towns bordering the ASAL, such as Nanyuki, Isiolo and Makutano. Nanyuki Veterinary Services is a successful example of a veterinarian managed veterinary drug shop applying the model.

6.3 The Animal Health Assistant (AHA) Model

The Mifugo Agrovet and the Animal Health Services Shop in Marsabit District are examples of this model. The weakness of the two shops is lack of working linkage with NGOs, livestock owners and the District Veterinary Officer but some of the ideas that the Kakuma-based AHA in Turkana District advanced are impressive. Lessons learnt from Marsabit and Kakuma take account of the following assumptions: -

- VSF-Belgium and SNV will be willing to offer institutional support to the model in Turkana District for the next two years and other ASAL districts will draw similar support from other NGOs.

- The District Veterinary Office will supervise the project. Each AHA will contribute Kshs. 1,000, monthly, towards the Veterinary Officer's subsistence allowance and fuel costs.

- The participating NGOs will be willing to jointly subscribe to a guarantee fund that will be put in a fixed deposit account with the Kenya Commercial Bank (KCB). This guarantee fund will serve as primary collateral for loans extended to AHAs.

- AHAs will be willing to accept loans not exceeding Kshs. 500,000 for each business unit for start-up. These loans will be used to purchase the following basic equipment and working capital.

Motorbike	280,000
Bardizzo (2)	11,000
Knapsack sprayers	10,000
Syringes/needles	2,000
Ear notches	1,900
Drugs	150,000
Insurance and license	45,100
Total	**Kshs. 500,000**

- KCB will be willing to participate under the following terms:-

  a) The guarantee fund should attract interest at market rate and on a quarterly basis
  b) Interest on loans to AHAs should be at 3% points above base rate
  c) KCB accept to apply chattel mortgage on all the items purchased with the loan funds
  d) KCB accept third party guarantees as collateral and should not insist on land titles for the same

The consultants (Table 12) present cash-budget projections for this model. The net present values and the internal rate of return are presented in Table 13.

Table 12: Projected Cash Budget (Kshs.): the AHA Model

	FEB 2002	MAR	APRIL	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	JAN 03	
Months	1	2	3	4	5	6	7	8	9	10	11	12	Total
CASH IN-FLOWS:													
Sales	135,576	271,151	271,151	325,381	325,381	325,381	292,843	292,843	292,843	351,411	351,411	351,411	3515632
Loan	454,900	-	-	-	-	-	-	-	-	-	-	-	
Owner contribution	40,000	-	-	-	-	-	-	-	-	-	-	-	
Total cash in-flows	**630,476**	**271,151**	**271,151**	**325,381**	**325,381**	**292,843**	**292,843**	**292,843**	**292,843**	**351,411**	**351,411**	**351,411**	
CASH OUT-FLOWS													
Equipment	304,900	-	-	-	-	-	-	-	-	-	-	-	
Depreciation	2,541	2,541	2,541	2,541	2,541	2,541	2,541	2,541	2,541	2,541	2,541	2,541	
Salaries	15,000	15,000	15,000	150,00	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	
Purchases	230,478	230,478	230,478	276,574	27,6574	248,917	248,917	248,917	248,917	298,700	298,700	298,700	
Professional fee	167	167	167	167	167	167	167	167	167	167	167	167	
Fuel and repairs	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	
Rent	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	
Telephone	500	500	500	500	500	500	500	500	500	500	500	500	
Stationery/consumables	3,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	
Reporting costs	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	
Loan repayment	12,965	12,965	12,965	12,965	12,965	12,965	12,965	12,965	12,965	12,965	12,965	12,965	
Total cash out-flow	**577,551**	**270,651**	**270,651**	**316,747**	**316,747**	**316,747**	**289,090**	**289,090**	**289,090**	**338,873**	**338,873**	**338,873**	
Net cash-flow	52,924	500	500	8,634	8,634	8,634	3,753	3,753	3,753	12,538	12,538	12,538	128,699
Drawings	-	-	-	1,295	1,295	1,295	563	563	563	1,881	1,881	1,881	
Opening balance	-	52924	53,424	53,924	61,263	68,602	75,941	79,131	82,321	85,511	96,168	106,825	
Closing balance	52,924	53424	53,924	61,263	68,602	75,941	79,131	82,321	85,511	96,168	106,825	117,482	

Table 13: The Net Present Value (Kshs.): AHA Model

Year	Initial cash outlay	Projected net cash-flow @5%	PV factor @ 10%	PV factor @ 15%	PV of Projected Net cash flows	
					10%	15%
0	-494,900	-	1	1	-494,900	-494,900
1		128,699	0.909	0.870	116,987	11,968
2		135,134	0.826	0.756	111,621	102,161
3		141.891	0.751	0.658	106,560	93,364
4		148,985	0.683	0.572	101,757	85,219
5		156,434	0.621	0.492	97,146	77,748
		Net present value =			+39,171	-24,440

Initial cash outlay: Kshs. 494,900 (i.e. loan Kshs. 454,900 and Kshs. 40,000 owner contribution)
Project period: 5 years
Expected growth rate: 5% p.a.
Discount rates: 10% and 15%

The Internal Rate of Return (IRR):

$$10\% + \{ \frac{39171}{39171+24440} \times (15\%-10\%) \} = 13\%$$

Conclusions and Recommendations

The AHA model is viable because it has advantages over the other models in an ASAL environment. These are: -

- The model does not require enormous amount of time and inputs to establish like the association model hence cheaper to replicate in other ASAL districts.
- AHAs are well trained and better placed to supply drugs in ASAL than *duka* operators.
- Veterinarians are currently not showing interest in the ASAL presumably because of insecurity, poor infrastructure, lower incomes and high delivery costs. The local AHAs can cope with these conditions better than veterinarians.

7.0 DATA AND INFORMATION GAPS

The successful analysis or assessment of any business activity depends on the adequacy and accuracy of data and information gathered and used; and the reliability of sources and the manner in which the primary data or information is assembled, packaged, stored and presented. There are often data gaps that render the analysis prone to distortion hence wrong conclusion.

In this assignment, the consulting team noted the following data gaps: -

- The data that the AHAs, CAHWs and even veterinarians provided was mainly from memories of interviewees. There is a limit to which individuals can recall information without giving inaccurate data, especially figures.

- There were no records for CAHWs and the AHA, *duka* and the veterinarian records were not comprehensive in most cases. There were no monthly summaries of expenditures, incomes, caseloads, drug sales or procurement, among others.

- The actual demand for drugs cannot be properly assessed from the available data making the assessment from livestock population, caseload or the volumes of drugs sold formally misleading for the following reasons:-

    - Livestock population figures are only estimates and no census has been undertaken for the last twenty years so the figures can only be used to estimate requirement or demand for vaccines but not for clinical drugs
    - Not all cases are reported or treated especially in pastoral areas. The number of cases recorded is an underestimation.
    - The volumes of drugs sold cannot be an accurate parameter because there are drugs available to livestock keepers, through the black market, whose quantities are not known.

- Limitations in estimating the actual demand for drugs and services require a separate detailed study.

- The number of trained CAHWs, and those who are active, inactive and the dropouts could not be ascertained in some cases, as in Kajiado district.

- There were no records of training needs projections in business skills and management. Training needs assessment in basic business skills and management is necessary in setting up a viable and sustainable community-based animal health service delivery systems.

- There was lack of experience on credit systems. No credit systems have been established in the pastoral areas hence lack of information in the subject. Credit systems for community-based animal health service delivery systems must be introduced with caution due to lack of experience.

8.0 CONCLUSIONS

In the light of inadequate animal health services by the government in Kenya's pastoral areas, and because these areas have not attracted conventional private veterinary practices, setting up the community-based animal health service delivery systems has given hope to livestock keepers and pastoral communities. The initial focus of community-based animal health service delivery systems was to provide services with little emphasis on long-term viability but there is now a major shift of attention to address these dimensions.

In this study, some community-based animal health service delivery models have been examined to determine their economic viability and sustainability. They are: -

- The Association Model
- The Private Veterinarian Model.
- The Animal Health Assistant Model
- The *Duka* Model

The long-term sustainability and economic viability of the above community-based animal health service delivery systems are yet to be achieved though some cases show success. This notwithstanding, there is potential for growth, sustainability and viability. To realise this potential, attention should focus on the following areas: -

- Improved drug supply line to ensure availability of quality drugs
- Elimination of black market for drugs
- Commitment and motivation of CAHWs
- A strong institutional support framework

Taking account of the present performance status, ease of application and the potential for privatisation, growth and development in pastoral areas and sustainability, the four models can be ranked as follows: -

- AHA Model
- *Duka* Model
- Private Veterinarian Model
- Association Model

The AHA Model ranks high because it can be applied and replicated in most pastoral districts. It has the *Duka* Model component and it is cheaper to operate considering the overhead costs. It is also effective in service provision. The AHA Model also has a high IRR (of 13%), and a wider application in the ASAL.

The Association Model, on the other hand, is expensive and time consuming to set up. It is difficult to replicate and often riddled with managerial problems at the operational level. Further, this model has relatively low personal drive, initiative and commitment.

The Private Veterinarian Model, though successful in Meru Central and Meru South districts, has certain limitations in pastoral areas. By virtue of their training and high academic qualification, the

veterinarians have higher expectations in income and social status. Experience has shown that pastoral areas are not attractive to them. Poor infrastructure, insecurity and harsh environmental conditions characteristic of most of Kenya's pastoral areas do not measure up to the veterinarians' expectations. Because of this, the support of the Veterinarian Model in pastoral areas requires careful selection of the veterinarian, targeting an individual willing to start low and preferably one who comes from the local pastoral area.

The proposed Private Veterinarian Model in West Pokot requires a minimum network of four AHAs and 80 CAHWs to be viable, assuming drugs sales turnover of above Kshs. 300,000 per month and a gross profit margin of 12%.

The *Duka* Model has high chances of survival because it is based on individual initiatives and drive. However, some of the *Duka* Model operations, such as selling ethical drugs without prescription and in the open-air market do not comply with legal requirements. Additionally, most individual operatives are not trained in handling drugs, violating legal requirements.

The NGOs and support agencies should now change focus from development of models to strengthening the institutional arrangements and supporting the existing models. The support should encompass business training, livestock owners' awareness training, setting up credit systems and support for the regulatory system. The realisation of these outputs should be part of the NGOs exit strategy.

For the sustainability of any preferred delivery system, the stakeholders must reduce or eliminate subsidies. Subsidies impact negatively on the market forces, further weakening the already low ASAL monetary economy. Any intervention measures should be channelled through a recognised existing system.

Frequent droughts have significant negative impacts on livestock production and productivity, and equally on the viability of animal health service delivery systems. To mitigate against the negative effects of drought, service providers are encouraged to diversify into other complimentary business opportunities, such as trade in livestock and hides and skins.

As a further measure to enhance the scope of activities and diversification, community-based animal health service delivery systems (Veterinary and AHA models) should be more involved in sanitary mandate. It is necessary that the DVS considers the emerging privatisation initiatives as an integral part of animal health service provision and further develop the modalities of incorporating them in sanitary mandate activities.

The consulting team noted that the KVB has approved curriculum for CAHWs. This goes a long way in recognising their existence. However, to motivate the CAHWs' the KVB needs to award certificates/accreditation to them and include their role in the legal framework.

ANNEXES

Annexe I Terms of Reference

Community-based Animal Health and Participatory Epidemiology Unit (CAPE)
Pan African Campaign for the Control of Epizootics (PACE)
Organisation of African Unity/Inter-Africa Bureau for Animal Resources (OAU/IBAR)
An assessment of the economic viability of private animal health service delivery in pastoral areas of Kenya

1. INTRODUCTION

1.1 Background

Community-based animal health (CAH) delivery systems are popular forms of service delivery that have proven to be effective in pastoralist areas of the Horn of Africa. These systems have been developed in underserved, marginalised grazing areas that are risky and conflict prone. In 2001, NGOs, CBOs, private entrepreneurs, and government authorities examined the long-term sustainability of these systems. Bearing in mind the wide variation in the design of community-based animal health systems, the privatisation of veterinary services in areas where they exist represents a challenge to the veterinary profession, the livestock owners, their representatives and the various regulatory authorities.

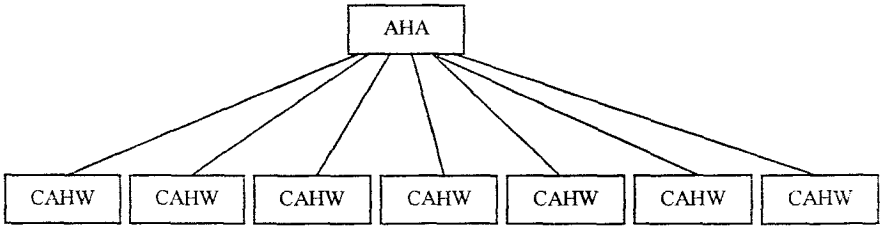
In Kenya, significant progress has been made in the last 3 years in gaining broad acceptance of the role of veterinary supervised community animal health workers (CAHW). The Kenya Veterinary Board (KVB) and the Department of Veterinary Services (DVS) have worked with relevant stakeholders to review and update livestock sector policy. The new policy recognises the role of the livestock owners and their representatives in service provision. A group of NGOs have worked with the KVB and the government to produce a standardised training curriculum for CAHWs and this accomplishment is now spurring debate on how to regulate CAHWs accreditation schemes and define "veterinary supervision."

OAU/IBAR, through its PARC-VAC Project and now through its successor the CAPE Unit of PACE, has been working with collaborators on all of these issues. CAPE is now seeking partners to carry out a thorough investigation and assessment of the economic potential of the various community-based animal health models found in Kenya. By using the same team and methodology to examine these models, comparison, lessons documented and conclusions drawn should be more convincing and useful for the future development of the whole range of delivery systems. The ultimate goal of this work is to develop the most appropriate and practical route to a privatised animal health delivery that is able to adequately meet the needs of pastoralist livestock owners including the poorest.

CAPE is looking forward to working with NGOs, CBOs and private individuals that have facilitated the development of the various models of animal health service in pastoralist areas. The main types of model to be studied in Kenya are described below.

1.2 Models for privatised animal health services

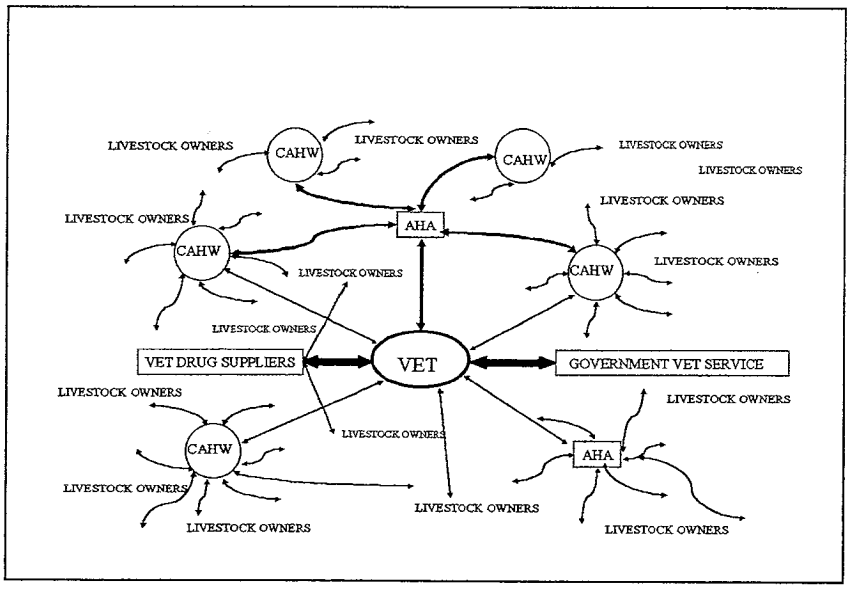
- ***The AHA Model***



The AHA is buying the drugs and selling them to the CAHWs. In this model it is the AHAs who will be privatised and running their own business. Government veterinarians would supervise them.

- ***The Private Veterinarian Model***

In this model there are a number of AHAs supervising a number of CAHWs, who are supervised by a [private veterinarian (PV). The PV will sell to the AHAs who will then sell to the CAHWs.

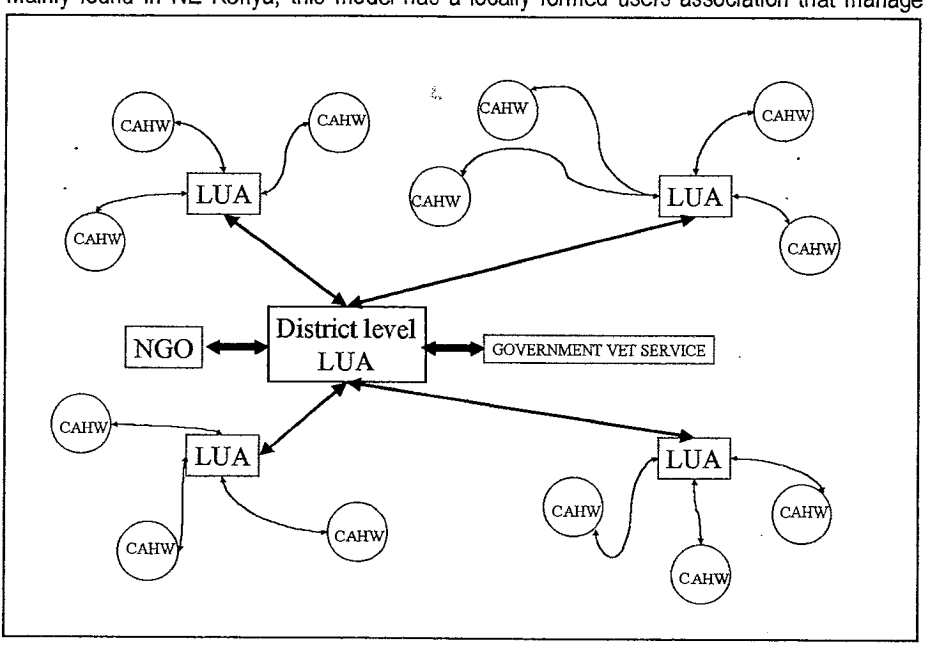


- ***The Private Drugstore (duka)–Model***

This model builds upon the existing system of successful small scale drugstores that are present in many areas but often limited to urban, peri-urban or peri-village supply. It has been argued that setting up a parallel system will undermine these private businesses. Is it possible for them to play a role in supplying the CAHWs? How could the veterinarians be involved?

- ***The Pastoral Association Model***

Mainly found in NE Kenya, this model has a locally formed users association that manages a drug store and supplies members and CAHWs with drugs. In Wajir this system has been further developed where by a district level association with greater purchasing power has been formed and linked to the divisional level associations (see diagram). Veterinary supervision is normally provided through govemment veterinarians. The model has certain advantages in terms of collective responsibility, capacity building local organisations and ability to be multi-sectoral.



- ***The 'independent' CAHW model***

In this model, CAHWs are successfully maintaining themselves by buying veterinary drugs from anywhere, wherever they can. These sources of veterinary drugs can be either official or unofficial. The CAHWs sell their services to local communities with no official veterinary involvement after their initial training.

1.3 Potential partners for the study

CAPE has identified several possible partners for this work. The tentative list is as follows:

- The AHA Model – VSF-Belgium, SNV and private AHAs
- The Private Veterinarian Model – Farm-Africa, KVAPS, VSF-Belgium and SNV
- The *Duka* Model – KARI and duka owners
- The CAHW Model – GTZ Samburu and private CAHWs
- The Pastoral Association Model – Oxfam UK/Ireland, ALRMP, Dept. of Veterinary Services and Wajir DPA

2. OBJECTIVES

The objectives of the assessment are as follows:

- Assess the economic viability of different models of privatised pastoral animal health service delivery in Kenya, bearing in mind the developing policy and legislative environment and variables in terms of geographical location, local economies, access to markets, infrastructure and cultural practices.

- Produce guidelines on the way forward to privatisation of existing and new community-based animal health delivery systems in pastoral areas, including the development of business plans for the different systems.

3. OUTPUTS

3.1 To assess the viability of the different set ups of privatised pastoral animal health services, the following outputs will be required: -

- Actual turnover of drugs and vaccines per CAHW, AHA, users association and the entire districts
- Determine the proportion of the sale of drugs as direct sales in relation to actual treatment and vaccinations by trained veterinary workers
- Actual costs pertaining to the logistics of the drug supply from Nairobi or nearest major wholesalers to the end user
- Projections per system:
  - Identify further costs pertaining to the delivery of veterinary services to pastoralists, including expected profit for the privatised system.
  - Actual profit margins for the CAHWs, AHAs, associations, dukas and the project / future privatised business, for direct sales versus treatment of animals
  - Make projections on realistic prices to be charged to the CAHWs and the livestock owners, to ensure that the system will be profitable (without any subsidy).
  - Comparison of these prices with the actual market prices of drugs in the area and prices at the local drug stores.
  - Make projections on amount of drugs to be sold by AHA private veterinary / association to break-even.
  - Comparison of these projections with estimates of demand for drugs by stockowners.

- Draw conclusions on the potential of the different systems to become economically viable

3.2 To recommend on the way forward to privatisation

- Bearing in mind the conclusions from the outputs above, identifying those systems that show potential for privatisation.
- Describe those systems that are already fully privatised.
- Estimate all costs and benefits pertaining to a private pastoral animal health service per identified system
  - Start- up costs
  - Running costs
  - Gross and net returns
- Produce a business plan, covering:
  - Initial requirements (start-up capital, skills, manpower, equipment, logistical support etc); for models with CAHWs, define number of CAHWs required per private vet or AHA
  - Assessment of loans or grants required in the start-up phase
  - Running costs in relation to expected profits
  - A thorough analysis of risks e.g. black market, environmental disasters, conflict

- Recommend possible mechanism for start grants/loans, considering the risks involved.
- Make recommendations on a time frame for privatisation, bearing in mind the legal framework and the presence of NGOs on ground to provide technical, logistical and financial support.
- Assess possibilities for business diversification and future sources of income and relate these to the predictions of business viability. For example, impact of/and potential for trade in hides and skins, milk and ability to carry out contract vaccination or disease surveillance on behalf of government.

4. METHODOLOGIES

This work will involve the following:

- Literature review - review relevant literature, such as assessments of contract vaccination, willingness to pay studies privatisation schemes.

- Field study:-

    - Interviews with project staff, veterinarians, associations, *duka* owners/staff, pharmacists, veterinary wholesalers, AHAs and CAHWs

    - Data collection regarding turnover rates of drugs, prices, number of CAHWs trained etc. This data would be made available through collaborating partners

    - Collect data regarding black market prices and drugstore prices

    - Collect any other data required to make realistic projections and recommendations

- Analysis of information gathered and report writing:-

    - Prepare a report of 30-40 pages using Microsoft office programs that will be submitted on disc and as a hard copy

    - The full report should be submitted to CAPE and its collaborating partners within 3 weeks of the end of the fieldwork

5. PLANNING

CAPE will seek consultants in July 2001 and present them to collaborating partners in August 2001.

A detailed timetable of activities and refinement of TOR will take place in August through discussion between the collaborating partners and the consultants. Fieldwork should start in September 2001 and would most likely be carried out in:-

- Turkana and West-Pokot
- Samburu and Marsabit
- North-Eastern Province

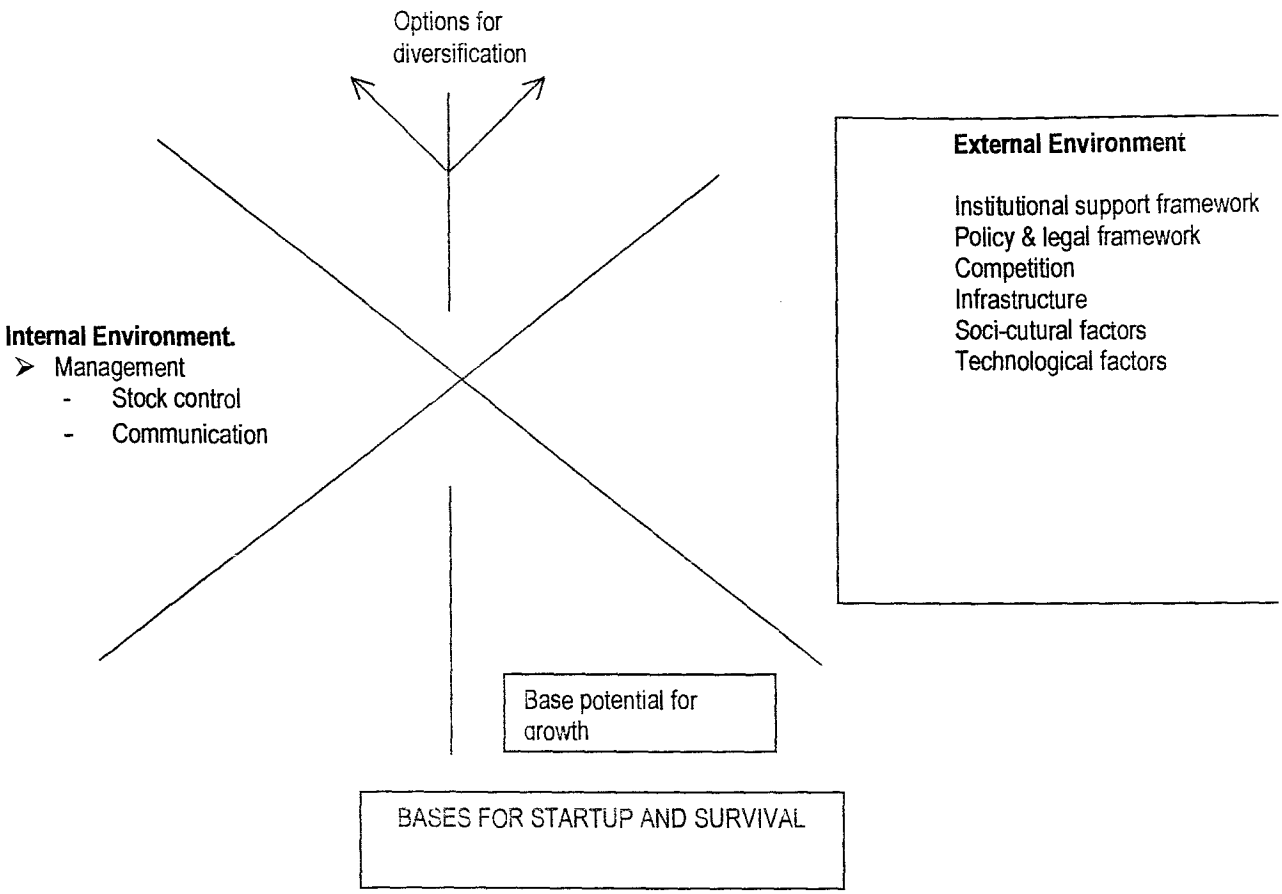
For the total assignment a period of 34-40 working days is foreseen, which is approximately 5 working days per area, exclusive of travel time.

6. INPUTS

Consultancy fees:	CAPE will cover this item at standard market rates and amounts depending upon the experience of the consultants identified
Allowances:	CAPE will cover this item
Transport to and from the field:	Collaborating NGOs and CAPE
Transport in the field:	To be provided where applicable by the NGOs/gov. partners on the ground

Annexe: II DIAGRAMATIC PRESENTATION OF THE DURHAM MODEL

The Durham Business Start-up and Growth Model.



BASIC INGREDIENTS:
-Motivation /commitment.
-Ability/ experience.
-Idea base.
-Resource base.

Annexe III (A) BUSINESS PERFORMANCE QUESTIONNAIRE

Model _____
(*To be filled by the veterinary practitioners*)

1) Name and Address of Practitioner Mr./Mrs./Dr. _____ P.O. Box _____ Tel. _____
2) Level of formal education: Primary ☐ Secondary ☐ Tertiary ☐
3) Professional qualification: CAWH ☐ AHA ☐ Diploma ☐ BVM ☐ Others Specify _____
4) Name of business and number of years in business: Name _____ Years _____
5) Average monthly turn over (last two years): Ksh _____
6) Activities the practitioner is engaged in:
   (i) AgroVet – List Top 5 (five) product lines (In order of volume and priority)
   No. 1 _____ Turn over Ksh _____ (Ethical/Non Ethical)
   No. 2 _____ Turn over Ksh _____ (Ethical/Non Ethical)
   No. 3 _____ Turn over Ksh _____ (Ethical/Non Ethical)
   No. 4 _____ Turn over Ksh _____ (Ethical/Non Ethical)
   No. 5 _____ Turn over Ksh _____ (Ethical/Non Ethical)
   (ii) Clinical: Yes/No
   If yes, list top five common cases you attend to:

	Drug used	Average case load/month	Professional fee/ case (Ksh)
1) _____	_____	_____	_____
2) _____	_____	_____	_____
3) _____	_____	_____	_____
4) _____	_____	_____	_____
5) _____	_____	_____	_____

   (iii) Others (specify):

- _____	_____	_____	_____
- _____	_____	_____	_____
- _____	_____	_____	_____

7) Cost structure (variable costs)
For the top 5 listed product lines, fill the matrix below:

Product line	Packs/ Unit	Unit Cost (Ksh)	Unit Sales Price (Ksh)	Average Units/ Month	Profit Margin (Ksh)	% Profit Margin	Procurement Source
a)							
b)							
c)							
d)							
e)							

8) For Clinical Service please indicate the estimated costs per case

Case	Name of drug	Cost/ unit (Ksh)	Estimated cost of drug (Ksh)	Consumables (e.g. methylated spirit)	Cost of Consumables (Ksh)	Total Variable Cost (Ksh)
1)						
2)						
3)						
4)						
5)						

9) List your current equipment and estimated cost of equipment

1. _____ Ksh _____
2. _____ Ksh _____
3. _____ Ksh _____
4. _____ Ksh _____
5. _____ Ksh _____
6. _____ Ksh _____
7. _____ Ksh _____
8. _____ Ksh _____
9. _____ Ksh _____
10. _____ Ksh _____

Total estimated cost of equipment Ksh _____

10) List your monthly overhead costs

Cost Element

a) Depreciation Ksh_____
b) Salaries and wages Ksh_____
c) Rent and rates Ksh_____
d) Professional fees Ksh_____
e) Transport costs Ksh_____
f) Water/electricity Ksh_____
g) Telephone Ksh_____
h) Licenses Ksh_____
i) Loan repayment Ksh_____
j) Others (Specify)

_____ Ksh_____
_____ Ksh_____
_____ Ksh_____
_____ Ksh_____

TOTAL MONTHLY OVERHEAD Ksh_____

11) What type of support are you currently getting in your business from the NGOs operating in this district?

_____

12) Would your business be sustained if this support was to be withdrawn? Clinical: Yes/No
If No, please give reasons.

_____
_____
_____
_____

13) List the Top 5 problems you are currently facing in your business (priority order):

Problem	Possible best solution
1) _____	_____
2) _____	_____
3) _____	_____
4) _____	_____
5) _____	_____

14) In this business list a maximum of 5 risks (i.e. seasonality, cattle rustling etc.) that adversely affect your business

1) _____
2) _____
3) _____
4) _____
5) _____

15) Suggest as many ways as possible for alleviating these risks:

16) If somebody were willing to assist you diversify your business, list two business ideas that, in your opinion, make economic sense for your catchments area:

1) _____
2) _____

Annexe III (B) LIVESTOCK OWNERS QUESTIONNAIRE

Model_____

1) Name of Stock Owner: Mr./Mrs./Dr._____
Address_____

2) For how long have you been in this business? ☐ Less than 5 Yrs ☐ < 10 Yrs ☐ >10 Yrs

3) Where do you currently obtain health services for your animals? ☐ Local Govt. Vet ☐ Local CAHW ☐ Local AHA ☐ Self ☐ Others Specify_____

4) Would you describe those services as: ☐ Excellent ☐ Very good ☐ Good ☐ Fair ☐ Poor?

5) How much do you currently pay for the following Vet services

Clinical			Vaccinations		
a) Dehorning	Ksh _____		a) CCPP	Ksh _____	
b) Deworming	Ksh _____		b) CBPP	Ksh _____	
c) Mastitis	Ksh _____		c) Rinderpest	Ksh _____	
d) ECF	Ksh _____		d) FMD	Ksh _____	
Other Clinical Services:			Other Vaccinations:		
- _____	Ksh _____		- _____	Ksh _____	
- _____	Ksh _____		- _____	Ksh _____	
- _____	Ksh _____		- _____	Ksh _____	

6) How would you describe the charges in Que. 5 above: ☐ Too expensive ☐ Expensive ☐ Fair ☐ Cheap?

7) If we are to improve the quality of animal health providers above, what would you want us to address:
   a) In the short run? _____
   _____
   b) In the long run? _____
   _____

8) What other non-veterinary needs do you currently want met but are inadequately catered for and how much are you prepared to pay for the service?
   a) _____ Ksh_____
   b) _____ Ksh_____
   c) _____ Ksh_____
   d) _____ Ksh_____

9) We have asked you several questions do you have any question(s) for us?
Question 1: _____
Question 2: _____
Question 3:_____

Annexe IV (A) WAJIR DISTRICT

BACKGROUND INFORMATION

Wajir is one of the four districts of North-eastern Province of Kenya, the others being Garissa, Mandera and Ijara. As in other ASAL districts, livestock are the main source of income and livelihood for the majority of the people of Wajir District. Due to inadequate rainfall, pasture and water, pastoralism is the livestock production system of choice. Livestock found in the district include cattle, camels, goats, sheep, donkeys and indigenous breeds of poultry.

A major constraint in livestock production is inadequate animal health services. The animal health service, being a critical support component in livestock production, must be improved as part of the strategy to reduce poverty in the district. The main animal health service providers in the district include the Department of Veterinary Services (DVS) and various NGOs who support community-based animal health service delivery as a viable option to improving service delivery in the district. The main service delivery model in operation is the Pastoral Association Model whose characteristic and financial analysis are detailed below.

Pastoral Association Model

i. The model comprises Pastoral Association (PA) with membership drawn from the community. There are seven PAs who are already established. Each PA is linked to a number of CAHWs or *daryelles* who are the contact points with livestock keepers. The PAs supply the *daryelles* with drugs. The *daryelles*, in turn, supply drugs to livestock keepers while at the same time offering basic animal health care service.

ii. On the other hand, the PAs are linked to the District Pastoral Association (DPA), the umbrella body that procures drugs and supplying the same to PAs as required.

iii. The DPA management committee draws technical and policy advice from the Pastoral Steering Committee (PSC) whose membership comprises representatives from relevant organisations including government departments. The District Veterinary Officer is the chairman of the PSC.

iv. The main characteristic of the Pastoral Association Model include:-

- established felt need, for example, poor services, limited individual strengths, among others
- established with the participation of the community, donors through NGOs and government departments
- responsive to the needs of the community
- limited skills and capacity
- has *daryelles* as volunteers and not operating on a commercial scale
- still "infant" but the model has potential for growth and maturity, external support still needed
- elements of sustainability emerging but still at a nascent stage
- dependency syndrome declining but will take time to wither away

Financial Performance Analysis

Business performance data was collected and analysed for the following four levels:-

- District Pastoral Association
- One private veterinary clinic and two chemists
- Pastoral association
- Community-based animal health workers (*daryelle*) level

District Pastoral Association (DPA)

The DPA has three main business activities namely: the water spare parts sales, drugs sales and leasing of generators.

Drug sales: The association's stocks comprise dewormers, trypanocides, antibiotics and acaricidals. The following sales figures were given as average monthly turnover per product line in the last three months.

Average monthly turnover per product line in the last three months (Kshs.)

Ranking	Packs	Unit cost	Unit sale price	Sales units per month	Total sales	Total co
Antibiotics						
a) Alamycine 10%	50ml	80	90	250	22,500	20,000
b) Oxytetracycline	50ml	80	90	250	22,500	20,000
c) Tenaline 10%	100ml	150	170	100	17,000	15,000
Total Antibiotics					62,000	55,000
Trypanocidals						
Samorin	15ml vials	430	460	50	23,000	21,500
Triquin	1 gm vial	200	220	100	22,000	20,000
Novidium	tablets	40	42	200	8,400	8,000
Total					53,400	49,000
Dewormers						
Levafas	125mls suspension	65	80	400	32,000	26,000
Vermitan	tablet 2500	32	40	1500	60,000	48,000
Vermitan	tablet 152	9.40	13	300	3,900	2,800
Wormicid	bolus	10	11	6000	66,000	60,000
Totals					161,900	136,800
Acaricides						
Triatix	100mls bottles	150	180	100	18,000	15,000
Total monthly drugs sales Average profit margin 14%					295,300	255,800
Water activity						
Piston rings	3 rings/pack	5,200	7,450	20	149,000	104,000
Con bearing	2 pc/pack	1,700	2,600	15	39,000	25,500
Nozzles	1	5,200	6,500	30	195,000	156,000
Oil filters	1	1,900	2,000'1,3	40	80,000	76,000
Diesel filters	1	1,000	20	40	52,800	40,000
Overhaul gaskets	1 package	12,000	16,500	10	165,000	120,000
					680,800	521,500
Average profit margin – water facilities 23.4%						

The study team established that the total monthly average sale is Kshs. 976,100. It further established that the total equipment cost is Kshs. 2,485,000, composed of buildings – office and stores – whose estimated value is Kshs. 1.2m. cabinet (Kshs. 40,000), fixtures and fittings (Kshs. 25,000), two generators (Kshs. 1.2m) and two water pumps (Kshs. 20,000).

The monthly overhead costs for the DPA is as follows:

Depreciation rate per month (15 years life span)	13,000
Salaries and wages	10,000
Management committee sitting allowances	3,000
Transport costs	2,000
Telephone	33
Total Monthly Overhead	**28,033.00**

Break-even volumes

The team established that out of the total turnover of Kshs. 976,100, the water activity contributes Kshs. 680, 800, which is 70% of the total sales, while the drugs activity contributes Kshs. 295,300. Consequently, the team

apportioned 30% of the overhead cost of Kshs. 8,409 to the drug sales activity. Therefore, given that the average profit margin for drug sales is 14% (as established above) the break-even sales (drugs) is as shown below:

$\frac{14}{100}$ x X (where X is the monthly sales volume) = 8,409.00

0.14X = 8409 $\quad \frac{X}{0.14} = 8409 \quad = 60,064$

The average daily sales volume = $\frac{60064}{26 \text{ days}} = 2,310.00$

The break-even sales volume for water activity:

$\frac{23}{100} X = 19623 \quad X = \frac{19623}{0.23} = 85,317$ per month

The average daily sales volume = $\frac{85317}{26} = 3281$ per day

Privately Managed Drug Shops

To compare and contrast the performance of the DPA with the performance of private veterinary drug shops and chemists in Wajir Town, the team collected and analysed data from:-

- Wajir Veterinary Centre and Clinic
- Liban Pharmacy
- Al-Furqan Pharmacy

Wajir Veterinary Centre and Clinic

Wajir Veterinary Clinic was established in 1999. It is owned by Dr. Yusuf Mohamed, but managed by Mrs. Mohamed. The clinic has employed a CAHW to run its activities under Dr. Yusuf's supervision. Below is a summary of the drug sales and clinic sales data: **(in Kshs.)**

Drug Top five list	Packs	**Unit cost**	**Unit sales price**	**Total units**	**Total sales**	**Total cost**
1. Vermitan	152 mgs tabs	9	16	430	7,680	4,320
2. Triquin	15ml viles	200	230	72	16,560	14400
3. Alamycin 10%	50ml bottles	99	120	120	14,400	11,880
4. Triatix	100ml bottles	130	200	168	33,600	21,840
5. Oxycycline spray	200gm tins	170	200	72	14,400	12,240
Total					**86,640**	**64,680**
Average monthly profit margin 26%						

Clinic activity

Case	**Drug name**	**Unit cost**	**Estimated sales**	**Consumables**	**Cost of consumables**	**Total VC**	**Professional fee**
Deworming	Vermitan	15	18	-	-	15	18
Trypanosomiases	Triquin	200	230	Syringe	30	260	220
Bacterial infections	Alamycin 10%	120	250	Syringe	30	150	130
Tick control	Triatix	200	400	-	-	200	15
Wounds	Oxycycline spray	200		Spirit/cotton wool	40	240	10

Average monthly caseload and receipts (amounts in Kshs.)

Case	Case load	Drug	Professional fee	Total marg. Drugs	Total gross prof. Fee	Total gr receipts
Deworming	960	3	18	2,880	17,280	20,160
Trypanosomiasis	144	140	220	20,160	31,680	51,840
Bacterial infections	96	100	130	9,600	12,480	22,080
Tick control	720	-	15	-	10,800	10,800
Wounds	96	-	10	-	960	960
Total gross receipts clinical services						105,840

EQUIPMENT

The clinic has the following equipment:

Name	**Value**
Hoof trimmer	7,000
Hoof Knife	600
Dehoming rod	1,000
Bardizzo – large and small	11,000
Stethoscope	2,000
Syringes (50ml, 20ml, 10ml)	2,000
Hand sprayer	5,000
Trocar and Cannula	1,500
Camel (1) for transport	7,000
Utensils (thermos)	1,000
Freezer	30,000
Total	**68,100**

OVERHEAD COSTS

Depreciation (15 years)	378
Salaries/wages	3000
Rent and rates	2300
Professional fees	416
Transport costs	5000
Water and electricity	400
Telephone	600
Licenses	416
Zakat (alms)	200
Total	**12,710**

When asked to apportion these overhead costs to the two activities (Agrovet and the clinic), Dr. Yusuf was of the opinion that Agrovet does contribute three-quarters of the overhead costs, while clinical activities contribute one fourth. This confirmed our suspicion that the clinic figures are overstated. For this reason and for calculating the break-even point the team has applied the 3:1 ration.

Monthly break-even point, Agro vet

Agro vet = ¾ of 12750 = 9560 - Average drug margin = 26%

$26/100 \times X = 9560 \qquad X = \frac{9560}{0.26} = 36{,}769$ per month

B/E sales volume per day $\frac{36769}{26} = 1414.20$

Liban Pharmacy

Liban Pharmacy was established in 1998. It has an average monthly turnover of Kshs. 250,000; 99% of the sales volume is realised from the sales of human drugs, while only 1% is from sales of veterinary drugs. The top five product lines for this pharmacy are:-

	Kshs.
1. Metakelfin tablets	36,000
2. Fansider tablets	20,000
3. Amoxil capsules	20,000
4. Fansider syrup	25,000
5. Brufen tablets	10,000

Dewormers are the only veterinary drugs stocked. So the consulting team saw no reason to calculate the break-even point.

Al-Furqan Pharmacy

Al-Furqan Pharmacy was established in 1999. It is owner-managed by Mr. Mohamed Diss. Its area of concern is mainly human medicine, and the following are the top four drugs in the order of priority:-

1. Metakelfin tablets
2. Paracetamol tablets
3. Trimex syrup
4. Penicillin antibiotics

The owner-manager was away, and the man in-charge was unable to provide sufficient data for an in-depth performance evaluation.

Local Pastoral Associations stores

The team collected and analysed business data from four out of seven local PA stores: Griftu, Mansa, Wajir Bor and Khorof-Harar. Below is a summary of the findings:

Semi-literate clerks handle 75% of the stores but the store clerk in Wajir Bor has secondary level of education, and some training in agricultural extension. Apart from Wajir Bor PA, whose turnover averages Kshs. 60,000 per month, the other three PAs registered a turnover of Kshs. 10,000 and below.

In terms of the top five product lines, there was diversity in ranking, as shown below.

- Mansa PA had dewormers (Wormicid) as the top ranked product line, with Panadols, broad-spectrum antibiotics, Bovitras and Vetamycin spray taking second and fifth positions, respectively.

- Wajir Bor ranked the broad-spectrum antibiotic as the fastest moving product line, followed by Tripanocidals: second position; dewormers: third position and acaricides: fourth position.
- Khorof-Harar listed Sevin Powder as number one, followed by Oxy-tetracycline, Wormicid tablets, Triquin and Tenaline.
- Griftu ranked Steladone for tick control as the 'cash cow', Bayticol (pore on) as their second product of choice followed by aerosol spray in third position and Alamycin in fourth position.

The consultants observed that tick control was important in Griftu, while the control of camel disease was priority in Wajir Bor. Mansa specialised in drugs for worm control and over-the-counter drugs for human. Associations that diversified into human drugs, sale of borehole spare parts and diesel registered higher turnover compared to those concentrating purely on veterinary drugs. These are the PAs that applied reasonable margins and structured their sales prices giving the CAHWs the products at fair rates. Mansa, Wajir Bor and Khorof-Harar, therefore, indicated better business performance compared to Griftu that was selling products at the same price.

Record keeping and maintenance of proper books of account is a major constraint in all the seven PAs. There is need to develop standard member/CAHWs transaction systems. In asset base, Khorof-Harar was leading with a fixed asset base of Kshs. 1,068,600, followed by Mansa (Kshs. 266,500), Wajir Bor (Kshs. 215,000) and Griftu (Ksh.185,500). This has a direct correlation to the amount of financial assistance the associations have received from Oxfam and other donors on the one hand, and from the contribution of the community on the other hand. In all the seven PAs visited, Mansa and Wajir Bor are leading in the business management approach to handling their activities because:-

a) They allow their CAHWs to apply margins on drugs sold to the livestock keepers.

b) They apply different pricing for CAHWs, members and the non-members. While this model allows the CAHWs to enjoy enhanced margins, it encourages the members to buy from the CAHWs rather than directly from the PAs. It also makes non-members realise the benefits that would accrue to them if they were to become members.

c) In Wajir Bor and Mansa, drugs are purchased in bulk, for example, a litre of Staladone retails for Kshs. 894 and is sold at Kshs. 1,000; Bovitras 5ltr at Kshs. 5,000 and sold at Kshs. 7,500; Fansidar tin (1000 tablets) at Kshs.1,000/- and sold at Kshs. 2,000/-. In these two PAs, the CAHWs are allowed to exercise their entrepreneurial acumen fully. At Wajir Bor, CAHWs buy Bovitras 5ltr at Kshs. 7,500 and sell 10mls at Kshs. 20, which amounts to Kshs. 10,000 for the 5ltr.

d) In both places (Wajir Bor and Mansa), the store clerks are paid a monthly wage, a practice that has encouraged commitment and increased personal drive.

e) Effort is made to maintain some books of accounts and records.

It was surprising to note that PAs that had received longer periods of external support were less focused in addressing their problems compared to those that received a shorter period of external intervention. Again, Wajir Bor and Mansa take the lead on this for they have shown a greater sense of purpose after only two years of external support.

The overhead cost figures were misleading because they were highly influenced by the depreciation cost element. It, therefore, showed the extent of external support for each PA and not the indirect costs incurred as a result of running the business. It was obvious that PAs that pay commissions to CAHWs, wages to store clerks, sitting allowance to their management committee members registered higher sales per month, compared to those who over-controlled the indirect costs and looked at the exercise as a service to the community.

Considering that the overhead cost elements are kept at their bare minimal level, the consultants did not find it necessary to calculate the break-even volumes for the PAs because the base minimal level of the overhead costs does not reflect an optimal operational level.

All the four PAs cited the problems they face and suggested solutions as follows: -

PROBLEM	SOLUTIONS
➢ Cheap and highly subsidised drugs distributed by NGOs	➢ All community support efforts to be channeled through the PAs
➢ Bad debts	➢ No solution was given. The consultants assumed this was as a result of the strong community attachment on the part of the management committee. It may also have been caused by the members' views of the PAs as channels for free donor support.
➢ Lack of working capital	➢ Enhance proposal presentations to willing donors to solicit for funds.
➢ Low purchasing power among the community	➢ Strengthen livestock marketing
➢ Lack of communication facilities	➢ Avail radio call facilities
➢ Inadequate incentives to CAHWs	➢ Provide for commissions and salaries
➢ Poor state of roads	➢ Requests government to look into the matter
➢ Inadequate community support to PAs	➢ Community sensitisation training
➢ High illiteracy level	➢ Community sensitisation and offering literacy lessons

Community-based Animal Health Workers (CAHWs)

Twenty-three community-based animal health workers (CAHWs) from seven pastoral associations (PAs) were interviewed. It was established that 74% of the respondents had no formal education, 22% had received primary education, and only 4% had secondary education. All the respondents had not thought of a business name for their services, an indication that they do not regard their activities as business enterprises, although over 70% of them had been in this business for over three years.

The average monthly turnover for the 23 CAHWs interviewed is Kshs. 6,826. The highest registered monthly sales amount to Kshs. 40,000. This is a unique case and the team learnt that the CAHW had twice been engaged in vaccination campaigns and received handsome allowances. This could have worked as a motivator and provided the CAHW with the drive and commitment necessary to serve the community.

On the product lines that the CAHWs were dispensing, 52% of the respondents regarded dewormers as their fastest moving product line, 31% indicated that dispensing of broad spectrum antibiotics was the leading product line, while only 13% regarded acaricides as the main product line. The demand for these products varies from region to region. The Wajir Bor, Riba and Khorof-Harar regions, for instance, showed higher demand for acaricides and trypanocidals, while the Hungai-Mansa region showed a comparatively higher demand for dewormers and broad-spectrum antimicrobials.

All 23 respondents showed a low asset base of less than Kshs. 4,000. The monthly overhead costs were equally low, or missing in some cases. In the absence of the said indirect costs, and given that most CAHWs were not charging any margin on drugs, the team was unable to compute the break-even volumes. The following problems were found to be common among the CAHWs.

Problems	**Percentage to respondents**
Lack of incentives	87%
Long distances covered	39%
Absence of certification	30%
Inadequate skills	26%
Lack of drug kits	17%
Weak linkage between CAHWs and PAs	17%

Other problems mentioned include:-

- Expiry of drugs
- Lack of water
- Debts
- Absence of business opportunities for diversification
- Unavailability of drugs at PAs
- Low purchasing power in the community
- Inadequate equipment and tools
- Need for uniforms for CAHWs

The District Pastoral Association (DPA) and member PAs should discuss and agree on commission arrangements that will incentivise the CAHWs. In the short-run, CAHWs should be encouraged to use camels to alleviate transport problems. In the long-run and if the infrastructure improves and a credit system is set up, the CAHWs could be given loans to buy motorbikes. To motivate the CAHWs further, OAU/IBAR and other key stakeholders should consult with the KVB to design a scheme of awarding certificates since the training curriculum for CAHWs has already been approved. Continuous training is necessary for the improving the CAHWs service delivery. Thus refresher courses should be intensified but in a co-ordinated manner, taking account of experiences and weaknesses gathered during the monitoring and evaluation exercise. The ITDG modula training approach could be adopted.

Stockowners perception of delivery system

Stockowners as the ultimate recipients of the services delivered through the CAHWs system.

To gauge the satisfaction level of the recipients, the consultants interviewed 26 livestock owners selected randomly from Wajir Bor, Riba, Khorof-Harar, Hungai, Mansa, Griftu and Wagaila locations. Seventy-three percent (73%)of the respondents have been in the business of stock-ownership for more than 10 years, 15% have an average of 10 years experience, while the rest (12%) have been in the business for less that 5 years. All the respondents indicated that they receive their animal health services from CAHWs. On the quality of service rendered, 65% described the service delivery as excellent, 19% very good while 16% regarded it as good. The following clinical cases were found to be common ones handled by CAHWS.

- Trypanosomiasis
- Tick-borne diseases
- Deworming
- Camel pneumonia
- Scabies
- Wounds
- Camelpox

The respondents were further asked to indicate the charges for the above services and express their views concerning them. Sixty-five percent stated that the charges were fair, 23% expensive, 8% very expensive, while 4% said they were cheap.

To improve the services delivered by CAHWs the respondents stated that the following support should be provided, in order of priority:

- Incentives in the form of salary/commission/allowances
- In-service/refresher courses
- Means of transport
- Recruit and train more CAHWs
- A variety and affordable drug packs
- Avail drugs at all times
- Identification documents
- Certification
- Cold chain
- Improve working relationship between the CAHWs, PAs and livestock owners
- Intensify vaccination to reduce disease load
- Buy uniforms for CAHWs
- Sensitise the community on the role of CAHWs

The team established the problems, fears and risks encountered by the District Pastoral Association office and the three private shop owners visited. The table below summarises the problems as expressed by the respective respondents and their suggested solutions.

Table : Problems limiting the growth of district-level drug shops and their suggested solutions.

Problem	Shops affected	Suggested solutions
Poor infrastructure	Al-Furqan Pharmacy Liban Pharmacy DPA	None
High transport costs	Wajir Veterinary Centre and Clinic	Procurement arrangement with Wajir-Nairobi commuter buses.
Lack of transport	Wajir DPA	Hire in the shortrun and plan to buy later
Expansiveness of the region	Wajir Veterinary Centre Clinic	Use of camels and use of more community-based animal health workers.
Low purchasing power	Wajir Veterinary Centre Liban Pharmacy	Diversification of business
Black market/fake drugs	Wajir Veterinary Centre Liban Pharmacy	Law enforcement through the administration Community sensitisation
High receivables (debts)	Wajir DPA Al-Furqan Pharmacy	Suspension of supply(credit sales) Support from NGOs and Govemment
Inadequate working capital	Wajir DPA Liban Pharmacy	Hire skilled manpower for stock control and strategic stock management
Lack of skilled manpower	Wajir DPA	Support from NGOs Hiring of skilled manpower
Uneven competition and subsidy	Wajir DPA Liban Pharmacy	NGOs should be discouraged from working independently and issuing subsidised drugs
Threat by the local DVO	Liban Pharmacy	No solution given

Annexe IV (B) TURKANA DISTRICT

BACKGROUND INFORMATION

Turkana District lies in the Rift Valley Province extending northwards to border of Southern Sudan. The district is the largest and probably the most vast in the country. Like all other ASAL districts in Kenya, the main sources of income and livelihood is livestock. Pastoralism is a lifestyle of the Turkana people and is the main livestock production system. Livestock species include cattle, sheep, goats, camels and donkeys. Animal health is one of the major felt needs of the Turkana. The Department of Veterinary Services leads in service provision but is very thin on the ground. Despite the complimentary effort by various NGOs and development agencies, animal health services are still inadequate.

THE AHA MODEL

The consulting team visited Turkana District and established that SNV and VSF-Belgium have initiated, on a pilot basis and due to the lack of private vets, the Animal Health Assistant (AHA) Model to enhance animal health delivery in the district. Four AHAs have been identified and posted in different parts of the district. SNV has two: in Kakuma and Lokichar, while VSF-Belgium also has two in Lodwar Town (but serving Loima and Turkwel catchment areas) and the second is in Kerio region. The team met three of the four AHAs and collected data on their current and projected business performance.

FINANCIAL PERFORMANCE ANALYSIS

The Performance of the AHA's

The common characteristics identified amongst the three AHAs include:-

- All are employees of the donor agencies
- They do not operate from any designated drug shops
- Their operations are not open directly to the public except through the CAHWs
- Their specific roles are similar and include:-
  - storing drugs
  - training of CAHWs in conjunction with veterinary officers
  - supplying drugs to CAHWs
  - supervising/monitoring of CAHWs performance
  - organising for refresher courses
  - collecting revenue from CAHWs
  - conducting vaccination campaigns
  - organising community dialogue workshops
  - conducting feasibility studies of new areas to be covered
  - reporting to supervisors, monthly

The consulting team requested each one of them to provide sales projections if they were to go into full-time business because they have not been operating as business entities. These projections now form the basis of the team's business analysis plan.

VSF-B AHA – LOIMA/TURKWEL REGIONAL CATCHMENT AREA

The AHA envisaged an average monthly turnover of Kshs. 71,050 derived from the following product lines:

PRODUCT	TOTAL TURNOVER	PROFIT MARGIN
Trypanocidals	26,400	12.5%
Alamycin 20%	25,000	11%
Triatix 100mls	14,000	12.5%
Dewormers	4,950	15.8%

Average profit margin = 13%

To enable the AHA operate efficiently, he listed the following equipment as basic for start-up.

EQUIPMENT	ESTIMATED VALUE (KSHS)
Chairs, table and fittings	15,000
Bardizo (2)	10,000
Vehicle (Suzuki)	400,000
Thermometers (2)	700
Gumboots	500
Spray pump	4,000
Total equipment cost	**430,200**

OVERHEAD COSTS

Cost of element	**monthly estimates (Kshs)**
Depreciation	3,585
Salaries and wages	10,000
Rent and rates	2,000
Professional fee (1000/- p.a. to KVB)	167
Petrol and repairs (1200kms per month @ 22/- per km)	26,400
Telephone	500
Stationery and consumables	3,000
Reporting costs (for GoK vets periodical visits)	900
Total indirect costs	**46552**

Projected break-even volumes

The expected clinical caseload in the area for the area would form only 10% of the business volume. Consequently, the drug sales will absorb 90% of the estimated monthly overhead costs of Kshs. 46,552, which is equivalent to 90% x 46552 = 41897

Therefore, the monthly break-even volume, taking into account that the average profit margin is 13% is

(13/100) x X = 41897, where x = the break-even vales volume $x = \frac{41897}{0.13}$ = Kshs. 322,285

This projects to a daily break-even sales volume of $\frac{322285}{26 \text{ days}}$ = 12396

Expected limitations

The AHA listed the following as some of the limitations that will adversely affect his performance.

- Mobility: preferred a vehicle to a motorbike
- Accessibility/vastness of the area: use of a vehicle could help ferry more drugs
- Need for more CAHWs to be trained and put in business
- Seasonality: need for diversification of activities like livestock marketing and butchery operation
- Underdeveloped cash economy: allow barter trade into livestock trade

SNV AHA – Lokichar Catchment Area

The AHA proposed an average monthly sales turnover of Kshs. 136,200. He listed the following as his key product lines:

Product	Total Turnover (Kshs)	Profit Margin
Trypanocidals	86,000	24%
Alamycin	23,000	12%
Vermitan	14,080	64%
Triatix	13,320	3%

Average profit margin 26%

On Vermitan, the AHAs strategy is to buy the five-litre packs and dispense at Kshs. 5. per every 10mls

Equipment Costs

Equipment	**Estimated Value (Kshs)**
Vehicle (Suzuki)	500,000
Hand pump	7,000
Bardizo (2)	11,500
Drenching gun	1,500
Gum boots /dust coat	1,500
Stethoscope	600
Hoof-trimmer	200
Automatic syringes	5,000
Total equipment cost	**527,300**

Overhead Costs

Cost of element	**Monthly Estimates (Kshs.)**
Depreciation	4394
Salaries and wages	25000
Rent and rates	1000
Fuel and repairs (1200kms @ 22/- per km)	26400
Telephone	3000
Vehicle insurance	2500
Road license	100
KVB license	83
Total	**62477**

Projected Break-even Volumes

The AHA has no intention of engaging in clinical service, hence the total overhead costs will be absorbed by the drug sales activity. The average monthly break-even sales volume is therefore Kshs.

$\frac{26}{100} \times X = 62.477;\ x = \frac{62,477}{0.26} = 240,296.$

This is equivalent to an average daily sales bread-even volume of Kshs. $\frac{240,296}{26} = 9,242$ /=

The following are the expected limitations and their possible solutions, as provided by the AHA:

Problem	**solution**
• High illiteracy rate	: community sensitisation and training
• Insecurity	: enhance inter-community dialogue
• Absence of drug store	: need to establish a drug store in Lokichar
• Low cash economy	: enhance livestock marketing

SNV AHA –K akuma

The Kakuma-based AHA expects to make an average monthly turnover of Ksh.34, 970, to be derived from the following key products:

Product	**Monthly Turnover (Kshs)**	**Profit Margin**
Trypanocidals	10,000	11%
Triatix	8,400	17%
Adamycin 10%	7,350	24%
Vermitan	4,610	11%
Tramazol	4,610	11%
Average monthly profit margin	15%	

Equipment costs	**Estimated Costs (Kshs.)**
Motorbike	280,000
Bardizo (2)	11,000
Knapsack sprayers (2)	10,000
Automatic syringes/needles	2,000
Ear notches	1,900
Total estimated equipment cost	**304,900**

Overhead Costs

Cost of element	Monthly Estimate (Kshs.)
Depreciation	2,541
Salaries and wages	20,000
Rent and rates	1,000
Petrol and repair	4,000
License (KVB)	167
Total monthly overhead	**27,708**

The Performance of the (CAHWs)

SNV, ITDG and VSF-Belgium have trained 106 AHWs in Turkana District, and 70% are active. The consultants were not able to meet most of these CAHWs but they met the two most active ones who operate under SNV and VSF-Belgium, but based at Kalemunyang and Lokapel trading centres.

The Kalemunyang-based CAHW has been working for two years, while his counterpart in Lokapel has three years of experience. Both CAHWs have drug shops with an average monthly turnover of Kshs. 20,000 from the sale of drugs. They have diversified their businesses into sale of cereals and general merchandise. Both CAHWs showed a high level of commitment and motivation to their work and each of them has substantially injected personal funds into establishing their drug shops. One of them raised the mandatory 40% deposit towards the drug kit without the help of his *adekar*.

The fastest moving product lines for these CAHWs were similar, with antibacterial products leading the league, followed by tripanocidals and dewormers. The Kalemunyang CAHW had the strongest fixed asset base, having managed to sell some of his livestock to construct a semi-permanent building for his drug shop, valued at Kshs. 40,000. His Lokapel counterpart relied on rental premises. Despite these CAHWs success in drug sales, they have not been exposed to any form of small business management skills. They both admitted to making regular personal drawings from the business, but were unable to indicate the exact figures.

In the absence of operational data, and the CAHWs inability to make operational estimates, it was difficult to calculate their break-even sales volumes.

The CAHWs provided the following as their major constraints:-

- Lack of appropriate transport system
- Insecurity
- Nomadic lifestyles of the Turkana communities
- Low literacy rate among the communities
- Low cash economy
- Seasonality factors

To alleviate some of these constraints, the CAHWs suggested the following approaches:

- Financial support to purchase bicycles
- Enhanced community dialogue to reduce insecurity and intensify community awareness on livestock health.
- Train and deploy more CAHWs to help cope with the nomadic lifestyle
- Support the CAHWs to diversify into other business opportunities such as running of general provision store, hides and skins, and livestock trade

To compare and contrast the turnover of the two CAHWs interviewed, the consulting team obtained actual cost recovery and drug revenue data of other CAHWs from one of the AHAs for 1999-2000.

The table below summarizes the analysis results of the four CAHWs

Name of CAHW	Adakar	Total cost (Kshs.)	Totals sales	Average monthly sales	Total profit	Gross margin %
Ekitela Loweto	Agiron	27,394	29,028	22,33	2,460	9
Lorinyoki Namus	Namus	31,435	32,745	2,519	4,160	13.2
Ngirantale Achakar	Achakar	35,225	39,415	4,927	4,130	11.7
Ewesit Logialan	Lobakomaran	18,865	20,755	1,153	1,890	10
Averages		28,230	30,486	2,708	3,157.5	11

Compared to the two CAHWs interviewed, the data in the table above shows that the actual turnover for the four CAHWs is relatively low, giving an average monthly sales volume of only Kshs. 2,708 compared to the former Kshs. 20,000. If the majority of the CAHWs fall under this latter category, then one would assume that the optimum average monthly sales volume might not go beyond Kshs. 10,000 per CAHW. If this assumption is true then the conclusion is that under the current operation, the Lokichar AHA will require 14 CAHWs in order to register his projected sales of Kshs. 136,620 per month. He will, however, require 24 CAHWs just to break-even. This follows that the AHA must strive to put in place between 30 and 40 active CAHWs to start registering reasonable profits. More than 40 CAHWs would present the AHA with managerial problems leading to a decline in marginal revenue contributed by each additional CAHW.

On the other hand, VSF-Belgium CAHWs is summarised in the table below: -

Table: VSF-B Actual monthly turnover for 6 CAHWs for the period January – September 2001

January 2001			
Product line	**Total sales**	**Direct cost**	**Total profit**
OTC	53,200	47,880	5,320
Triquin	14,300	13,200	1,100
Triatix	49,920	45,760	4,160
Ethidium	66,510	59,120	7,390
Dewormers	52,000	44,000	8,000
Eye wound powder	770	700	70
Totals	**236,700**	**210,660**	**26,040**
Sales average per CAHW	**39,450**		**average profit=4340 per CAHW**
February 2001			
OTC	23,600	21,240	2,360
Triquin	13,000	12,000	1,000
Triatix	35,520	32,560	2,960
Ethidium	24,705	21,960	2,745
Dewormers	26,000	22,000	4,000
Eye wound powder	110	100	10
Totals	**122,935**	**109,860**	**23,075**
			average gross profit per CAHW = 2,179
March 2001			
OTC	66,400	59,760	6,640
Triquin	2,600	2,400	200
Triatix	28,320	25,960	2,360
Ethidium	50,310	44,720	5,590
Dewormers	40,300	34,100	6,200
Eye wound powder	1,210	1,100	110
Totals	**188,930**	**186,040**	**21,100**
			average gross profit per CAHW = 3,517
Average sales	31,493		
April 2001			
OTC	38,000	34,200	3,800
Triquin	7,800	7,200	600
Triatix	4,560	4,180	380
Ethidium	14,040	12,480	1,560
Dewormers	9,100	7,700	1,400
Eye wound powder	4290	3900	390
Totals	**77790**	**69660**	**8130**
			average gross profit per CAHW = 1355
Average sales	12965		
July 2001			
OTC	10800	9720	1080
Triquin	260	240	20
Triatix	480	440	40
Ethidium	900	800	100
Dewormers	-	-	-
Eye wound powder	-	-	-
Totals	**12440**	**11200**	**1240**
August 2001			
OTC	8000	7200	800
Triquin	-	-	-
Triatix	480	440	40
Ethidium	-	-	-
Dewormers	5200	4400	800
Eye wound powder	-	-	-
Totals	**13680**	**12040**	**1640**
			average profit per CAHW = 273
Average sales per CAHW for two months = 2113			
Average per month 1056 per CAHW			

From the above analysis, it is apparent that the monthly turnover per VSF-Belgium CAHW is not different from that registered by SNV CAHWs. The sales from January to April 2001 were abnormally high, ranging between an average of over 31,000 and 12,000 per month per CAHW, purely due to availability of highly subsidised drugs. In May and June, due to the absence of subsidised drugs, no sales were registered and thereafter the average monthly sales per CAHW ranged between 1000 and 2000. This confirms that the average monthly sale per VSF-Belgium CAHW is not significantly different from that of the SNV CAHW. However, the fact that the average monthly sales per CAHW during periods of drug subsidy can be as high as 31,000 is an indicator that the CAHWs have the capacity to sell more if given some incentives. This also further indicates the extent to which subsidies affect the market forces of supply and demand, with slipover effects to the sustainability of future delivery of animal health services. In conclusion, just like the SNV AHA, the VSF-Belgium AHA requires 26 CAHWs registering average monthly sales of Kshs. 10,000 each to realise his monthly break-even sales volume of Kshs. 260,433. He will also require between 30 and 40 active CAHWs to start registering reasonable profits.

Annexe IV (C) WEST POKOT DISTRICT

BACKGROUND INFORMATION

West Pokot District is in Rift Valley Province and lies on the northwest of Kenya bordering Uganda. The bordering districts are mainly Turkana, Trans Nzoia and Mt. Elgon. The major part of the district is arid and semi-arid with pastoralism as the lifestyle, forming a major component of livestock production system. Cattle, sheep, goats are the main species of livestock kept.

Animal health needs are a priority in the district. The main animal health service providers include the DVS, NGOs and drug sellers. NGOs, with participation of the veterinary department, have trained CAHWs and are now supplying them with drugs. In Turkana, the AHA who are employees of NGOs, supply the CAHWs with project drugs and the CAHWs in turn supply the same to livestock keepers. The livestock keepers can also buy drugs from drug dealers in the shops as witnessed at Kacheliba or in the open-air market at Nakwijit, approximately 70kms from Kapenguria. The provision of animal health services is inadequate and calls for interventions.

There is no privatised community-based animal health service delivery system except for the drug supply by the drug sellers. The AHA-CAHWs-livestock keepers' linkage operates on a cost recovery basis but has not developed or matured into a privatised system. However, the proposed veterinarian supervised community-based animal health service delivery model will be built on this.

Proposed veterinarian supervised community-based Animal Health Service Delivery Model

According to the proposal, the veterinarian is expected to have a network of AHAs and CAHWs. The operational base for the veterinarian will be Kapenguria/Makutano from where he will be supplying drugs to AHAs and CAHWs. Ideally, the model has a good base for drugs supply to livestock keepers but will require a master plan and a good strategy to contain and sustain the network. On another front, the drug sellers who have already secured a position in the drugs supply line pose a challenge to the proposed Privatisation Model.

The animal health delivery system in West Pokot District is co-ordinated by four NGOs: SNV, SNV (NRM), ELCK, and World Vision who have jointly trained 54 CAHWs. Preliminary discussions amongst the NGOs have resolved that SNV CAHWs should spearhead the privatisation process. The district has been divided into four areas each headed by an AHA, and all the four AHAs will be expected to report to a proposed private veterinarian to be established at the district headquarters in Makutano. The four areas where the AHAs will set base are:

- Kacheliba-Alale area
- Chepareria/Ortum
- Sigor
- Kapenguria

FINANCIAL PERFORMANCE ANALYSIS

a) Drugs Percentage profit margins for AHA and CAHWs.

Drug Percentage Profit Margins

	AHA			CAHW			
Drug name	**Buying cost**	**% increment to CAHW**	**Selling cost to CAHW**	**% incr. From CAHW price to stock owner**	**Selling cost CAHW to stockowner**	**Total % incr., from buying cost**	**Final cost per ml.**
Duocycline L.A. 100mls	337	10	370	8	400	19	4 per ml
Teneline 10% 100ml	160	50	240	25	300	75	3 per ml
Limoxin 10% 100ml	100	140	240	83	300	340	3 per ml
Triatix 100ml	168	10	185	8	200	19	-
Novatraz 100ml	135	19	160	28	180	33	-
Ethidium tabs	30	33	40	50	50	67	-
Novidium tabs	42	19	50	36	60	43	-
Veriben sachets	38	32	50	40	70	46	-
Eyewound powder	64	25	80	15 per application			15 per application
Nilverm 5lt	2109	19	2500	20	3000	42	60cts per ml
Triquin	180	17	210	10	230	27	-
Cymelarsan	180	17	210	10	230	27	-
Pygrease	59	19	70	21	80	36	-
Cevomec 50ml	1222	23	1500	17	1750	30	35 per ml
Average gross margins		31		27			

b) Product costs between private drug shops and CAHWs

Product line	**Private drug shop**	**Cost**	**Selling price**	**CAHWs**	**Cost**	**Selling price**
Trypanocidals	Norotryp. Novidium	33 45	40 50	Veriben Novidium Triquin Ethidium	38 40 180 30	50 50 210 40
Tick control	Triatix	145	160	Triatix Norotraz Pygrease	168 135 59	185 160 70
Antibacterial	Alamycin 10%	95	110	Tenaline Duocycline	160 337	240 370
Dewormers	Nilsan Wormicide Vetworm	165 46 42	180 50 50	Cevomec Nilverm 5 lt	1222 2109	1500 2500

c) Open-air market drug prices – Nakwijit market – West Pokot district

Drugs	Manufacturer/agency	Package	Prices (Kshs.)
1. Oxy-kel 05	K-Kela	500mls	650 per bottle 20 per 10CC
2. Alamycin 5%	Norbrook	50mls	120-140
3. Limoxin 50	Inter-chemie	100mls	200
4. Tenaline 10%	Sanofi	100mls	300
5. Adamycin 5%	Assia pharmaceutical	50mls	170
6. Adamycin 10%	Assia pharmaceutical	50mls	180-200
7. Adamycin 10%	Assia pharmaceutical	100mls	250-270
8. Triatix	Coopers (K) Ltd	40mls	100
9. Triatix	Coopers (K) Ltd.	100mls	200
10. Triatix	Coopers (K) Ltd.	250mls	540-560
11. Wormizan plus	Biodeal Laboratories	1ltr 0.5ltr 150mls	570-600 300-350 140
12. Nilzan plus	Coopers (K) Ltd	125mls	180-200
13. Vetworm plus suspension	Lab and Allied	120mls	100-120
14. Vetworm plus liquid		125mls	50
15. Wormicid liquid	Cosmos	125mls	50
16. Phenoxyl 10%	Kela	50mls	180-200
17. Adapen strep	Assia pharm.	50mls	200-250
18. Diazole –60EC	Farmchem	28mls	50
19. Steladone 300 EC	Norvatis	100mls	150
20. Wormicid	Cosmos	1g bolus	20
21. Diseptoprim bolus (intra-uterine bolus)	Cosmos	200mg	10 per bolus
22. Diminaphen	Phenix	2.3gm	50
23. Norotryp	Norbrook	2.3 gm sachets	50
24. Novidium tabs		Tablets	60
25. Sevin (dust) –insecticide Acaricide	Rhone-Poulenc	200gm 43gm sachets	80 70
26. Baygon powder	Bayer	100gm	60
27. Multipurpose hand spray		1ltr capacity	200
28. Syringes – kings		10cc 20cc	20 25
29. Needles hypodermic		G16 G18 (disposable)	20 10
30. Hypodermic syringes		10cc	350
31. Eye/wound powder	Hightech pharm.	25gms	120
32. Fuzo grannules (furazolidine)	Cosmos	6 gms	30
33. Introvit (multivitamin injectable)	Interchemie	100mls	350
34. Tixfix	Twiga	100mls	180-200

Annexe IV (D) MARSABIT

FINANCIAL PERFORMANCE ANALYSIS

At least four NGOs and a bilateral agency, working in close liaison with the Department of Veterinary Services have supported the community-based animal health delivery system in Marsabit District. These include Farm-Africa, GTZ, ITDG, CIFA/COOPI, which have trained 213 CAHWs between 1991 and 2001. They have also assisted two AHAs to set up drug shops: Mifugo Shop (GTZ) and Animal Health Services (Farm-Africa) in Marsabit Town. Others have set up 14 drug users associations during the same period, and periodically offered subsidised drugs as part of drought mitigation strategies. To ascertain the current business performance of the animal health delivery system, the consulting team obtained data from the drug shops, CAHWs and livestock owners.

Drug Shops

The team visited five drug shops, two privately owned and three owned by drug user associations. The two privately owned drug shops are Mifugo Services and Animal Health Care Services, while the drug users association include Karare Drug Users Association, Artha Torbi Livestock Development Group and Yaagara Livestock Development Group (Furole) shops.

a) Mifugo Services

Based in Marsabit Town, Mr. Lesas, a holder of a diploma certificate in Animal health from Egerton University, owns the shop. It was established in 1994 with financial support from GTZ. The day-to-day management of this shop is in the hands of Mrs. Lesas who works for the Department of Veterinary Services in Marsabit Town.

Specialising mainly on drug retailing, the top five product lines for this shop are broad-spectrum antibiotics, drenches, acaricides and Sevin Powder. Specific product brands are Alamycin 10%, Wormicid plus, Sevin Powder, Triatix and Steladone in that order. The drugs are sourced from Interlink Drug Company in Meru Town, over 300kms away. A working relationship has been established between Interlink and Mifugo services, whereby all drug orders are places by phone, and delivered by lorries that supply beer to Marsabit Town. The owners pay the suppliers through the Interlink bank account in Marsabit Town.

The current monthly turnover for Mifugo Services ranges between Kshs. 75,000 and Kshs. 90,000 with an average gross margin of 20%. The highest margin (of 33%) is derived from the sale of Alamycin, while the lowest margin (15%) is from the sale of Wormicid plus. Monthly overhead cost is Kshs. 13,433. This gives a monthly break-even sales volume of Kshs. 67,166 that are equivalent to a daily break-even sales volume of Kshs. 2,762.20.

N/B *Break-even point = Total overhead costs ÷ Average percentage gross margin*

Mifugo Services registered an average monthly sales volume of Kshs. 200,000 and above during the first two years of operation. The current reduced turnover, as stated above, has been brought about by several constraints including:

- Limited access to the pastoralists: This has been occasioned by reduced support from GTZ. Besides, the AHA has not made any effort to maintain the relationship with the CAHWs (and by extension the pastoralists), as originally envisaged by GTZ.
- High receivables
- Emergence of cheap open-air drug supply lines
- Low cash economy, hence reduced effective demand.

b) Animal Health Care Services Shop

The Animal Health Care Service shop was established in 1999 in Marsabit Town with financial support from Farm-Africa. It is owner-managed by Mr. Joseph Salgi, who holds a Diploma in Animal Health from Egerton University. Specialising in drug retailing (with some limited clinical services), the main product lines are similar to those of Mifugo Services. The average monthly turnover is Kshs. 25,000 with an average gross profit margin of 24%. In contrast, the monthly overhead costs is Kshs. 10,643, giving a monthly break-even sales volume of Kshs. 44,346. This shows that this drug shop is currently making losses. The team advised the owner-manager to re-evaluate the controllable costs such as salaries/wages and transport costs. It was noted that this shop procures drugs from Interlink (Meru), but has not established transport cost-reducing arrangement like that of Mifugo Services.

When asked to list some of the factors limiting his business success, the owner cited the following:

- Availability of cheaper drugs through quacks and NGOs
- Inadequate capital for diversification (low capital investment)
- Costly and inefficient drug sourcing system
- Lack of sanitary mandate to allow private practitioners to get contracts for vaccination campaigns
- Weak institutional linkage with the pastoralists
- Lack of access to the government laboratory services
- Lack of animal health forum to address animal health provision-related issues and problems
- High receivables
- Weak cash economy in the ASAL

c) Karare Livestock Self- Help Group

The Karare Livestock Self-Help Group was set up in 1995. The membership is 30, paying a membership fee of Kshs. 1,000 and an animal subscription fee of Kshs.500. Currently, the group has four activities: drug sales, transport, dispensary and irrigation farming.

With an initial drug support from Arid Lands Resource Management Programme (ALRMP), the group established a drug store in 1997. The major product lines are antibiotics, acaricides and dewormers. Specific product brands are Alamycin, Tixfix, Albenzole, Wormicid and Sevin Powder.

The average monthly turnover for the last two years is Kshs. 10,000, with a gross average profit margin of 31%. The monthly overhead cost is Kshs. 4,133, giving an average monthly break-even sales volume of Kshs. 13,332. This store is currently registering losses and the management committee members have been alerted. The group's major operational problem is high receivables, currently standing at Kshs. 100,000

d) Artha Torbi Livestock Development Group

The Artha Torbi Livestock Development Group is based at Torbi Shopping Centre, 150kms northeast of Marsabit Town. The group established a drug shop in 1994, with financial and advisory support from Farm-Africa. The group is currently receiving financial support from CIFA/COOPI.

The current product lines are mainly antibiotics, dewormers and acaricides. The most popular product brands are Alamycin 10%, Wormicid-plus and Steladone, in that order. The average monthly sales turnover is Kshs.3, 500 with an average gross margin of 11%. The monthly overhead cost for the drug store is Kshs.3, 244. The group's monthly break-even sales volume is, therefore, Kshs. 29,490. Just like Karare Drug Shop, Torbi is also registering high losses.

Some of the problems affecting the performance of the business include: -

- Credit sales
- Low cash level among the community
- Long distances covered to procure drugs
- High cost of drugs
- Inadequate watering sources, hence pastoralists desert the area
- High overhead expenses
- Lack of sense of ownership amongst the members
- Inadequate management/leadership skills

e) Yaagara Livestock Development Group, Forole

The Yaagara Livestock Development Group is in Forole Manyatta area, at the Kenya-Ethiopia border. The group established a drug store in 1999 with financial and advisory support from CIFA/COOPI.

Like the Torbi-based drug store, the Yaagara Drug Store registers an average monthly sales turnover of Kshs. 3,500. The major product brands are Albenzole, Tenaline 10%, Alamycin 10%, Veriben, Steladone, Triatix and Sevin Powder. Albenzole, the fastest-moving drug, had been out of stock for the last three months, while CIFA donated Triatix and Sevin Powder.

The average gross profit margin for the drug store is 13%, with a monthly overhead cost of Kshs. 3,500, just like the Torbi-based drug shop. This gives the group an average monthly break-even sales volume of Kshs. 26,923. The drug shop hardly meets its overhead costs and the members meet every three months to give financial contributions to defray the said costs.

The group cited the following as their main constraints:-

- Transport problems: currently, the group procures drugs from Mifugo Services Shop in Marsabit Town. 200kms away on a rough insecure road
- Few CAHWs: The group initially had two CAHWs, one is managing the drug shop, but the second one recently secured a job with the Pastoralist Integrated Support Programme (PISP)
- Subsidised drugs from NGOs: This causes drugs to expire on the shop's shelves
- Inadequate diagnostic skills among the CAHWs and the stockowners
- High illiteracy rate among the stockowners

The consulting team appreciates the efforts made by Farm-Africa and GTZ in setting up the Mifugo Services and Animal Health Service Drug shops in Marsabit Town. Despite the mentioned short-comings, there is a chance that these shops can survive as business units that can be further developed to support the livestock drug supply line in Marsabit District. Deliberate efforts must now be made to link them with the rural drug shops.

The group-owned drug shops (user associations), on the other hand, have performed dismally and show no chances of succeeding in the market place. Concerted efforts should now be made to replace them with individual-managed rural drug shops, as discussed below. Apparently, CIFA is currently creating more of such groups with no plans to work with the existing two drug shops. There is definitely a need for refocusing.

Community-based Animal Health Workers (CAHWs)

In consultation with Marsabit District Veterinary Office and the CIFA/COOPI officials, the team visited Manyatta Jillo, Dirib Gombo, Logologo, Karare, Kamboe, Torbi and Forole areas. Despite having been informed that 213 CAHWs had been trained for over 10 years (1991-2001) in Marsabit District, the team met only six supposedly active groups.

Out of six CAHWs interviewed, two had no formal education, two had primary level education, and another two had secondary school education. CAHWs with the secondary level of education were seen to be the most active despite having been in business for only two years. The third most active CAHW had no formal education, but had been in this business for the past 16 years, having started as a traditional healer. The two CAHWs with secondary level of education were also managing their own community-based drug shops.

Of the two primary level CAHWs, one had not started delivering animal health services, saying that he was yet to receive the initial drug kit from CIFA/COOPI. But he had been trained over a year ago and could source drugs from the community drug shop, as a sign of commitment to this service. The second CAHW had diverted into livestock trade due to stiff competition from the open-air drug peddlers and subsidised drugs from NGOs. This CAHW manifested high business acumen, having sold his own animals (after training) and raised Kshs. 36,000 to establish his own drug store. On realising that he could not compete favourably (his location being only 8kms from Marsabit Town) he diverted to livestock trade.

The CAHWs that were practising had similar product lines, mainly antibiotics, dewormers, acaricides and tripanocidals. The fastest moving product brands in order of priority are Wormicid-plus, Alamycin 10%, Valbazen, Triatix, Triquin and Novidium tablets. The average gross profit margin is 24%, with the highest being charged in Karare area (28%) and the lowest in Kamboe (21%).

The average monthly sales for each CAHW was Kshs. 4,000. The main expense was personal drawings, since there was no established salary level. The average monthly drawing per CAHW was Kshs. 1,500. This gives each business unit an average monthly break-even sales volume of Kshs. 6, 250. It follows, therefore, that all the CAHWs are operating below their break-even points. It is just a matter of time before they wind up their business.

Following are limitations that the CAHWs cited.

- Inflexibility among the stockowners, for example, some livestock owners decide on the drug dosage to be given to their animals irrespective of the CAHW's advice
- Poor drug supply line
- High temperatures affecting drug potency
- Nomadic lifestyle of the stockowners forces the CAHWs to trek long distances to provide services
- Credit sales due to low cash economy
-

Solutions to the above problems include: -

- conduct stockowner awareness campaigns
- improve drug supply lines by assisting some CAHWs to establish own drug shops
- assist rural drug shops and the CAHWs to purchase portable cool boxes
- provide transport – in the short-run – donkeys and camels, and motorbikes in the longrun

The CAHWs further gave the following business opportunities as possible areas for diversification:-

- Livestock trade
- Operating rural drug shops
- Cultivation of vegetables through irrigation

Annexe IV (E) MERU CENTRAL AND MERU SOUTH DISTRICTS

BACKGROUND INFORMATION

Farm-Africa has spearheaded the delivery of animal health services, through the community-based animal health workers, in Meru Central and Meru South districts. The Dairy Goat and Animal Health Care Project was started in February 1996, with funding from the Department for International Fund for Development (DFID). The project targets the drier parts of the two districts, specifically in Miiriga Mieru East, Abothuguchi East, Abothuguchi Central, Muthambi and Chuka divisions.

KVAPS, in collaboration with Farm-Africa, assisted two veterinarians to establish private clinics in Meru and Chuka towns. The two veterinarians received a commercial loan from Barclays Bank of Kenya, with Farm-Africa providing collateral covering one-third of each loan size. The collateral was an interest -earning fixed deposit placed with the Co-operative Bank of Kenya, and the certificate of deposit of the same amount, lodged with Barclays Bank of Kenya. There was an understanding that a "lien" will be put on this fund until the two loans are fully repaid. The average loan size for each veterinarian was Kshs. 450,000. These loans have been fully repaid.

The NGOs also set up a parallel guarantee fund arrangement for AHAs and CAHWs. To-date, eight AHAs have received commercial loans ranging between Kshs. 50,000–75,000 each. Farm-Africa has trained 52 CAHWs and provided with kick-start drug kits. Forty-eight of them are currently active.

The project uses group approach as an entry point to the community. The group members, made up of dairy goat farmers, identify one of their own to be trained by Farm-Africa as a CAHW, who is then subsequently linked to the AHA. To-date, the CAHWs, AHAs and the veterinarians have formed the Meru Animal Health Workers Group (MAHWG) that is establishing a fund to enable them extend credit to its members, once Farm-Africa project comes to an end.

Similarly, the Dairy Goats Farmers Group has also formed an umbrella group called the Meru Goat Breeders Association, with the main objective of ensuring the sustainability of the Toggenburg-based breed improvement.

To assess the performance of the players under the Private Veterinarian Model, the consulting team interviewed and collected data from the two private veterinarian, three AHAs, five CAHWs and twelve livestock owners.

FINANCIAL PERFORMANCE ANALYSIS

Private Veterinarians
Meru Vet Services Clinic

Meru Vet Services Clinic, located in Meru Town, is owner-managed by Dr. Alice Kamau. The clinic was established in 1997 and has three main activities: drug sales, clinical services and artificial insemination services.

a) Drug Sales
The main product lines are dewormers, acaricides, antibiotics, mineral salts and feeds. The average monthly sales turnover is Kshs. 50,000, with an average gross margin of 30%. The drug sales only contribute 15% of the total business.

b) Clinical Services
The clinical activity accounts for 40% of Dr. Kamau's business. The most common cases attended to include Anaplasmosis, Mastitis, Pneumonia and East Coast Fever. A professional fee of Kshs. 250 is charged per case. The average monthly caseload is 104 cases.

c) Artificial Insemination (A.I)
Artificial Insemination is the main cash cow for this clinic, accounting for 45% of the business volume. The monthly average caseload is 80 cases. An examination of the cash-receipts for the 2001 revealed that the highest caseload were in July 2001, with 130 cases, while the lowest was registered in September 2000 with 30 cases. The practice charges Kshs. 500 per case on local bull semen and Kshs. 1,000 or more on imported bull semen. Eighty percent of the caseload is on local bull semen, giving a gross profit margin of Kshs. 340 per case.

d) The Asset Base
The clinic has a strong asset base composed of a motorbike, AI tanks, assorted surgical equipment, assorted AI equipment, furniture and fittings, all valued at Kshs. 213,650.

e) Overhead Costs
The total monthly overhead costs are extremely high – Kshs. 56,384, considering that the clinic is currently servicing two loans: KVAPS loan and an overdraft facility from the Barclays Bank of Kenya. Total monthly loan repayment for both facilities is Kshs. 26,176. The KVAPS loan, however, will be fully repaid by the end of 2001, drastically reducing the monthly overhead costs.

f) The Break-even Levels.
At the current monthly overhead cost of Kshs. 56,384, AI activity contributes 45% (Kshs. 25,372), while clinical and drug-sale activities contribute 40% (Kshs. 22,553) and 15% (Kshs. 8,459) respectively.

The break-even drug sales volume is therefore:

$$\frac{30}{100} \times X = 8{,}459 \qquad X = \frac{8{,}459}{0.3} = 28{,}196$$

The AI monthly break-even caseload

$$\frac{25{,}372}{340} = 75 \text{ cases per month,}$$

$$= 3 \text{ cases per day}$$

The clinical monthly break-even caseload

$$\frac{22{,}553}{250} = 90 \text{ cases per month}$$

$$= 3.5 \text{ cases per day}$$

The current problems experienced by this clinic as provided by the proprietor include:

- Poor location of the clinic, hence not strategic for drug sales
- Stiff competition from AHAs

Dr. Kamau's drug procurement strategy is sound, enabling her to offer very competitive drug price levels. However, her location outside Meru Town's central business area (the business entity is 3kms away) does not appeal to customers including AHAs, attached to the Farm-Africa programme. She recently made an attempt to secure premises within the central business area. Although the premises are available the landlords demand over Kshs. 100,000 as goodwill.

Chuka Vet Services Clinic

Chuka Vet Services Clinic is located in Chuka Town. It is owner-managed by Dr. J. W. Wang'ang'a, and has been in operation since 1997. It specialises in two main activities: drug sales and clinical services.

a) Drug Sales
The clinic registers an average monthly tumover of Kshs. 60,000. The main product lines include dewormers, mineral salts, acaricides, insecticides and feeds. The average gross margin on drugs is 20%.

b) Clinical Services
The average monthly caseload is 23 cases, at a fee of Kshs. 200 per case. The clinical services contribute 50% of the business.

c) Asset Base
The asset base for this clinic is valued at Kshs. 585,000, composed of a pickup vehicle, motorbike, fridge and assorted surgical equipment. The monthly overhead costs amount to Kshs. 29,230 giving a break-even drug sales volume of :

$\frac{14,615}{0.2}$ = 73,075 and a monthly caseload of

$\frac{14,615}{200}$ = 73 cases

This business has a strong asset base. The performance could be improved if Dr. Wang'ang'a concentrates on its management. During the first two years of operation, this business was registering a monthly sales tumover of above Kshs. 200,000. This good performance enabled the business to fully repay KVAPS loan in only three years of operation.

Despite the two veterinarians being active members of Meru Animal Health Providers Group (Dr. Wang'ang'a is the current chairman), no emphatic effort has been made to strengthen linkages with the AHAs and the CAHWs.

It appears that Dr. Wang'ang'a's initial enthusiasm to go into private practice faded. He strongly believes that the performance of his business cannot improve because the farmers are too poor to pay for the services. The overheads are too high when it comes to delivery of animal health services, and the cost of capital, that is, interest rate, is too high in this country. These views are in contrast with those of Dr. Alice Kamau, who appeared positive and has managed to build a strong and reliable client base.

The Animal Health Assistants (AHAs)

Farm-Africa has assisted eight AHAs to establish rural drug shops in Meru Central and Meru South districts. Two of the AHAs have diversified into providing AI services. The consulting team managed to visit and interview three of the AHAs in Muthambi, Thimangiri and Giaki locations. These AHAs had been in business for a period ranging between two to six years. Two of them are involved in agrovet sales and clinical services, while the third one is involved in the two services and AI.

The main product lines for these AHAs are dewormers, antibiotics, herbicides and dairy meat but the actual product brands are different. In Muthambi Location, the fastest moving brands are Diseptoprim tablets, while in Thimangiri Location, Sigma Layer Feeds take the lead. In Giaki Location, Triatix is the leading drug product.

The highest average monthly turnover is registered by the Giaki Location AHA amounting to Kshs. 12,000, while the Muthambi and Thimangiri AHA drug shops are each registering an average of Kshs. 10,000. The Thimangiri Drug Shop is less than 10kms from Meru Town, but is surprisingly charging the highest margins – of 76%. The other two (Muthambi and Giaki drug shops) are charging an average gross margin of 36% each. The high gross margin of Thimangiri Drug Shop is due to the business strategy employed, that is, breaking bulk. The AHA, for example, purchases a 70kg poultry feed at Kshs. 900, which he re-packs in a 1kg polythene bags and sells at Kshs. 25 per pack, resulting in a 94% sales gross margin. This strategy works very well in this area because of the presence of several small-scale farmers. It can also be successfully employed in the sale of other products like dewormers, fertilisers and acaricides.

Clinical Services

Compared to the veterinarians, the AHAs charge lower clinical fees, the lowest by the Giaki Location AHA at Kshs. 50 per case, while Thimangiri and Muthambi AHAs charge Kshs. 100 and Kshs. 150, respectively. The contribution of the clinical service activity to the total overhead costs differs amongst the AHAs: Thimangiri AHA – clinical 50%, AI 30%; drugs 20%, Giaki AHA – clinical 60%; drugs 40%; Muthambi AHA – clinical 60%, drugs 40%

AI Services

As already stated, the Thimangiri based AHA is the only one providing AI services. His average caseload per month is 50 cases, with a conception rate of 85%. The bulk of this caseload (90%) is on local bull semen and he charges Kshs. 500 per case. This AHA has developed a strong working linkage with the private veterinarian. He sources for bull semen, liquid nitrogen and other AI consumables come from Dr. Alice Kamau. The gross margin per case is Kshs. 250 i.e. 500 – 172.5 – 77.5, where, 172.5 = 150, the price per straw x 1.15, the 85% conception rate, and 77.5 = cost of other consumables.

The Asset Base, Overhead Costs and Break-even Sales Volume

The Thimangiri-based drug shop has the highest asset base estimated at Kshs. 171,000. It is composed of a motorbike, AI tanks, microscope and assorted clinical equipment. The Giaki-based drug shop has an estimated asset value of 6,200 while the Muthambi AHA asset base amounts to Kshs. 1,000. Due to this variation, the overhead costs differ significantly. The Thimangiri AHA's overhead costs amount to Kshs. 20,912.30; that of the Giaki AHA is Kshs. 9,817.20; and Muthambi AHA is Kshs. 7,058. These give the following break-even points:

Thimangiri AHA: Total overhead cost = Kshs. 20,912.30

a) Clinical 50% = Kshs. 10,456.15
b) Drugs 20% = Kshs. 4,182.50
c) AI 30% =Kshs. 6,273.70

a) Clinics break-even caseload:

$$\frac{10,456.15}{100} = 104 \text{ cases per month}$$

= 3.5 cases per day

This compares favourably with the current daily average caseload of 3

b) Drugs break-even sales volume:

$$\frac{4,182.5}{0.76} = \text{Kshs. } 5,503.30 \text{ per month}$$

= Kshs. 212 per day

c) AI break-even caseload

$$\frac{6,273.70}{250} = 25 \text{ cases per month}$$

Currently the average monthly AI caseload is 50 cases.

Giaki AHA: Overhead costs =Kshs. 9817.20

a) Drug sales = 40% = 3926.9
Break-even sales volume:

$$\frac{3,926.9}{0.36} = \text{Kshs. } 10,908 \text{ per month}$$

= Kshs. 419 per day

with the current average monthly turnover of Kshs. 10,000 the Giaki AHA is currently operating below the break-even point.

b) Clinical – 60% = Kshs. 5890.30
Break-even caseload;

$$\frac{5,890.30}{50} = 118 \text{ cases per month}$$

= 4 cases per day

the current daily average caseload is 3 with the highest ever registered being 6 cases.

Muthambi AHA: Total overhead cost = Kshs.7058

a) Drugs - 40% = Kshs. 2,823.20

Break-even sales volume:

$$\frac{2,823.20}{0.36} = \text{Kshs. } 7,842 \text{ per month}$$

= Kshs. 302 per day

the current average monthly sale volume = Kshs. 10,000 thereby comparing favourably with break-even level.

b) Clinical – 60% = Kshs. 4,234.80

Monthly break-even caseload:

$$\frac{4,234.80}{150} = 28$$

= 1 case per day

Current average daily caseload is 2, which is above the break-even level, thus favourable.

Some of the limitations cited by the AHAs include:

- Unfavourable competition from the government staff
- Sale of non-ethical drugs by provision stores
- High transport costs

Community-Based Animal Health Workers (CAHWs)

Meru Central and Meru South districts have 30 trained CAHWs, each attached to a dairy goat-farming group. The consulting team visited and held discussions with five CAHWs from Kiburine, Mukuthuku, Giaki, Thuura and Chuka locations. Each of these CAHWs has been in business for the past four years. Three of the CAHWs have secondary level of education, while two are primary school level graduates. All these CAHWs are involved in clinical services. However, they do not purchase their drugs from the AHA drug shops save for the one based in Kiburine Location. This AHA buys his drugs from the local AHAs and Dr. Kamau's drug shop. All the CAHWs visited do not charge any professional fee, but build their charges into the drugs dispensed. They thus reflect very high gross profit margins that range between 64% and 94%. Due to lack of records, the average monthly turnovers for these CAHWs is based on estimates averaging Kshs. 2,000.

Asset Base, Overheads and Turnovers

The CAHWs depend on equipment previously donated to their groups by Farm-Africa. These include bardizos, hoof-trimmers, surgical blades, syringes and needles. The only overhead costs these CAHWs incur are personal drawings. The average monthly drawing per CAHW is Kshs.1500. Taking into account that the profit margin ranges between

64% and 94% on an average monthly turnover of Kshs. 2,000, the CAHWs can draw between Kshs. 1,280 and Kshs. 1,880 without adversely eating into the capital. However, because of their inadequate skills in small business management, they may not be aware of this fact, and if this knowledge is not imparted to them in good time the drug kits will soon be consumed through personal drawings.

The CAHWs provided the following as the major constraints affecting their performance:-

- Lack of legal recognition
- Competition from AHAs – both within and outside the project. The CAHW in Mukuthuku Location has to contend with three recently graduated freelance AHA and a veterinarian, besides some CPK-trained CAHWs.
- Inadequate support from the local project AHAs and the private veterinarian
- The group members are often divided along religious and clan lines. This division impacts negatively on the work of the CAHWs.
- Inadequate skills: CAHWs are restricted from using injectables
- High receivables
- Long distances covered when visiting group members to deliver the services

Annexe IV (F) KAJIADO DISTRICT

BACKGROUND INFORMATION

FINANCIAL PERFORMANCE ANALYSIS

Kajiado District has a total of 141 agrovets/chemists that are operated privately. The consulting team was able to visit 25 of these agro-vets (18%) in Ewaso Kodong, Nugurman (Entasopia), Shompole, Kajiado Town, Bissel, Namanga, Loitokotok, Kimana and Mashuru. The team also met and interviewed 27 stockowners.

Although the team was informed that 43 CAHWS were trained under the Semi-Arid Rural Development Project, none was available for interviews. Out of the 25 drug shops visited, 84% of the shop attendants had secondary school level of education. Out of these, three had received professional training, two at Animal Health Assistants and one at Diploma levels.

In terms of average monthly sales turnover, the following was observed:
Over Kshs. 200,000 - 12%
100,000-200,000 - 16%
50,001 – 99,999 - 20%
20,000 – 50,000 - 32%
Less than 20,000 - 12%

However, 8% of the respondents were uncooperative refusing to furnish the team with any data. The fastest-moving product lines were dewormers, acaricides and tetracycline, in that order. The most popular product brands were Nilzan, Wormicid, Triatix and Adamycin 10%.

The Asset Base
Except for the agrovet shops with an average monthly turnover of over Kshs. 100,000 (28% of the respondents), the rest had a very weak asset base.

Gross Margins, Overhead Costs and break-even Sales Volumes
There was a direct correlation between the gross margin levels and the turnovers. The agro-vets, for example, with an average monthly turnover of over Kshs. 200,000 applied an average gross margin of only 14% while those with Kshs. 20,000 to 50,000 gross margins of 23%. A shop in Kajiado Town posted the lowest margin, 11.2%.

The three top shops (that post over Kshs. 200,000 as average monthly turnover) are Pukoret agro-vet in Ewaso Kedong (Ngong division), Zinken Agro-vet (Kajiado town), and KAMCO agro-vet in Loitokitok Division. These shops have overhead costs of Kshs. 21, 530, Kshs. 59, 302 and Kshs. 66,312 respectively, resulting in a monthly break-even

sales volumes of Kshs. 184,150, Kshs. 59,482 and Kshs. 349,010 in that order. These show that they are profitable and sustainable.

In comparison, the shops which post average monthly turnovers of between Kshs. 100,000 and Kshs. 200,000 are:

Shop	Town	Monthly turnover (Kshs.)	Overhead costs (Kshs.)	Gross margin	Monthly B/E sales volumes
Hossana	Loitokitok	160,000	29,550	25%	118,200
Lekenga	Bissel	156,000	38,753	25%	157,532
Jesmo	Kajiado	119,000	39,880	25%	159,520
Malel	Namanga	120,000	15,000	21%	71,429

From the above table, the most profitable drug shop is Malel Agro-vet, that has been in business for over seven years, while the least profitable is Jesmo Agro-vet that has been in business for two years. Lekenga Agro-vet (one year old) is just breaking even.

The common constraints as listed by the agro-vets include:

- Inadequate training for the shop attendants
- Unfair competition from the NGO-subsidised drugs and open-air drug peddles
- Inadequate veterinary personnel to advise farmers
- Lack of cold chains for storage of vaccines.
- High transport costs
- Inadequate working capital
- Existence of fake products in the market
- Low cash economy hence low purchasing power
- Pastoralists nomadic lifestyle hence fluctuations in business volumes
- High receivables

Annexe V LIST OF KEY INFORMANTS

NAME	ORGANIZATION	ADDRESS
1. Roba D. Shamaro	OAU/IBAR	30786 Nairobi
2. Abdi Issack	DPA	410 Wajir
3. Abdirahman Ali	Oxfam – GB	458 Wajir
4. Dr. Lawrence Mwongela	DVO Wajir	97 Wajir
5. Rahay H. Amin	Oxfam – G	458 Wajir
6. Imam I Hassan	DPA	401 Wajir
7. Dr. Mwai P. M.	VO Wajir	97 Wajir
8. Dr. Wachira Kimenge	DDVO Wajir	97 Wajir
9. Dr. Mario Youn	VSF-Switzerland	18 Wajir
10. A. A. Saisi	DALEO	33 Wajir
11. H. M. Nyambu	DALEO	33 Wajir
12. Omar Jibril Hussein	DPA	401 Wajir
13. Abdi I Nur	DPA	401 Wajir
14. Bare M. Nur	DPA	401 Wajir
15. Jelle A. Ibrahim	DAO Wajir	33 Wajir
16. Aydross Daar	WASDA	277 Wajir
17. A. M. Mohamed	ALRMP	490 Wajir
18. Nasir A. Harun	NPHC	444 Wajir
19. Dr. Yusuf Husein	DVO Wajir	97 Wajir
20. Abdi Omar	Ass. Chief Riba	Riba
21. Maalim Jimale	Daryelle	Riba
22. Abdi Sulane	Daryelle	Riba
23. Omar Guliye	Daryelle	Riba
24. Mohamed Omar	Daryelle	Hungai
25. Diriye M. Ali	Hungai PA	Hungai
26. M. I. Yussuf	Stockowner	Hungai
27. M. Molid	"	"
28. Omar Ali. Hassan	"	"
29. Hassan Ali	"	"
30. Sheikh Abdi Arale	"	"
31. Maalim Abdi	Daryelle	"
32. Abdi Omar	Stockowner	"
33. Shikh Shalle	"	"
34. Molid Hujale	"	"
35. Issack Hassan	"	"
36. Siyad Jelle	"	"
37. Jamatha Hujale	"	"
38. Musa Abdulahi	Ass. Chief	Mansa
39. Adan Abdullahi	Stockowner	"
40. Mollid Hussein	Senior Chief	"
41. Sheikh Molid	Treasurer, Pastoral Association	Mansa PA
42. Khalif Alwed	Stockowner	"
43. Adow Hasho	Stockowner	"
44. Khalif Molid	Stockowner	"
45. Ahmed Molid	Chairman, Mansa Pastoral Association	"
46. Dalahow Bishewk	Member, Mansa Pastoral Association	"
47. Ahmed Abdi	V/Chairman, Mansa Pastoral Association	"
48. Shahid Omar	Daryelle Mansa	"
49. Molid Ahmed	Daryelle Mansa	"
50. Hanra Abdile	Chairlady, Mansa Women's Group	"
51. Abdulahi Molid	Chairman, Griftu Pastoral Association	Griftu PA
52. Nur S. Abdille	Secretary, Griftu Pastoral Association	"
53. Muktar Dahir	Storeman, Griftu Pastoral Association	"
54. Noor Molid	Assistant Chief, Griftu	"

55. Abdi Abdulahi	Stockowner	Griftu PA
56. Yussuf Malid	"	"
57. Abdi Adom	"	"
58. Nuria Hussein	Daryelle	"
59. Sirat Maow	"	"
60. Dr. Mbuthia Mutungi	SNV	Turkana
61. Nelson Murwa	DO I	Turkana
62. Frauke de Weijer	VSF-Belgium	Turkana
63. Willy N. Lolim	AHA	SNV Turkana
64. Michael Kapolon	AHA-VSF-B	Turkana
65. Benson Ririmpoi	Private Vet	West Pokot
66. Peter Lotesuro	ALRMP	Turkana
67. J. Eypan	"	"
68. Maria Twerde	SNV	"
69. Jacinta Abenyo	ITDG	"
70. Richard Wachira	VO West Pokot	Makutano
71. Andrea Pello	AHA Alale	West Pokot
72. Paul Aminy	V. Chairman	LUA – Kakuma
73. Joseph Kuchal	Treasurer	LUA – Kakuma
74. Grace Ciarunci		
75. Genesia Ciambaka		
76. Hariet Muthoni		
77. Fridah Kanyua		
78. Lucy Ciandeke		
79. Josy Kanya		
80. Beaty Ndumba		
81. Sarafina Josphat		
82. Jenesia Cianduru		
83. Siribesta Kainy		
84. Lucy Kaari		
85. Judith Mati		
86. Pasiliska Mikui		
87. Fidelis Julias		
88. Idah Maruta		
89. Lucy Kageni		
90. Kageni Isaak		
91. Margret Ciakirimo		
92. Barako Guracha	Secretary	Marsabit
93. Sora Guyo	V. Chairman	"
94. Tura Galgallo	Committee	"
95. Okotu Haro	Member	"
96. Abudo Sora	member	"
97. Boku Guyo	member	"
98. Elema gura	Ass. Chief	"
99. Dr. L. M. Arithi	DVO	"
100. Dr. Guyo Shanda	CIFA	Marsabit
101. Dr. Mungathia	CIFA/OOPI	"
102. David tamasot	AHA	"
103. Dabasso Bakako	CIFA	"
104. Adam Wako	AHA CIFA	"
105. Maina Kiondo	DLPO	"
106. James Mathenge	DAPO	Meru
107. Dr. Muriira	Deputy DVO	Meru
108. D.r Kaiberia B. K.	Farm Africa	Meru
109. Patrick Mutia	Project Co-ord.	Nairobi
110. Dr. G. W. Njoroge	GTZ	Farm Africa
111. Adano Salesa	ITDG	Marsabit
112. Talaso chucha	ITDG	Marsabit
113. Dr. H. L. Awando	DVO	Meru Central

114. Dr. F. M. Njeru	VO	Meru Central
115. C. O Auya	Farm Africa	Meru
116. H. Karimi	DVO' office	Meru Central
117. Dr. Muriithi Kamunde	VO Loitokitok	Loitokitok

Annexe VI WAJIR DISTRICT PASTORAL ASSOCIATION MEMBER PAs

1. HUNGAI PA
2. KHOROF-HARAR PA
3. RIBA PA
4. WAJIR BOR PA
5. DAMBAS PA
6. GRIFTU PA
7. HABAWEIN PA
8. ABAKORE PA
9. ARBAZAHAN PA
10. KUTULO PA
11. ELDAS PA
12. WAGALLA PA
13. HADADO NORTH PA
14. UNA PA
15. BUTE PA
16. KORON DILE PA
17. HADADO SOUTH PA
18. SARIF PA
19. SABULI PA
20. MERI PA
21. MANSA PA
22. LAG-BOGOL PA
23. DUNTO PA
24. DIIF PA
25. HABASWEIN ZEYTUN PA
26. DADAJABULLA PA

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