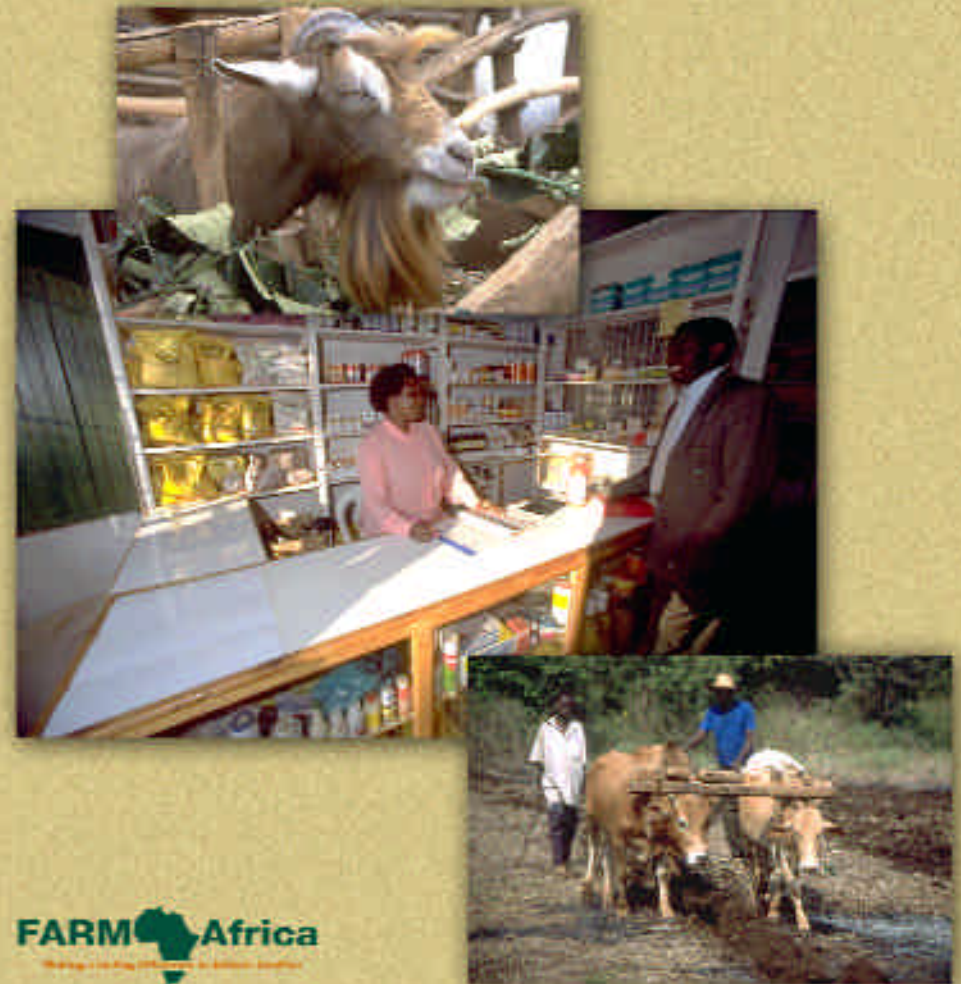


This publication presents community based solutions to animal health care service delivery in order to improve the livelihoods of both pastoralists and settled communities. It documents the experiences of community based animal health work in Kenya and illustrates a decentralised system of community controlled service delivery. In addition to providing an analytical account of the socio-economic benefits, the efficacy and economic viability of such community based service delivery, it also outlines lessons learned during the process to influence the practice of others interested in decentralised animal health systems.

Delivering affordable and quality animal health services to Kenya's rural poor

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**DELIVERING AFFORDABLE AND
QUALITY ANIMAL HEALTH SERVICES
TO KENYA'S RURAL POOR**

FARM-Africa's Experiences

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Any comments or questions should be sent to FARM-Africa at the above address.

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About the Organisation

FARM-Africa (Food and Agricultural Research Management) is a British based NGO whose goal is to reduce poverty by enabling marginal African farmers and herders to make sustainable improvements to their well-being through more effective management of their renewable natural resources.

FARM-Africa seeks to achieve its mission by working in the following manner.

- Innovative, challenging and risk-taking
- Specialised
- Practical and operational
- Catalytic, rather than merely providing services
- Independent
- Acting as a bridge between researchers and farmers
- Building the capacity of people and local institutions in Africa rather than developing parallel structures
- Disseminating practical experience
- Advocacy to improve policy and practice
- Conducting research, when required, that is relevant to practical problems confronting communities

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Patrick Mutia - December 2002
Project Co-ordinator
FARM-Africa Meru & Tharaka-Nithi
Dairy Goat and Animal Healthcare Project



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Abbreviations

AHA	Animal Health Assistant (Certificate Holder in Animal Health)
AI	Artificial Insemination
ALRMP	Arid Land Resource Management Project
ASAL	Arid & Semi-Arid Lands
CCS	Christian Community Services
CAHW	Community Based Animal Health Worker
CBME	Community Based Monitoring and Evaluation
CBO	Community Based Organisation
CCF	Christian Children Fund
CCPP	Contagious Caprine Pleuropneumonia
CDTF	Community Development Trust Fund

CEC	Community Education Concern
CIFA	Community Initiative Facilitation Action
CIG	Camel Improvement Group
COOPI	Cooperazione Internazionale
CPK	Church of Kenya
DA	Development Agency
DAH	Decentralised Animal Health
DFID	Department for International Development
DLEO	Divisional Livestock Extension Officer
DLPO	District Livestock Production Officer
DPIRP	Drought Preparedness Intervention Recovery Programme
DVO	District Veterinary Officer
DVS	Director of Veterinary Services
FARM	Food and Agricultural Research Management
GoK	Government of Kenya
GDP	Gross Domestic Product
GTZ	German Co-operation Agency
IMF	International Monetary Fund
ITDG	Intermediate Technology Development Group
JAHA	Junior Animal Health Assistant
KARI	Kenya Agricultural Research Institute
KCA	Kenya Camel Association
KCF	Kenya Camel Forum
KETRI	Kenya Trypanosomiasis Research Institute
KLDP	Kenya Livestock Development Programme
KVAPS	Kenya Veterinary Association Privatisation Scheme
KVB	Kenya Veterinary Board
LO	Livestock Officer (diploma holder in Animal Health)
MAHWG	Meru Animal Health Workers Group
MGBA	Meru Goat Breeders Association
MOARD	Ministry of Agriculture and Rural Development
MOC	Mobile Outreach Camp
PARC	Pan African Rinderpest Campaign
PDP	Pastoralists Development Project
PSO	Association for Personnel Service Overseas (Netherlands)
SALTCLICK	Semi Arid Lands Training and Livestock Improvement Centre
SCC	Samburu County Council
SOS	Special Outreach Services
VAHC	Village Animal Health Committee
VO	Veterinary Officer

Executive Summary

Since pastoralism is a way of life for virtually all the people inhabiting the Arid and Semi Arid Lands (ASALS) of Northern Kenya, the health of livestock is naturally one of their major concerns. The same applies to smallholder livestock keepers whose livelihoods revolve about and around efforts to maximise production on small and declining farm sizes.

Structural adjustment, liberalisation, population growth and donor fatigue have all combined to force the governments of Kenya and other African countries to rethink how they deliver animal health services to the public. Additionally, in order to ensure sustainability, donors are now only willing to provide support for those projects demonstrating clear exit strategies for donor/implementing agencies, proving that the projects will continue long after such assistance has been withdrawn. As a result, more is expected of national governments, and yet, they have decreasing amounts of available resources to respond to such expectations. The Government of Kenya (GoK) for example, does not have sufficient capacity to treat all animal diseases adequately. As a result, national governments need to consider alternative means of handing over the responsibility of service provision to communities and/or private enterprises.

This situation prompted international development agency, FARM-Africa, to look for lasting community-based solutions to address the gaps in animal health care service delivery in an effort to enhance the livelihoods of both pastoralists and settled communities engaged with animal husbandry. Its experiences are presented in this book, which documents the development of community based animal health work in Kenya. It illustrates a decentralised animal healthcare system that aims to deliver a service controlled by the community, rather than the government, in which different levels of locally-based practitioners are provided with basic veterinary skills and knowledge for disease diagnosis and treatment.

The book provides an analytical account of the socio-economic benefits, the efficacy and economic viability of such community based service delivery, drawing from the experiences of both settled and pastoralist communities in Kenya. It also attempts to document 'lessons learned' during the process

in order to influence the practice of others interested in establishing similar schemes.

The main conclusions drawn from this innovative work is that the veterinarian-supervised animal health system tested by FARM-Africa and the Department of Veterinary Services (GoK) during 1996 - 2003 has proved to be extremely effective in delivering high quality, affordable animal health care to livestock keepers in the marginal farming areas of Meru South and Meru Central districts of Kenya. The three levels of service providers are vets, animal health assistants (AHAs) and community based animal health workers (CAHWs), all of which have established viable enterprises providing their owners with a long-term livelihood as well as creating much needed employment in rural areas. As an indicator of the success of the system, the services provided were used by over 80% of users who were not part of the FARM-Africa Dairy Goat Project, indicating a real demand for such a decentralised animal healthcare system.

Underpinning the entire system was that each service provider approached their role as a business, took out loans and received training in business management skills. The strong links between vets, AHAs and CAHWs also led to the establishment of additional fora, such as the Meru Animal Health Workers Group, which will not only provide vital support to its members but will also represent their interests to the government.

The major impacts of the system are undoubtedly increased access to veterinary services and drugs from rural areas at vastly reduced costs; improvements in disease surveillance, increased community awareness of animal disease; successful intensification of dairy goat production and finally, improved range and supply of livestock and agricultural services.

In sum, this experience demonstrates that decentralised animal health service delivery is an extremely effective way of providing animal health care in the absence of government services. Through documenting both the successes of the system as well as the lessons learned, it is hoped that other development actors and policy makers will find this a valuable resource upon which subsequent decentralised animal health systems can be developed further.

1. Introduction

There are many partners involved in the delivery of animal health services in Kenya, and government policy makers are entitled to information to help them with the planning process. FARM-Africa, a partner with the UK Government's Department for International Development (DFID) regarding community based decentralised animal health care, wishes to advocate for policy changes that support the efforts of animal health workers to assist the rural poor, not by challenging the government, but by collaborating with it to plan for sustainable livelihoods and food security.

This document will describe the impact of decentralised animal health (DAH) systems within two FARM-Africa project areas: The Pastoralist Development Project (PDP) and The Meru Dairy Goat and Animal Healthcare Project (MDGP). The aim is to share experiences with other stakeholders, and, by presenting some of the lessons learned from these projects, to assist others to build on the DAH process more successfully.

2. Agriculture and Livestock Production in Kenya

It is estimated that overall national poverty in Kenya is 52%, affecting 15 million people, three quarters of whom live in rural areas. Consultations for the recent Poverty Reduction Strategy Process revealed that rural development is recognised as a national priority (GoK, 2001).

Agriculture is the main source of income in rural areas of Kenya, contributing 25% of Gross Domestic Product (GDP) and involving over 70% of the population, the majority of whom are women. Household food crops and livestock products contribute most of the agriculturally-based income. In Marsabit and Samburu (northern Kenya), it is estimated that 85% of income comes from agricultural sources, and in Meru the figure is 72%. One of the most significant growth areas is in small-scale livestock production that dominates the sector and accounts for 80% of milk and 70% of meat produced annually.

Livestock ownership is a major source of livelihood and contributes 10% of GDP, over 30% of farm gate value¹ of commodities produced in the

agricultural sector and employs over 50% of the agricultural labour force. Livestock products generate foreign exchange through exports of hides and skins, dairy products and canned beef.

One cause of rural poverty is the low productivity of livestock, particularly as a result of high incidence of disease. High livestock disease morbidity and mortality has a direct impact on national food security.

2.1 Government Animal Health Services

Over the last thirty years, the demand for veterinary services and inputs has expanded rapidly. Since the initiation of Structural Adjustment Programmes by the International Monetary Fund (IMF) and World Bank in the 1980s, lack of funds has forced Kenya to move towards the privatisation of veterinary services and down-sizing of the Civil Service.

Despite these policy changes to promote the role of the private sector, the Government of Kenya (GoK) is still the controller of veterinary services, but its capacity to provide services is becoming increasingly limited. It has been unable to sustain the heavy investment and subsidies needed to meet the operational costs of personnel, drugs, equipment and transport in rural areas. Due to the decline in the provision of government services, gaps have appeared in service delivery, particularly in poor rural areas, such as marginal zones and the Arid and Semi Arid Lands (ASALs).

Clinical services - The GoK used to provide free services to farmers, but these are currently provided on a fee-for service basis with livestock owners paying a professional fee, as well as for transport, disposable materials (syringes, needles, gloves, sutures etc.) and drugs. The geographical areas covered by such services are mostly within or close to towns and trading centres in which government personnel are based. Poor smallholder farmers in rural areas cannot afford to transport GoK vets to treat their stock. The situation is exacerbated in ASALs by the long distances between towns and trading centres and the small number of GoK vets compared with the large numbers of livestock.

¹ The price a farmer receives for his produce as it leaves the farm.

Dispensing and selling drugs — The government only makes drugs available to its field staff in the event of major disease outbreaks. On the rare occasions that drugs are supplied, livestock owners meet the costs and the proceeds are surrendered back to the Treasury. Some development agencies distribute drugs, but otherwise, GoK personnel are expected to buy and use their own drugs.

Surveillance and monitoring — With the low level of staff deployment in most districts, effective disease surveillance is a major problem. An effective and efficient disease control system requires mechanisms of prompt detection of disease outbreaks as well as timely intervention. GoK veterinary officers rely on verbal reports of disease outbreaks from livestock owners. Sometimes livestock owners deliberately withhold information about outbreaks of notifiable diseases for fear that markets will be closed due to the imposition of quarantines.

Vaccination campaigns — Vaccination is a major activity in disease control and the GoK has carried out successful annual vaccination campaigns against major notifiable cattle diseases. However, the recent withdrawal of government subsidies on vaccines (some of which were previously free) has adversely affected the number of animals covered in current vaccinations. In Samburu for example, the number of cattle vaccinated against Foot and Mouth Disease declined from 70% in 1997 to 40% in 1999/2000, despite the fact that the charge was only KSh 10 (US\$ 0.13) per cow (Dr Manga, Samburu DVO office).

2.2 Drug Quality

Another major constraining factor in the delivery of effective animal health care in pastoral and marginal areas is the circulation of poor quality veterinary products. Much of the problem is attributed to the large distances between drug outlets and the urban-based quality control bodies. Common malpractices include re-labelling of expired products, re-labelling of sub-standard products and the formulation and packaging of concoctions of unknown origin. Counterfeit products are difficult to detect on casual inspection, although they are often suspiciously low priced. A

survey conducted by Kenya Agricultural Research Institute (KARI) established that the strengths and efficiency of various brands of anthelmintics in the market are lower than stated. In many cases, products were found to have no active ingredients at all. This creates problems of drug resistance as well as unfair competition against drug outlets that source their products from credible suppliers. Of special concern in pastoralist areas is the increasing resistance of trypanosomiasis to the range of drugs currently in use.

2.3 Decentralised Animal Health Systems in Kenya

In the wake of declining GoK services, the challenge has been to find other ways to improve access to high quality animal health services for livestock keepers. In ASAL areas there are very few vets, and the situation is exacerbated by poor infrastructure, lack of transport and poor security.



Very few practitioners are willing to set up private practices and the drugs that are available are centrally located in main towns. A few vets have opened private practices in the high potential areas, where dairy activities predominate. In such areas, vet practices are based in market places or are operated from home.

Private practitioners experience a number of operational constraints, such as:

- high operating expenses;
- lack of initial capital;
- lack of collateral to acquire loans;
- unfair competition;
- poor infrastructure.

To reach farmers and pastoralists at the grassroots level, livestock owners have been trained as Community-based Animal Health Workers (CAHWs) and equipped with veterinary drugs to provide basic animal health care services. This reduces the cost of services to the farmer, especially for minor cases.

Since 1986, when the Catholic Diocese of Meru requested the Intermediate Technology Development Group (ITDG) to start a programme at Kamujine Farmers' Centre, many agencies² have been involved in the provision of decentralised animal healthcare. Not only has a variety of names been used over the years — vet scouts, drug handlers, wasaidizi, contact herders and paravets — but various different approaches and related training methods have been used.



Training Session in Meru

² The various agencies involved include AMRMP, CCF, CCS, CEC, CDTF, DPIRP, FARM Africa, GTZ, ITDG, KETRI and KLDP.

- Building vaccination posts and providing logistics for vaccination programmes.
- Supporting emergency disease control measures.
- Carrying out surveys on disease incidence and advising pastoralists accordingly.
- Training CAHWs and providing drug kits.
- Establishing community drug stores.

However the implementation of these approaches has often been constrained in various ways by the existing policy and legal framework.

2.4 Government Policy and Legal Framework

Animal health policies were formulated on the assumption that the government would provide the majority of clinical services, most of which would be subsidised. Despite the withdrawal of the GoK from veterinary service provision and the shift in policy towards promotion of private enterprise, various laws affecting the livestock sector remain unchanged and restrict the development of a privatised and decentralised system.

The present Veterinary Surgeons Act (Laws of Kenya, Cap 366) says nothing about the role of Animal Health Assistants (AHA) and CAHWs role in service delivery. Section 3 of the Act states that, “No person shall, unless registered under this Act, practise or hold himself out whether directly or by implication as practising or being prepared to practise veterinary surgery.” Section 5 of the same act specifies that only qualified veterinarians are to engage in private practice in Kenya, and that these veterinarians must be registered with the KVB. Under the Act, the KVB has legislative authority to discipline veterinarians and ensure they abide by a professional code of ethics defined by the Act, but is silent on disciplinary measures for AHAs and CAHWs. As only veterinarians can be registered with the KVB, holders of diploma and certificate level veterinary qualifications (Livestock Officers and Animal Health Assistants) can only legally operate private practices if employed by a private veterinarian. This presents a serious problem in rural areas where the number of veterinarians in practice is extremely low. Therefore there is need for legal recognition of other cadres of service providers other than vets.

The Pharmacy and Poisons Act (Laws of Kenya Cap 244) controls the pharmacy profession and the trade in drugs (both human and veterinary) and poisons in Kenya. In relation to private veterinary practices, the Act prohibits a veterinarian from stocking large quantities of medicine unless a registered pharmacist controls the premises where they are stored and sold. However, a pharmacist can stock and sell veterinary medicines without employing a veterinarian and veterinarians are not included in the Pharmaceutical Inspectorate.

These legal anomalies have in effect sidelined entire cadres of trained animal health professionals. A weak regulatory framework in the animal health sector has created a situation where the provision of animal health supplies and services is mostly in the hands of lay people. This reduces the viability of private practice for veterinary and animal health graduates and dissuades them from venturing into the sector. Competition from unethical non-professionals has adversely affected the turnover of animal health supplies and rendered those already in private practice increasingly underemployed. In addition, the weak enforcement of existing statutes has had a negative impact on the quality of animal health service delivery.

If the healthcare provider has no inherent interest in ensuring that clients recover following treatment, then the quality of healthcare administration is likely to suffer. If on the other hand the health care provider earns his living (or a substantial portion of it) through the delivery of services, his basis for respect and acceptance by the community is the product of his professional abilities and he has a vested interest in the recovery of his clients. Therefore he will do all within his powers to ensure he delivers a quality service (Stem and Sode 1999).

2.5 FARM-Africa's Decentralised Animal Health Service Delivery Programme

The government's new animal health services delivery policy recognises the need to build viable and self-sustaining systems (Kayume 1999). In line with this policy, FARM-Africa has established systems of decentralised animal healthcare with the aim of providing high quality clinical services

and drugs in a sustainable way to poor farmers and herders. In order to achieve this, FARM-Africa has focused on privatisation and partnership in two projects it has implemented in Kenya. The main issues involved are listed below.

Partnerships in the delivery of services

Through collaboration with the Ministry of Agriculture and Rural Development, FARM-Africa has established an animal health service system that links private practitioners to beneficiaries and to the Department of Veterinary Services.

Privatisation as a policy option

FARM-Africa has guaranteed loans to AHAs and vets through commercial banks, to enabling professionals to establish private practices in rural areas.

Beneficiaries' participation

FARM-Africa has trained CAHWs who are farmers and pastoralists in disease surveillance and improved animal husbandry techniques in rural communities. The role that CAHWs can play in delivery of animal health has yet to be formally recognised by KVB.

3. Pastoralists' Development Project (PDP)

The project area of PDP extended from Samburu to Marsabit and Moyale districts, which are part of the ASALs. These lands comprise approximately 88% of Kenya's land area, hold 25% of the national human population and about 50% of the national livestock herd. Soils are characteristically low in fertility, shallow and highly erodable, and often contain areas of high salinity. The climatic conditions for the districts vary between lowlands and highlands. Rainfall, generally below 200-300 mm per year, is usually erratic in season, duration and distribution. The population is almost totally dependent upon livestock for its livelihood, and productivity is dependent on rainfall and varies greatly between areas and seasons.

This project started in 1988 as a camel improvement project, resulting from the experiences of a recent drought that predominantly affected cattle keepers (Samburu and Borana) of northern Kenya. It was conceived to

demonstrate and promote the use of camels in dry areas but was later expanded to include interventions in human health and hygiene, range and water management, livestock health and management, social development and gender.

From 1994, the goal of the project was to improve the living standards of pastoralists by improving the capacity of communities to better manage their available resources. The project closed in 2000 and the activities are being continued by two local NGOs³.

During the 12 years that PDP operated, it worked with the Samburu, Turkana and Ariaal communities in Samburu district and the Gabbra, Rendille, Borana Somali and Sakuye communities in Marsabit/Moyale. The Rendille, Gabbra, Somali and Sakuye are primarily camel keepers, whereas the Samburu and Borana are traditional cattle owners who have increasingly adopted the camel in recent years.



Rendille Pastoralist Herding Camels

³ Ramati Development Initiatives (Ramati) in Samburu, and Community Initiative Facilitation Assistance (CIFA) in Moyale/Marsabit were established by former FARM-Africa local staff to continue and extend the work of PDP. PDP enabled its staff to gain invaluable experience and skills in facilitating community development in ASAL regions. In anticipation of the end of PDP in late 2000, the staff, in collaboration with target communities, set up two local NGOs to carry on the pastoral community development work of PDP. The Community Initiative Facilitation Assistance (CIFA) was established in Marsabit, whilst in Samburu District, support was given to set up Ramati Development Initiatives (Ramati). Both CIFA and Ramati have official registration with the NGO Council of Kenya.

3.1 Mobile Approach to Delivery of Services

Due to the vastness of the project area and the mobility of the target groups, reaching pastoralists effectively was a challenge but vital to maximise the effectiveness of the project. In order to address this, the project adopted a mobile approach to service delivery by setting up Mobile Outreach Camps (MOC), where staff lived and worked, moving camp every few months to reach new communities. Initially, PDP staff provided animal health services from the MOC, but as the project focus changed from service provision to capacity building, the main function of the MOC was to train community members, for example, as CAHWs. After several years the MOC had visited all communities and had become too cumbersome to move. A more flexible approach was developed using smaller teams of personnel, mounted on camels, who worked from mini-MOCs in Marsabit, and Special Outreach Services, working on foot, to reach more remote areas in both Samburu and Marsabit.

Lessons Learned — Mobile Outreach Approach

The Mobile Outreach Approach enabled the project to understand and address the needs of the communities more effectively than if the project staff had worked from a town base, particularly given the vastness of the project area and the poor infrastructure.

Involving CAHWs in mobile outreach services enhanced their performance. By increasing their range to reach remotely located pastoralists, CAHWs increased their client base and advertised their services more widely.

The MOC approach is practical but may be too expensive for GoK and other Development Agencies to adopt, but the Special Outreach Services (SOS) approach has been adopted by CAHWs.

3.2 The Establishment of Community Based Animal Health Services

PDP facilitated the formation of Camel Improvement Groups (CIGs) in Samburu in 1989 and in Marsabit and Moyale in 1991. The purpose of the CIGs was to create an entry point to the community and act as an instrument for raising awareness on development issues. One of the objectives of the CIGs was to meet pastoralists' demands for veterinary drugs. Groups were trained in camel management and significant camel diseases, and members raised funds through membership fees to purchase drugs from the project for onward sale to the wider community. This was an attempt to address the inherent constraints to drug accessibility and affordability at the grassroots level. As demand increased for a wider variety of drugs to treat other livestock, CIG members set up drug stores. The more settled members kept the drugs in their homes.

Later, the Government Veterinary Department advised that it was illegal for PDP to sell drugs directly to communities. It was also recommended that communities receive training on drug use and administration. In 1994 PDP began to provide training to CIG members on the diagnosis and treatment of common diseases. Those pastoralists trained were known as 'drug handlers'. The role of drug handlers was to:

- ensure general accountability for the drugs;
- operate the drug stores;
- give advice to pastoralists on dosages and mode of treatment;
- keep basic records on disease incidence;

Like the CIG members, the drug handlers operated on a voluntary basis and income from sales was used to purchase replacement drug stock.

These drug stores eventually collapsed and by 1997 only one remained. The collapse was due to the lack of individual ownership and lack of business skills on behalf of the CAHWs. Group members managed the stores and it was intended that the revenue raised would be used as a revolving drug fund and to increase drug stocks. Heavy debts were incurred as CIG members refused to pay for drugs and a lack of income for individuals running the stores led to mismanagement. By this time, the majority of drug handlers had opted to operate independently from the groups in order to earn

income, as CAHWs trained by other development agents were doing in the region. The impact of their services prompted the target communities to request FARM-Africa to train more pastoralists as CAHWs. This proved a more successful and sustainable approach as CAHWs earned income from their work and were each provided with a drug kit on a cost-sharing basis.

The role of CAHWs was to:

- carry out simple treatments and routine husbandry practices;
- act as drug handlers and manage drug stores;
- report disease outbreaks to GoK veterinary department;
- create awareness during vaccination campaigns;
- refer difficult cases to the PDP vet;
- link the community with reliable agents involved in livestock related services;
- liaise with field Vet department staff;
- identify and report cases of drug peddlers to the Division Veterinary Officers.

PDP also proposed that CAHWs be able to give vaccinations not otherwise readily accessible to pastoralists.

PDP trained 191 CAHWs, of which 102 were in Samburu, 52 in Moyale and 37 in Marsabit. There are fewer CAHWs in Marsabit, despite the much larger area of the district, because the pastoralists are more mobile, herding stock in remote areas, and are harder to locate for training.

Of the total trained, 131 were equipped with drug kits on a 25% cost recovery basis. Of those with kits, only 7.6% dropped out, whereas the dropout rate was 21% for those without kits. Those who did not contribute to the purchase of a kit were either too poor or were not interested in the work. Those who did not buy kits but only provided advice to livestock keepers did not earn any income for their services.

Lessons Learned — CAHWs

PDP had initially provided animal health services to pastoralists but it was thought to be more sustainable for community drug handlers to be trained to provide these services.

CAHWs need to earn an income from their work if they are to maintain service delivery on a sustainable basis.

CAHW Selection

Initially, the Camel Improvement Groups (CIGs) each selected two pastoralists to be trained as drug handlers. However, those selected in this way were not effective, as they proved to be relatives of members, influential people in the community, were too old to be sufficiently mobile, or did not own livestock. This resulted in a high dropout rate, which prompted PDP to involve the wider community and other stakeholders in developing appropriate selection criteria. Suitable drug handlers included settled pastoralists, the middle-aged, trustworthy, those who kept livestock and traditional herbalists (who were specifically sought for their existing knowledge on animal health). Literacy was seen as an advantage but was not a criterion for selection.

In Samburu, 15% of the CAHWs trained and active were literate. Some illiterate CAHWs relied on memory other than records for their work and others asked literate community members (e.g. teachers) to write records for them. PDP encouraged illiterate CAHWs to attend Functional Adult Literacy classes, provided by the Project, to enable them to keep their own written records.



Lessons Learned — CAHW Selection

Community involvement in CAHW selection ensured that suitable members were trained.

A trainee approved by the entire community was instilled with a sense of accountability to that community.

Despite community participation in CAHW selection, there were many dropouts from the system, particularly during drought and insecurity and among the very poor who used the income from drug sales to buy food.

The selection of traditional medicine practitioners for training as CAHWs proved to be effective, as treatments in traditional healing are paid for in kind rather than in cash.

The low level of literacy of CAHWs was not a limiting factor to their performance as illiterate CAHWs were just as likely to be active and keep good records as literate CAHWs.

Literate CAHWs were more likely to leave the area in search of a job.

CAHW Training

Training needs assessments were carried out and the community was sensitised to the significance of animal health improving the survival and productivity of stock. Community meetings were held to discuss the roles of CAHWs and the relationship they would have with the community. Training was tailored to the needs of trainees, based on their expectations and existing knowledge of livestock diseases. Pastoralists are frequently familiar with clinical signs of diseases but less knowledgeable about causes and control measures. In 1998, all stakeholders and the DVO office developed a CBAHW training manual. Training included general livestock management and nutrition, livestock husbandry and healthcare, identification and treatment of common livestock diseases, and drug formulation and administration. The programme was also adapted to meet local conditions so that prevalent diseases were included. Training was conducted in phases, with each CAHW receiving one week of training every three months, for a year. Three or four days of follow up training, conducted at six-monthly intervals, provided information on new drugs, revision of previous topics and opportunities to share experiences.



Training Session for CAHWs on Dehorning

Lessons Learned — CAHW Training

Training was most effective when provided in phases. This approach gave time for CAHWs to absorb the new knowledge, to practise in the field and give feedback to the next training session.

A training period of four weeks can only be regarded as a minimum and does not allow full coverage of all common diseases and brands of drugs.

Refresher training and close monitoring is necessary for at least two years after initial training.

Training was effective when it built on existing knowledge of pastoralists. Pastoralists are knowledgeable about diseases and their clinical signs but less skilled in treatment, particularly using modern drugs.

Prior to 1998, each NGO in the district had its own training programme for different lengths of time and used different training manuals. A consensus on standardising training led to each NGO providing four weeks of similar training and the same equipment in the drug kits.

There is still a need for harmonisation of CAHW training between development agencies, for example, by agreeing on cost sharing by project beneficiaries.

CAHW Supervision

Government

PDP worked in collaboration with GoK to implement its project activities, an approach which improved project relations and increased the capacity of GoK to take over the responsibility of supervising animal health delivery services. The monitoring system of CAHWs was designed to involve GoK at District level. Performance records monitored the number of cases attended, recovery rates, drug turnover and profit accrued from drug sales.

Regular monthly monitoring visits to CAHWs by veterinary staff were carried out in Marsabit District (Huri Hills, Kalacha and Turbi). The Veterinary Officer collects information for inclusion in DVO reports and gives CAHWs the support they need to maintain their activities, such as treatment of referral cases and refresher training. In Baragoi division of Samburu and North Horr division of Marsabit, the veterinary department personnel were supervising the CAHWs performance by spot-checking their records. In Moyale, the GoK staff capacity to monitor CAHWs is limited and since PDP closed no supervision has been provided, although government personnel support the concept of community based service provision.

The project made a considerable effort to link animal health service providers to Development Agents (DAs) and GoK in order to improve CAHW performance, by providing support, supervision and advice through refresher courses and the provision of kits. In general, GoK has accepted responsibility for supervising the quality and provision of community based animal health services. However, since the market has been liberalised, the District Veterinary Officer (DVO) feels powerless to control drug quality.

Private Veterinary Professionals

In line with the change in project focus to capacity building and sustainability, there was a need to establish a professionally supervised system and to identify a reliable source of high quality drugs for community service providers. A system was adapted from a model designed specifically for ASAL regions, and was established in the project area in 1998 (Stem and Sode 1999). The system entails locating the highest trained cadres of animal healthcare providers in urban centres, running drug stores, providing clinical services to pastoralists and restocking drugs to CAHWs.

To establish the right supervisory environment, financial support was offered to professionals to set up in practice in the project area. A loan was provided by the project to a Livestock Officer (a diploma holder in Animal Science) of KSh 96,000 (US\$ 1,230) worth of drugs to start a store in

Marsabit. In Samburu, an AHA (a diploma holder in Animal Health) was loaned KSh 278,000 (US\$ 3,560) in drugs for the same purpose. The loans were repayable in eighteen monthly interest-free installments.

It was the intention that the LO and AHA would have a supervisory role over CAHWs and provide support to them in terms of refresher training and drug supply. CAHW monitoring forms were to be collected by the LO and AHA, who were to include the information in their reports to the district. The project closed before this system could be established (see Section 3.4 - Impact).

Lessons Learned — CAHW Supervision

CAHWs need support and supervision to enable them to provide quality services and keep up with new drugs on the market and increase their knowledge of diseases. This can be achieved with GoK, where it has the capacity, or with the cooperation of private professionals.

Linking CAHWs to drug stores owned by paraprofessionals is necessary for a sustainable drug supply and to reduce drug misuse.

Policy regarding the legality of paraprofessionals needs to be revised to include a regulatory and disciplinary framework.

The availability of credit is crucial for the establishment of veterinary drug clinics in pastoral areas.

Collaboration with Partners

District Level

Collaboration between different development agencies has led to the adoption of common practices. In 1997, FARM-Africa initiated the formation of District Animal Health Providers Forums in ASAL regions. One has been established in Marsabit/Moyale and another in Samburu. The purpose of the forums is to improve co-operation and networking between the various players and to review and formulate pastoral livestock programmes.

The forums have focused on:

- agreement by collaborators on implementation of cost-sharing by CAHWs for drug kits;
- adoption of agreed content of drug kits;
- overcoming the problems of inadequate veterinary drug supplies;
- high cost and poor quality of veterinary drugs sold by illegal drug shops and drug peddlers;
- developing standardised training formats;
- establishment of a joint system for supervision and support of the training process to be carried out in collaboration with GoK.

The forums are coordinated at district level by the District Veterinary Officer and include all DAs engaged in the promotion of animal health and production (GTZ, ALRMP, CCF, SCC, SALTICK, PSO, CPK and ITDG).

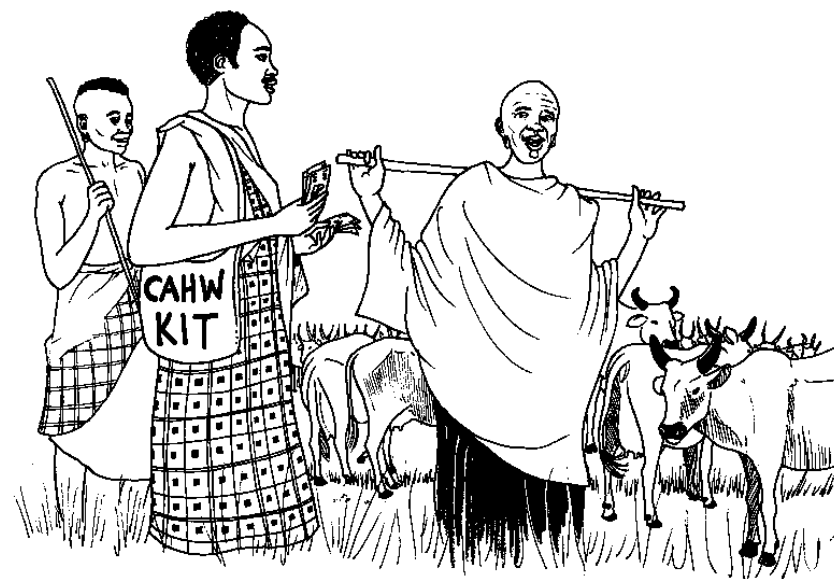
In the later years of the project, PDP began to address policy issues. Workshops were held with opinion leaders of pastoralist communities (traditional parliamentarians) and GoK in an attempt to lobby for the recognition of CAHWs as legitimate providers of animal health services.

Local Level

The District Level Forums led to the formation in 1999 of CAHW forums in each district which brought together CAHWs trained by different agencies, to discuss their successes and strengths, constraints and weaknesses. These met annually and, working through the District Forums, created a link between the grassroots and policy makers.

Unfortunately, they have not been active since PDP closed. However, they did provoke CAHWs to think of their long-term role within the community, and discussions were held to plan the sustainability of services. One outcome was that CAHWs pooled their resources to establish drug stores (see section Livestock Treatments by CAHWs).

Village Animal Health Committees (VAHCs) were established in Marsabit/Moyale to resolve the problem of the community perception that CAHWs should provide their technical services free of charge. VAHCs helped the community to understand that the viability of the CAHW system relied on income generation on the part of the service providers.



The roles of VAHC are to:

- demand services from CAHWs to the community;
- monitor the activity of CAHW services to pastoralist communities;
- ensure accountability of CAHWs to the community;
- monitor drug stocks and they are revolved without any exploitation to community members;
- decide and determine reasonable incentives to CAHWs from services and drug sales;
- link the service providers and pastoral communities.

Lessons Learned — Collaboration with Partners

Collaboration between DAs and the exchange of ideas and experiences through the District and CAHW Forums has led to increased adoption of common practices.

VAHCs have helped to keep the CAHWs active by demanding their services to the community.

The involvement of the VAHCs in monitoring CAHWs has inspired communities to look for initiatives to make the system sustainable.

Some problems have developed with VAHC members wanting a share of the CAHW income.

Kenya Camel Forum

PDP has been central to the establishment of the Kenya Camel Association and has supported and participated in the annual Kenya Camel Forum (KCF). The KCF brings together individuals, groups and organisations with a stake in camel production, both within Kenya and throughout the Region. These include traditional camel keepers, commercial camel farmers, private and government veterinarians, pharmaceutical industry representatives, livestock production staff, researchers and CAHWs. These forums have provided CAHWs with the opportunity to share experiences and make contacts with drug suppliers and policy makers.

3.3 Drug Supply in DAH System

AHA and LO Drug Shops

Initially, pastoralists sourced drugs from the project through the MOCs, but this created dependency on the project. CAHWs also relied on the project to procure drugs rather than looking for alternative sources. When the AHA and LO were assisted to establish drugs shops in 1999, CAHWs and other pastoralists obtained their drugs directly from them. CAHWs

would walk between 100-200km to purchase drugs. In Marsabit, drug purchases were so small, it was not cost-effective to travel such long distances to procure them. The LO initiated a mini-MOC in Marsabit and visited CAHWs to restock their drug supplies. However, this approach proved too expensive as he was travelling 390km to reach the furthest CAHWs in Dukana. To address this problem, several options have been implemented.

The LO assisted a CAHW to set up a drug store in Dukana in February 2000. This store supplies five CAHWs in the area and is restocked from Marsabit.

Huri Hills and Balese procure drugs from Kalacha where the community has built tourist bandas. The CAHWs have arranged for drugs to be delivered in the plane which regularly flies tourists from Nanyuki.

During the drought in northern Kenya, emergency programmes like Cooperazione Internazionale assisted local NGOs like CIFA and Ramati to restock drug supplies and pay CAHWs to provide services. Pastoralists then paid for these services in shoats.

The LO and AHA were introduced to pharmaceutical companies to help them purchase drugs for their drug shops on favourable terms for onward supply to CAHWs. This system brought high quality and affordable veterinary drugs closer to the community and substantially reduced travel time for CAHWs and livestock owners. As a result of this arrangement, the drug shops provided a regular source of drugs and information for some 25% of CAHWs from Marsabit and Samburu. The LO and AHA obtain information about current livestock diseases from CAHWs who come to buy drugs and information on disease incidence can also be deduced from types of drugs sold. Some CAHWs who were 100-200 km from a drug shop, were visited by the LO/AHA who advised on new techniques and drugs available on the market.

CAHW Drug Supplies

On completion of the training, each CAHW was offered a drug kit worth KSh 15,000 (US\$192), of which they were expected to pay 25% on receipt. PDP stopped providing drugs in 1997 to encourage CAHWs to replenish the kits from other sources (e.g. pharmacists in Maralal and Wamba). CAHWs came together to establish community drug stores to increase their bargaining power when buying drugs. Profits are shared between individual CAHWs (as private income) and the group, and are used to maintain stock levels. Seven community drug stores have been established in Marsabit and two in Samburu. In addition, community members contributed to the building materials required for the drug stores. In Sererit, Baragoi Division, for example, the community provided twelve shoats and CAHWs provided twenty shoats and KSh 10,000 (US\$ 128), which was sufficient to construct a store, but the plans were not implemented due to the onset of drought.

The two community drug stores established in Samburu are still functional (August 2001). It is likely that this is because the community itself initiated them. Of the seven stores established in Marsabit, only two are still functional. The breakdown has been caused by mistrust between the owners who take turns to sell drugs from the store. Although all these stores started as CAHW initiatives, those that failed received top-up funds from PDP or the Arid Land Resource Management Project (ALRMP) or DVO. The two surviving stores in Marsabit received no additional funds.

In Moyale, pastoralists are more business-oriented and have chosen to work alone rather than in groups. The CAHWs are located along the main road with easier access to drug supplies from Moyale town. Treatments are mostly given across the border in Ethiopia where the population of livestock is higher, and load camels have assisted CAHWs to carry drugs and basic foodstuffs for sale in these areas.

PDP established a link between CAHWs and the Arid Land Resource Management Programme in Samburu and Marsabit, for support in the establishment of drug stores. CAHWs were provided with a loan and required to pay 20% of the cost. This scheme collapsed in Samburu after six months due to leadership disputes. In Marsabit, the DVO stocked three

CAHW drug stores with stock worth KSh 25,000 (US\$320) each from a veterinary revolving fund.

Lessons Learned — Drug Supplies

The introduction of drug kits on a cost-sharing basis instilled a sense of ownership because of the investment by the CAHW. CAHWs who had purchased their kits themselves were more likely to use the income gained to replenish them.

Active CAHWs are willing to walk 200km round trips taking four days to replenish their drug kits.

There is a need for drug manufacturers to open drug depots or stores in main ASAL areas to supply service providers with quality drugs at competitive prices.

Drug shops would be more sustainable and drug sales improved if manufacturers were to extend to vets, LOs and AHAs similar concessionary rates as are offered to chemists.

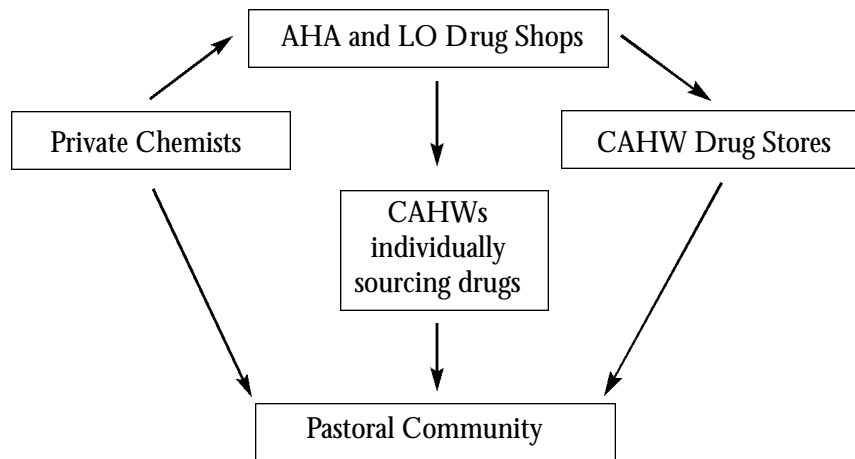
Some NGOs give free drugs to CAHWs in pastoralist areas. Providing credit to service providers without cost recovery however, undermines the potential viability of DAH businesses.

Group initiatives are thought to be more successful if they arise from the community rather than from an external body.

The number of NGOs working with pastoralists in community animal health means that CAHWs are supported by a succession of projects, and have little opportunity to function autonomously.

PDP has educated pastoralists to source drugs from a reliable source rather than from street hawkers. Illiterate pastoralists identify drugs by the packets. When new drugs come on to the market they now buy them from a trustworthy source who can explain the application and dosages.

Figure 1. Current Drug Supply Scenario in the Project Catchment Area



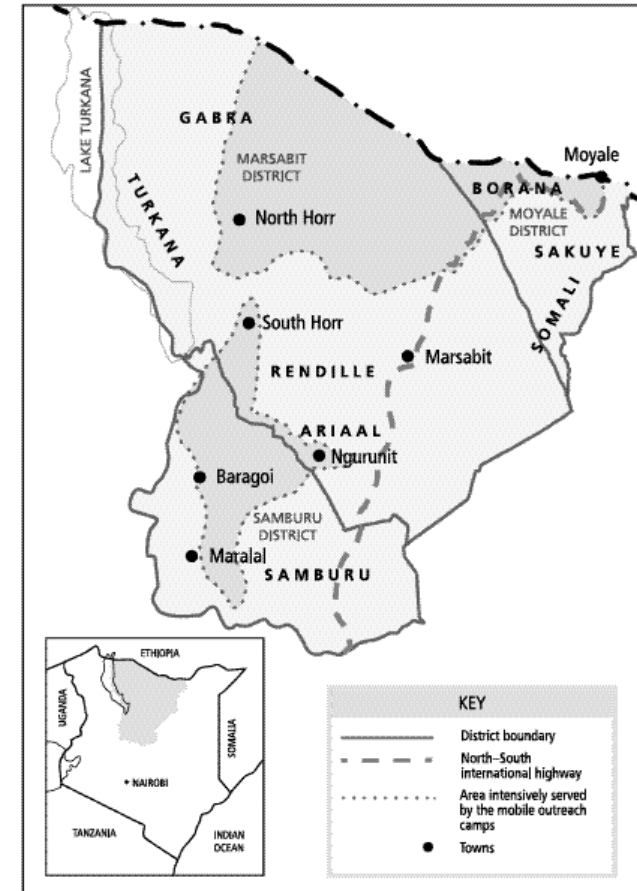
This model has provided the following benefits to decentralised animal healthcare.

1. Distances have been reduced for pastoralists to access drugs which has therefore reduced costs of treatment of livestock.
2. CAHWs get advice and supervision from the AHA and LO when procuring drugs.
3. Provision of quality drugs to CAHWs has resulted in displacing some illegal veterinary drug stores and drug peddlers.

3.4 Impact

Coverage

Map 1: PDP Project Catchment Area



PDP Project Area

The PDP project area covered Samburu — including all six Divisions of Samburu but operations were concentrated in two Divisions — Nyiro and Baragoi; Marsabit — North Horr and Maikona Divisions (two out of five); and Moyale — Obbu, Golbo and Uran Divisions, (three out of four).

Livestock Treatments by CAHWs

Table 1. Total Livestock* and CAHWs in the PDP Working Area

Area	Total Livestock	CAHWs
Samburu	180,000	102
Marsabit	492,000	37
Moyale	71,250	52
Total	1,743,250	191

* **Source:** Arid Land Project, 1997, Veterinary Department

The number of livestock treated in Marsabit and Moyale represented an average of 9.5% of the total livestock population; in Samburu, the figure was 1.9%.

During drought, the CAHWs in Moyale find the majority of their clients in Ethiopia. A report by the DVO of Marsabit claimed that 260,000 Kenyan animals were located in Ethiopia, in search of better grazing across the border. According to the DVO, the stock was in Ethiopia illegally, but pastoralists tend to ignore international borders when seeking pasture. CAHWs from Moyale also treat Ethiopian stock in Ethiopia, so it is difficult to provide an estimate of the number of livestock in their working area. A recent initiative by Community Initiative Facilitation Action (CIFA) and other NGOs and approved by the Kenyan and Ethiopian Governments, established a cross-border disease control committee in August 2001, which will support and monitor the work of CAHWs in the area.

Table 2. Treatments Given by CAHWs by Species from 1997 - 2000

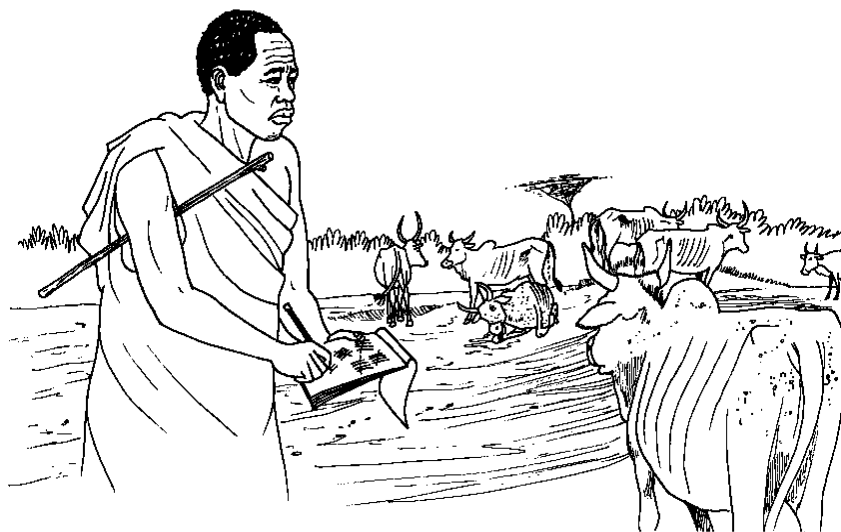
Period	Cattle	Camel	Shoats	Donkey	Total
Samburu					
Oct 97 - Mar 98	12	46	462	0	520
Apr 98 - Sept 98	296	124	6,579	8	7,007
Oct 98 - Mar 99	1,378	137	4,814	2	6,331
Apr 99 - Sep 99	1,286	362	4,736	18	6,402
Oct 99 - Mar 00	328	113	975	10	1,426
Apr 00 - Aug 00	7	28	595	9	639
Marsabit/Moyale					
Oct 95 -Dec 95	280	440	680	-	1,400
Jan 96 - Mar 96	570	610	1,800	-	2,980
Apr 96 - Jun 96	820	790	1,590	-	3,200
Jul 96 - Sep 96	980	720	1,950	-	3,650
Oct 96 - Dec 96	130	480	890	-	1,500
Jan 97 - Mar 97	640	1,110	1,050	-	2,800
Apr 97 - Jun 97	1,500	1,300	1,200	-	4,000
Jul 97 - Sep 97	800	1,800	1,900	-	4,500
Oct 97 - Dec 97	490	925	885	-	2,300
Jan 98 - Mar 98	300	768	700	-	1,768
Apr 98 - Jun 98	600	980	1,020	-	2,600
Jul 98 - Sep 98	750	1,250	1,000	-	3,000
Oct 98 - Dec 98	795	423	2,300	-	3,518
Jan 99 - Mar 99	1,235	565	2,725	-	4,525
Apr 99 - Jun 99	1,600	500	3,023	-	4,123
Jul 99 - Sep 99	399	215	901	-	1,515
Oct 99 - Dec 99	700	346	2,359	-	3,405
Jan 00 - Mar 00	492	700	2,299	-	3,491

Notes: Training of CAHWs was a gradual process, with additional pastoralists being trained throughout the project life to meet the demands of communities. Not all CAHWs operated all the time, due to drought or economic and social factors.

The project area was affected by El Niño from October 1997 to July 1998 and by drought from November 1999. This is evident in data from Samburu: the number of treatments per CAHW per month increased during El Niño and decreased to ten during the drought. The variation in treatments can be attributed to the effects of the El Niño (October 1997 to July 1998), drought (from November 1999) and to recurrent disease outbreaks such as Contagious Caprine Pleuropneumonia.

Effectiveness

Initially, there were no records kept of mortality of livestock treated and this information was not available from DVO. To address this and other monitoring needs, PDP established a Community Based Monitoring and Evaluation (CBM&E) system, whereby pastoralists themselves kept records of herd mortality to enable them to trace the trends over time. CBM&E is one way to improve reliability data on disease and mortality levels and trends, as well as changes in livestock population and productivity.



It should also be expected that with a functional CAHW system in place, the incidence of disease reporting would actually increase due to improved reporting system by CAHWs (no diseases go unreported as would be the case in their absence).

It was difficult to determine livestock population and productivity changes as an indicator of CAHW performance because they may be attributable to other factors, such as economic recession or the outbreak of notifiable epidemics, over which CAHWs have no direct control. Since 1995, there has been drought in PDP operational areas causing livestock deaths. The El Niño event

of 1997/98 brought unusually high rainfall that was followed by abundant grazing and high incidence of disease (McLeod and Heffernan 1999).

Mortality

In some communities there has been a general reduction in mortality rates of shoats. In Latakweny for example, it was reported that the number of shoats lost due to CCPP reduced from 100% to 20% (PDP Samburu Report 1999).

The recovery rate in North Horr is low because of the vastness of the division. This meant that there was little support for CAHWs and drug supply was a problem. In Golbo the recovery rate is low also because of the poor support to CAHWs, due to serious insecurity in the region. In Ural and Maikona the recovery rate of stock was high as the CAHWs were receiving support. In Ural, the three CAHWs were supported by a vet from Christian Community Services (CCS) and in Maikona, Christian Children Fund (CCF) provided a lorry which was used to purchase drugs from Nairobi.

Table 3. Livestock Treatments: Marsabit and Moyale

Project Areas	No. of Livestock Treated	Recovery Rate
Marsabit District		
North Horr Division	29,200	52%
Maikona Division	16,840	75%
Moyale District		
Obbu Division	5,405	65%
Golbo Division	5,800	47%
Uran Division	2,290	70%

Notes: Similar figures are not available from Samburu due to incomplete record keeping by CAHWs.

Accessibility

The current availability of GoK resources is extremely limited which means pastoralists do not have the required access to animal health services. Ideally the GoK has certain levels of staff required to deliver animal health care in a District. The limited government human resources available means that there is only 36% of the required personnel in Samburu, 33% in Marsabit and 25% in Moyale. Even if GoK was funded by NGOs to carry out veterinary services in these areas, the staffing capacity is insufficient unless more staff are recruited. Part of the problem is the vastness of the districts that renders an administrative structure based on human population levels unsuitable.

Observations in communities with active CAHWs show that there has been a notable improvement in the provision of animal health services. During the project, 20 CAHWs were each covering a radius 20-40 km per month. On each trip a CAHW could access up to 20 pastoralist households and treat an average of 50 shoats for Helminthiasis, 5 camels for Trypanosomiasis and 2 cattle for Anaplasmosis. CAHWs also collaborated with GoK vaccination programs for CBPP and Rinderpest.

The PDP involved CAHWs, under supervision, in the operations of the MOCs and SOS, providing capacity building field experience. In addition, by extending their range, CAHWs earned more income which motivated them to continue working. Forty-two CAHWs (six women and thirty-six men) have participated in this MOC/SOS approach that also increased CAHW access to remotely located pastoralists. For example, a CAHW stayed with the MOC in Loadua, Samburu for two weeks. During this time he visited the homesteads of twenty-three pastoralists (nine women and fourteen men) treating 121 cases (75% of which were Helminthiasis in shoats), as well as offering advice on the correct administration of drugs. The treatments earned him KSh 1,843 (US\$24).

Transport is a major problem for CAHWs. In many cases, the load camel was found to be the most appropriate means of overcoming this. Load camels were given to active CAHWs on a 50% cost-sharing basis. CAHWs at eight centres were provided with camels, enabling them to extend their working area by a radius of up to 15km, and thus expand their case load.

In some areas for example, CAHWs travelled up to 140km to Ethiopia to provide animal health services.

Women were encouraged to work closer to home so they could continue their household responsibilities, whilst men were encouraged to move further away to reach more remote pastoralists.

Load camels were provided to some CAHWs on a cost-sharing basis. Camels enabled CAHWs to make extra income by diversifying their businesses to carry other essential commodities like tea, sugar and tobacco as well as livestock trading. This was especially common during drought.

Affordability

Contrary to the popular belief that pastoralists cannot afford to pay for veterinary services, reports from Baragoi and PDP MOCs showed that veterinary drugs worth KSh 60,000 (US\$ 769) were purchased per month from the drug stores. However, a lack of cash is a constraining factor, especially for highly nomadic pastoralists. This can be overcome by trading in small stock for drugs.

CAHWs sometimes gave services and drugs on credit and it was found that their relatives were the most serious debtors. Pastoralists identify giving credit as good practice and this is generally extended to those who are thought capable of repayment. Paying debts, however, is not time-bound, and sons or grandsons can pay credit back at some time in the future. It was found that each CAHW had extended credit of between KSh 1,000 and 8,000 (US\$13-103). Credits on drug sales ranged from 10-55% of total income, which is a constraint to CAHW service delivery.

At the CAHW Forum in 1999, members agreed to manage this issue by pooling resources and developing credit rules. However, this plan was not implemented due to the onset of the drought later in 1999. Payment in shoats reduces the necessity for credit, as the animals are readily available. This system breaks down during drought, however, when CAHW services have come to a standstill, as CAHWs need a cash income to purchase food. There is still a need to develop a system to help CAHWs to remain active during drought.

Disease Surveillance

Over the last four years, the Department of Veterinary Services has implemented mass vaccination campaigns in Marsabit and Moyale, using information on disease outbreaks collected from CAHWs. Compulsory vaccinations for Contagious Caprine Pleuropneumonia (CCPP) have been launched in collaboration with CAHWs. The campaigns have benefited from the input of CAHWs who have readily mobilised communities and enabled more animals to be vaccinated than the GoK could manage alone.

Supervision and Monitoring

Since 1993, GoK staff have been involved in CAHW training provided by PDP. DVOs assisted in the development of the CAHW training curriculum and were assigned to supervise the work of CAHWs. During the training, it was explained that the CAHWs were answerable to the DVO. However, this did not work in practice as there was no formal monitoring of CAHWs. PDP district teams used questionnaires to collect information from CAHWs on their performance. These were forwarded to the PDP head office in Nanyuki. Unfortunately, the records were not analysed and there was no feedback on progress to the field teams or to the CAHWs themselves. The PDP then devised monitoring sheets for CAHWs to keep records of their work. These were to be delivered to the DVO office but the project closed before the process could be implemented.

The PDP vet provided services from the MOC and SOS direct to pastoralists until August 1999. The services of the MOC project vet were then stopped to give the CAHWs opportunity to work autonomously and without competition. The PDP vet provided supervision to CAHWs in the form of one-to-one discussions every six months. Advice was given on diagnosis and treatment of unfamiliar diseases and about new brands of drugs on the market. Pastoralists identify drugs by their colours and the pictures on the packaging; when new brands come onto the market, assistance was provided to educate them accordingly.

The consultancy by Stem and Sode (1999) observed that the DAH system could only be sustainable if private practitioners were involved in the

supervision of CAHWs and drug supply. After the AHA in Samburu and the LO in Marsabit established clinical practices, they assisted CAHWs by offering advice on diseases and new brands of drugs when CAHWs came to the shops to replenish drug kits.

The table below shows the dramatic increase in the number of beneficiaries of CAHW services in Marsabit and Moyale after the establishment of VAHCs, with a significant increase in the number of households accessed and of animals treated.

Table 4. Performance of Kalacha CAHWs in One Month

Services Provided by CAHWs	Before VAHC (1998)	After VAHC (1999)	Increase (%)
Number of animals treated	76 (10 cattle, 16 camels, 50 shoats)	234 (12 cattle, 38 camels, 184 shoats)	208%
Number of households accessed	24	70	192%
Number of mobile outreach services conducted	1	4	300%
Number of special outreach services (SOS) conducted	1	3	200%
Frequency of replenishing drug kits	1	4	300%

3.5 Viability

Drug Shop Profits

In Baragoi, the AHA practice, established with assistance from PDP, has a monthly turnover of KSh 30,000 (US\$ 385).

CAHW Drug Stores

Eleven drug stores had been established and were providing essential veterinary services to pastoralists by 2000. An average of 200 pastoralists visited each drug store every month.

In Ngurunit one store was established by four CAHWs in March 1999, with stock worth KSh 66,590 (US\$ 854). During the first six months, turnover was KSh 7,288 (US\$ 93) and for the second six-month period, it was KSh 6,415 (US\$ 82). Another in Lodungokwe was established in January 2000 by two CAHWs with an initial stock of KSh 23,696 (US\$ 304). During the first four months, turnover was KSh 7,060 (US\$ 91) per month and stock was replenished seven times from Maralal.

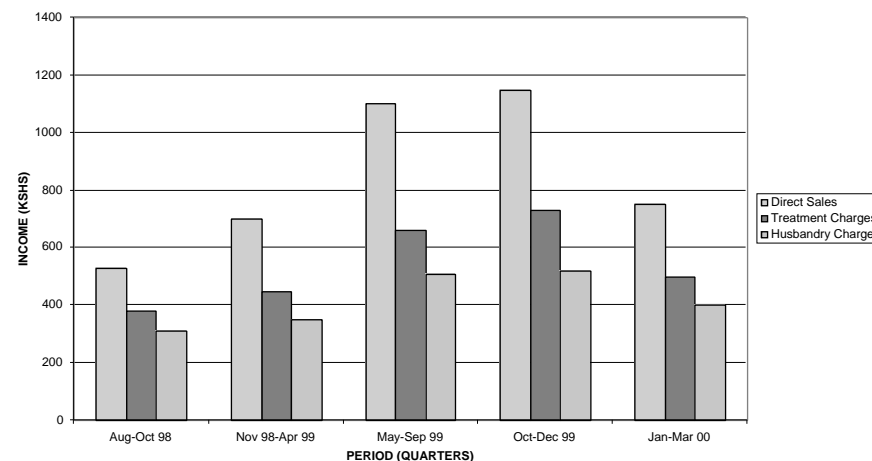
CAHWs

CAHWs benefited from the sales of drugs and, in some cases, from professional fees. The pricing of drugs by CAHWs differed from one region to another. More remote areas charged higher prices but pastoralists still made purchases. CAHWs based close to towns did not perform as well since they were in direct competition with pharmacists who could purchase drugs at wholesale prices and therefore offer lower prices to clients.

Table 5. CAHW Income in Samburu

Period	Average Income by CAHW Per Month	
	KSh	US\$
Oct 97 - Mar 98	5,400	69
Apr 98 - Sep 98	6,000	77
Oct 98 - Mar 99	4,425	57
Apr 99 - Sep 99	2,165	28
Oct 99 - Mar 00	1,363	17

Graph 1. Income Obtained from Provision of Services from Community-Based Animal Health Workers



The graph (above) shows the income of individual CAHWs from the delivery of services.

In the dry season, when the demand for drugs was low, CAHWs were encouraged to invest their income in livestock or in commodities such as tobacco. However, if a CAHW invested in twenty shoats, he might have to sell them when the market is poor and therefore end up making a loss. One of the constraining factors is the lack of reliable market information in pastoral areas.

Income is low during the dry season because livestock is dispersed to seek fresh pasture. Morans take herds far from their base and do not have cash to pay for services or the authority to sell stock to raise cash without consulting their father who is back at home. In addition, the livestock market may be some 200km away, making it difficult to sell stock.

Private Professional Drug Shops

The LO began repayment of the loan but ceased when the PDP closed. The AHA repaid 78% of the loan until the drought delayed repayment. However in June 2000, the AHA took a loan of KSh 160,000 (US\$ 2,051) independently from the Co-operative Bank to increase his stock. One month later, a CAHW drug shop opened in Baragoi, sponsored by ALRMP, which temporarily reduced his client base. Clients returned however, in order to benefit from the AHA's professional advice on dosage rates and access the wider drugstock available. Drugs are sourced from Maralal at the same cost as procurement from Nairobi.

The AHA's major clients are the pastoralists living around Baragoi, the town where he and his drug shop are based. His peak sales are in the rainy season due to the higher disease incidence, the main problems being helminthiasis, pneumonia, trypanosomiasis and ectoparasites. Pastoralists are more likely to buy curative drugs than preventative healthcare. According to the AHAs, women are increasingly looking after livestock, which was previously the domain of men, and tend to purchase more drugs than men.

3.6 Socio-Economic Benefits

Socio-economic benefits have accrued to both CAHWs and the communities they serve. Direct benefits to animal health workers include income generation and heightened social status. There is a saying among the Gabra: "a camel is next to God", therefore a person who attends to an animal, which then recovers is perceived to be the most important in the community. In Samburu and Marsabit, six CAHWs have been elected as councillors and three appointed as chiefs. However, this could be attributed to other reasons, notably that only honest and public spirited individuals were selected by the community for training.

Proceeds from drug sales and services have improved the living standards of active CAHWs and the community sees them as well off because they always had ready cash to meet their needs. In Loikumkum, Samburu, for example Anna Lesampej who is a CAHW, could pay school fees and meet household food requirements from her monthly income of KSh 1,035 (US

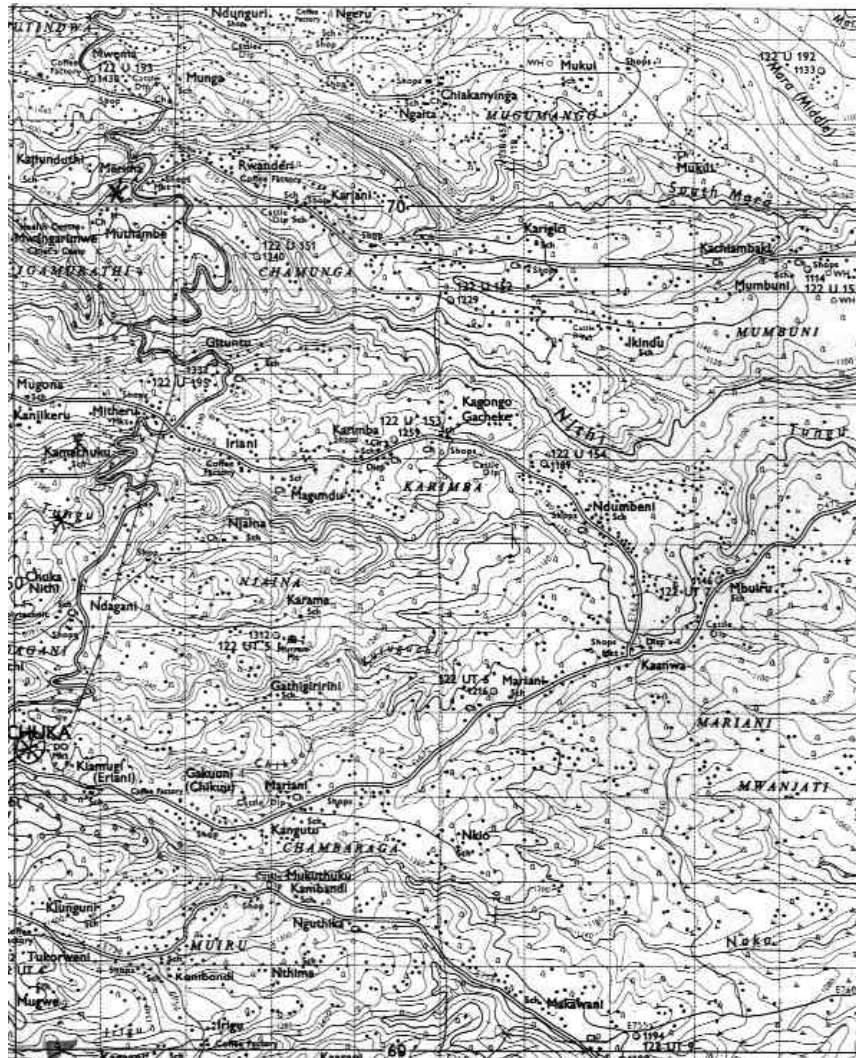
\$13). A CAHW from Ngurunet, Mzee Lelekina, has acquired a flock of thirty shoats which provide his family with milk. Before becoming a CAHW, Lelekina had no livestock of his own and used to be a herder (PDP Quarterly Report 1999 Samburu).

Stimulating the internal exchange of goods and services has enhanced the local service industry. Benefits to the community mainly centre on faster and easier access to drugs and services. This enables more timely interventions and thus positively influences the likely outcome of disease. Community members have learned to negotiate drugs and treatments on credit when cash is not readily available which precludes the necessity of quickly selling stock at very low prices to purchase drugs. Instead, stock can be sold off at a later date when the owner is in a better bargaining position.

Closer access to drugs and services saves time that would have been spent walking long distances to drug dukas situated in town and centres.



Map 2: Meru South District Project Catchment



4. Meru and Tharaka-Nithi Dairy Goat and Animal Healthcare Project

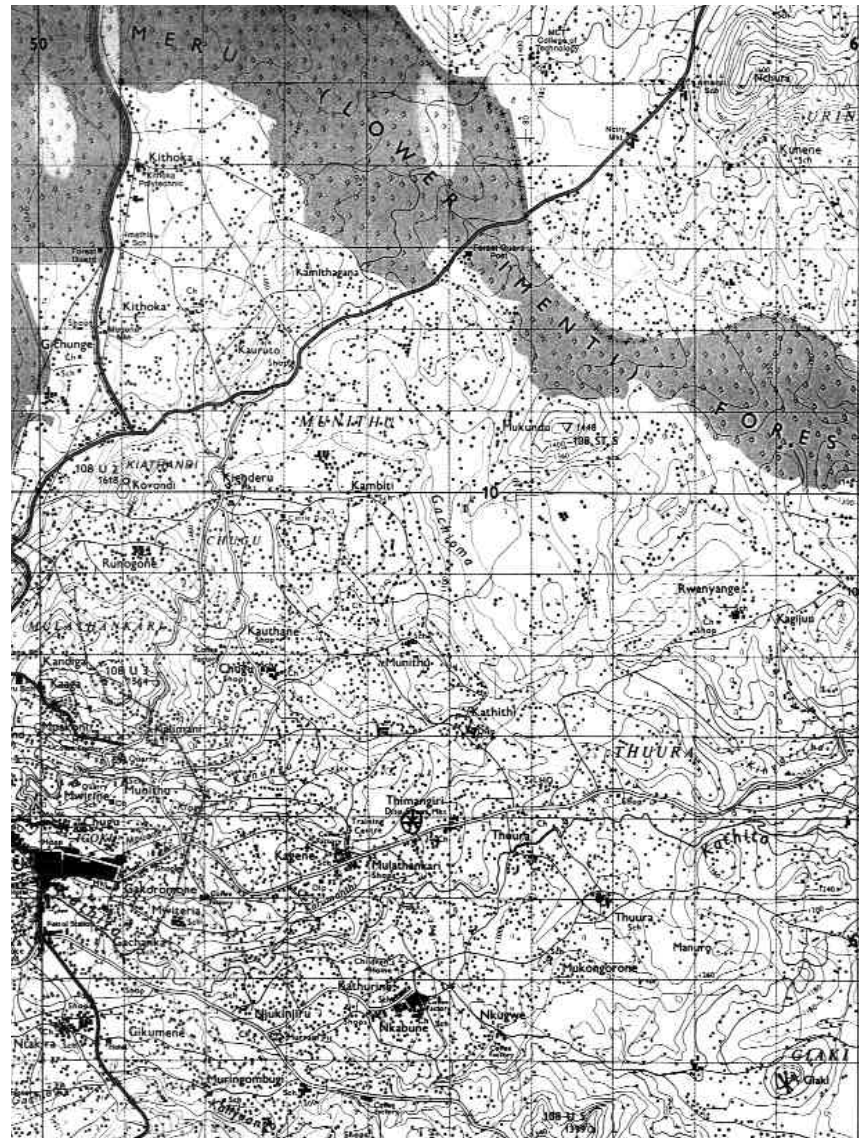
The project is based in two districts, Meru Central and Meru South in the medium potential zones of Meru region (predominantly agro-ecological zone 3) characterised by small-holder settled farming with small and declining farm sizes (generally 0.25 to 1.5 hectares) and small livestock holdings.

The overall goal of the project is to reduce poverty through increased income and milk consumption by increasing the productivity of local goats through better management, access to healthcare and genetic improvement, and of local dairy cattle from better access to healthcare.

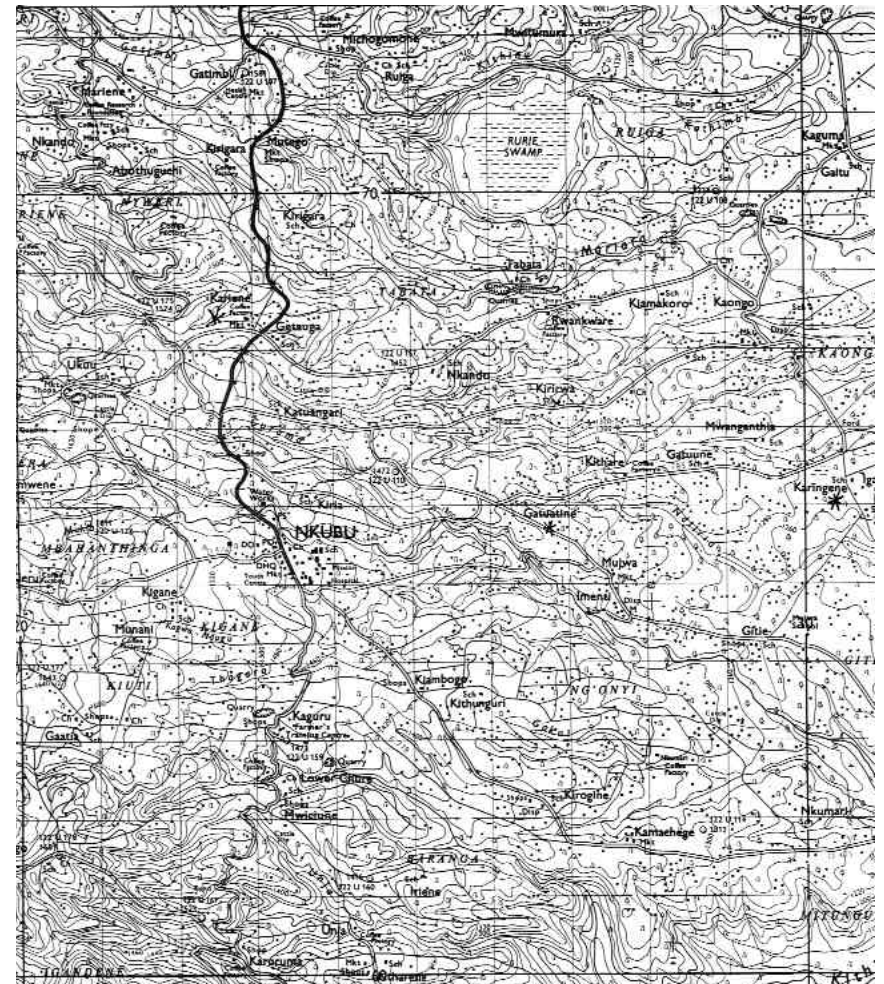
This is achieved by the cross breeding of local goats with British Toggenburg dairy goats, the development of a community animal health care system, improved fodder supplies and the development of an effective extension support service through Ministry of Agriculture and Rural Development (MoARD).

The target beneficiaries of the project are poor farmers in the poorer divisions of the districts, the majority of whom are women (see maps 2 to 4 on facing and subsequent pages). The project has been implemented through self-help groups, most of which were formed specifically to carry out project activities. The community was assisted to identify the poorest families by selecting indicators of wealth and using them to rank households accordingly. Project beneficiaries, are, for example, those without regular income, those with an income of less than KSh 1000 (US\$ 13) per month, and those who cannot afford to send their children to school (over 75% of farmers in the project). In each group, basic training was provided to farmers in goat husbandry, animal healthcare, leadership and group dynamics. A member of each group was trained as a CAHW to equip them with relevant skills to serve the group and the wider community, on disease surveillance and treatment of minor ailments.

Map 3: Meru Central - Murigu Meru East Project Catchment



Map 4: Meru Central - Abothuguchi East and Central Project Catchment



Animal healthcare services in Kenya have not been readily available to resource-poor smallholder farmers. Public services have been cut and the current national policies and legal framework are more appropriate to high potential areas. There is a need to develop appropriate approaches and strategies to address the needs of marginal areas. Government policy on animal health services delivery now focuses on partnerships between government, the private sector and the beneficiaries. In line with this policy, FARM-Africa has developed a decentralised animal health delivery system with the aim of:

- increasing community access to veterinary services and drugs in rural areas;
- establishing sustainable links between private and public services;
- providing supervision of AHAs and CAHWs by private veterinarians;
- establishing a sustainable veterinary drug supply;
- improving disease surveillance and reporting of outbreaks to MOARD.

4.1 Establishment of DAH Services in Smallholder Production Systems

Planning

Before the DAH system was implemented, a survey was carried out to investigate the animal health situation in the project area. The aims of the survey were to:

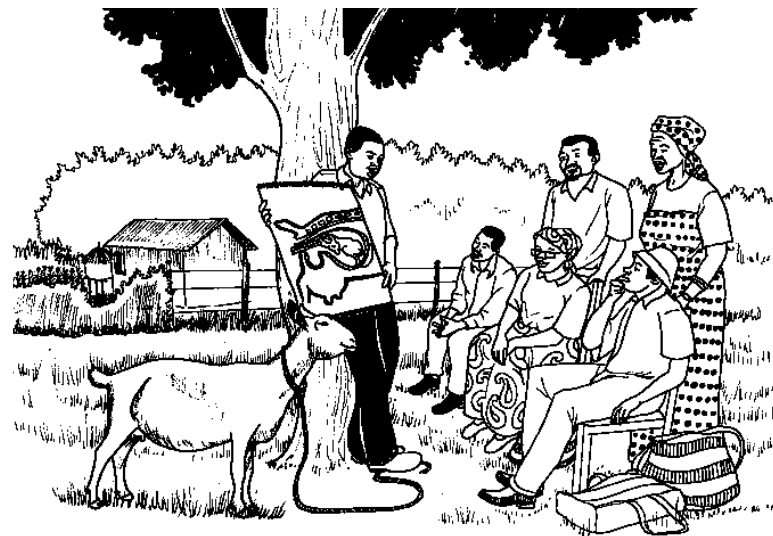
- determine the livestock species and population kept by farmers in the project area;
- identify the animal health service delivery needs and how readily farmers obtained clinical services;
- list and rank the common livestock diseases and conditions in the project area in order of prevalence and importance to poor farmers;
- obtain views on the plan to train CAHWs and establish private vets in practice, including recommendations for programme implementation.

The survey was carried out with farmers and then with other stakeholders, including MOARD. Project group members were interviewed on the current animal health status and views were sought on how FARM-Africa could improve the situation. Farmers expressed an interest in paying for

services that would be made available to them. Farmers also informed the project that there were a number of unemployed AHAs in the area and suggested they be included in the new system (Kaberia 1997).

Using this information, FARM-Africa developed a strategy for the DAH system which was presented to stakeholders — GoK vets, private practitioners, AHAs and farmers.

Farmers were trained as CAHWs, while unemployed AHAs and private veterinarians were helped to open their own drug shops and linkages between them were established.



The CAHWs should, ideally, work within the existing veterinary system, whether that is a Government service or vets operating in private practice. Before CAHW training, discussions should be held with the relevant authorities to ensure that they are accepted and will be able to function effectively.

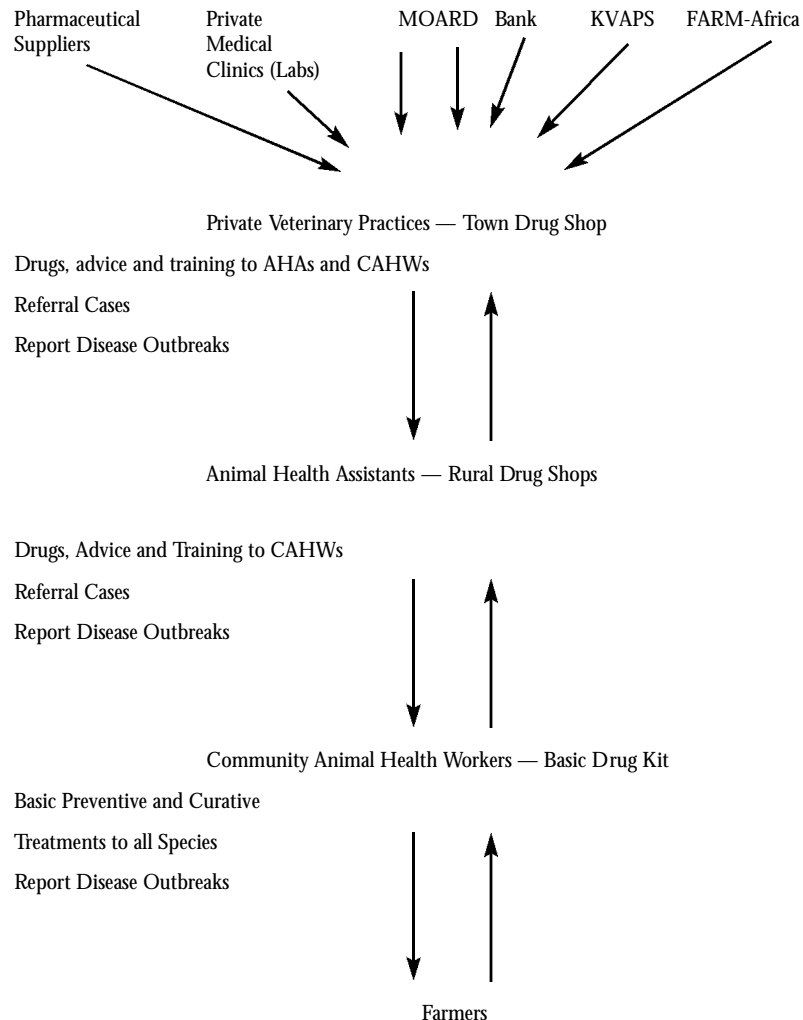
Regulations governing the use of certain scheduled drugs, such as antibiotics and trypanocidal drugs, were put in place.

CAHWs were trained to serve the needs of a defined group of goat owners, such as members of a goat group or co-operative society.

Lessons Learned – Competition Between Public and Private Sector

It was found that the DAH system has complemented the government veterinary services and created healthy competition.

Figure 2. The FARM-Africa Privatised DAH System in Meru District



Development of Private Veterinary Practice

As part of its strategy, FARM-Africa wanted to explore whether high quality veterinary services could be delivered to poor farmers. It advertised in the national newspapers for vets to apply to set up private businesses and presented its strategy to KVAPS who was also recruiting private vets. Twenty-seven applications were received and nine were invited for interview. Of those nine, six were selected on the basis of their motivation, business ideas, business acumen and experience, and their access to resources to use as collateral for a loan. They received training from FARM-Africa and KVAPS to assist them to write business proposals and undertake feasibility studies. The vets were invited to talk to farmers and GoK to obtain information on livestock population, disease patterns, inputs used by farmers for livestock and active and inactive animal health personnel.

After carrying out this work, all the vets decided that the business would not be feasible and none of them was willing to take the risks involved in setting up a business in a rural town. This was due in part to the unfavourable working environment presented by some stakeholders and the fact that the project area was low lands and not high potential as was their expectation. The vets were unwilling to take up the offer of a loan even though FARM-Africa was to act as guarantor because they felt the business was a high risk venture.

Subsequent negotiations with individual vets resulted in two of the initial six accepting the challenge and they were assisted to develop business plans. Based on the original feasibility studies, the aim of the plans was to:

- identify business opportunities for veterinary services and goods in the practice area;
- identify internal and external factors that would influence the performance of the practice and facilitate the planning of relevant interventions;
- obtain a pattern of disease and livestock problems in the project area;
- make financial projections;
- identify competitors and develop a competition strategy.



Dr Alice Kamau Examining a Cow After a Successful Caesarian Section

Two business plans were prepared and successfully presented to KVAPS for viability assessment. Dr Alice Kamau began work in May 1998 and Dr John Wan'g'anga in September 1998. At the same time, AHAs were recruited, with three AHAs opening rural drug stores in Meru Central under the supervision of Dr Kamau. Another three were recruited in Chuka (Meru South) and began work under the supervision of Dr Wan'g'anga.

Lessons Learned — Recruitment of Professionals

The project had planned to support eight vets to set up in practice but it became apparent that there would not be sufficient business to sustain so many. In addition, the scale and duration of the loans required for veterinary practices (including equipment, transport and drugs) were larger than could be met from the project.

Vets were reluctant to establish private practices in a low potential area because of the high level of risk

It was found that AHAs could play a significant role in rural areas by acting as an intermediary between CAHWs and vets. The involvement of AHAs in the DAH system was encouraged by farmers who knew them and were keen to have improved access to veterinary services. The AHAs were local people who were willing to set up drug shops in their own rural communities.

Loans to Private Veterinarians

Vets could not afford to set up private practices on their own because they did not have the collateral required by the banks. The project wanted to assist vets and AHAs to access loans on a sustainable basis through existing infrastructure, rather than receiving loans from FARM-Africa. At that time, there were few credit institutions in Meru other than banks, but at the start of the project it was impossible to persuade them to make loans to establish the private vet practices. The banks' view was that such businesses, operating in rural areas, could not be financially viable. In addition, commercial rates of interest were prohibitively high. On behalf of the vets and AHAs, FARM-Africa negotiated loans with Barclays Bank and the Co-operative Bank and two schemes were developed.

A. Barclays Bank/KVAPS Loan Scheme

Since FARM-Africa could not afford to be sole guarantor for two loans, it entered into an agreement with KVAPS to secure loans jointly for the two vets.

The Barclays/Kenya Veterinary Association Privatisation scheme allowed the vets to each borrow funds according to their business plan. This was approximately KSh 480,000 (US\$ 6,153) per vet to be paid back over five years with interest. KVAPS provided 50% of the security required, FARM-Africa provided 30% through a Fixed Deposit Account and the borrower provided the remaining 20% through a third party guarantor or by mortgaging equipment. KVAPS gave a bonus to the vets that was equivalent to one month's interest every two months, in effect reducing the interest rate paid by the vets from 34% to 17% (the interest rate has since fluctuated). The loans took eight months to set up.

B. Co-operative Bank Loan Scheme

It was intended that loans for AHAs would also be secured through Barclays Bank. This was not possible however, as the amount involved too small for Barclays' loan scheme, and KVAPS had no mandate to provide loans to AHAs. FARM-Africa therefore negotiated with Co-operative Bank to provide loans to AHAs. This scheme enabled AHAs to apply for a loan of

KSh 50,000 (US\$ 640) over three years. The condition was that FARM-Africa acted as the guarantor and, as with the Barclays Bank scheme, opened a Fixed Deposit Account to act as security. The interest earned on these funds offset the interest paid by the borrower from the commercial rate of 34% to a net rate of 20%. The borrower lodged a security (which could be provided by a third party) with FARM-Africa and entered into a binding agreement. The loans took seven months to set up.

In the year 2000, after realising the AHAs' business potential, the Co-operative Bank Manager promised to incorporate into their small micro-enterprise loan scheme, any AHA who could successfully demonstrate their ability to complete the FARM-Africa loan repayment. AHAs would thus be able to obtain loans independently of FARM-Africa for up to KSh 300,000 (US\$ 3846), without any additional security.

Lessons Learned

Unplanned bank charges made business very difficult and delayed repayment of loans by at least six months. Charges have increased by a factor of four since 1998 and are made without informing the borrower. Bank charges were from the monthly repayments, which meant that the repayments themselves were insufficient and interest was incurred on the deficit.

Private Vet and AHA Training

The vets and AHAs were trained in business management to provide the skills required to establish and maintain a viable business in a marginal farming area.

The main components of the training was as follows.

- Business proposal writing.
- Business management — record keeping, customer relations/communication, people and time management and risk assessment.
- Veterinary practice management:
 - fee setting of services and products
 - packaging of products and services
 - book keeping and store keeping skills

- Achieving quality service provision.
- Communication techniques (active listening, recognising common barriers to listening and understanding, body language).
- *Perception and expectation concept* (a specific training tool on how to achieve customer satisfaction and improve service delivery⁵).
- Monitoring and evaluation of products and services provided.
- The FARM-Africa loan scheme.

FARM-Africa agreed to market the vets and AHAs by creating awareness of their services in the community, inviting them to public meetings such as chiefs' barazas, farmer training sessions and dairy goat group meetings.

Lessons Learned — Setting Up Private Veterinary Practices

Taxation policy for small businesses is complicated and needs to be fully understood to ensure advantage is taken of any concessions when establishing a new business. It was realised that vets and AHAs need training on income taxation laws as much as any other business.

During business plan preparation, the AHAs and vets recommended that contingencies be included to cover adversities such as drought.

FARM-Africa's experience with private vets and AHAs has shown that the main reasons for their success can be attributed to personal characteristics, some of which can be acquired through micro-enterprise training by NGOs and Community Based Organisations. Such characteristics include:

- the desire to achieve;
- being action oriented;
- problem solving ability;
- being a risk taker;
- using one's initiative;
- ability to work independently;
- having a positive attitude;
- being time conscious.

⁵ If customers' expectations are high and the service they receive does not meet this expectation, perception is low and customers are dissatisfied. If the service is good, the perception is high, the customers are satisfied and likely to return.

Vet and AHA Coverage

The working area of AHAs and vets is restricted by the number of livestock, competition from GoK AHAs and by their mobility (e.g. ownership of a motorcycle). Due to their lack of mobility and the limited diversification of their businesses (providing a variety of services such as AI, clinical services, drug sales, etc.), project vets and AHAs have not yet reached their maximum potential.



A Motorcycle Makes Service Delivery Economical

Of the seven AHAs, three have motorcycles and attend cases in about a 10km radius from their shops. Those who travel on foot, travel about 7km from their shops but treat fewer cases per day. The vets travel up to 15km radius on a daily basis from their shops by motorbike and can reach into the high potential areas. Distances travelled can reach 40km for cases referred by CAHWs to the vets. Most of the CAHWs cover a radius of 1km from their home. They are approached for their services by farmers in the vicinity and asked to attend an animal and travel on foot to treat them.

With the existing data, a recommendation cannot be made as to the optimal ratio of CAHWs/AHAs/vets to farmers, households and livestock.

There is need for further research to provide this information.

However, the average clientele size and average case volumes per person per month for each cadre of the practice establishment over the period are shown in Table 6. This refers to service provision from inception to end of year 2001.

From Table 6 a decrease in number of clients as well as animals treated in 1999 and 2000 by the AHAs and the CAHWs is observed. This is the period the Kenyan economy was at its worst state and severe drought hit the project area. The AHA and the CAHWs are the most susceptible individuals to such shocks because their practices, which are in the rural areas, provide services to the vulnerable members of the community (the poor). The poor people depend on agriculture and livestock for their livelihoods and hence are the most affected by any slight negative changes in climate or economy resulting in reduced purchasing power. In 2001, when the drought was over, business improved for the AHAs and the CAHWs. Many of the treatments under taken by CAHWs and AHAs during the drought period was in form of bad debts which were never recovered from clients. Many of these clients were not able to meet their liabilities.

Table 6. Average Number of Farmers and Animals that Received Services per Practitioner in each Cadre

Year	Average No. of Clients Served per Month			Average No. of Animals Treated per Month		
	CAHW	AHA	VET	CAHW	AHA	VET
1998	10	16	19	16	26	20 (32%)
1999	8	15	21	12	28	22 (35%)
2000	6	11	22	11	11	30 (58%)
2001	9	17	22	17	19	33 (47%)
Annual Averages	8	15	21	14	21	26 (39%)

The vets, who are stationed at the main towns, have clients ranging from the poor (from referral cases) to well-to-do farmers. Farmers who are

middle-income earners and above are able to suffer economic shocks and still continue to seek services. For most of these better-off farmers, farming or livestock may not be the only means of livelihoods and if it is, they are undertaking intensive farming enterprises. Their livelihoods are from salaries or business. Table 6 shows a slight rise in clients for the vet, despite the previously mentioned external practice shocks. The rise occurs because the vets are increasingly getting to the high potential areas and gaining more clients. This is good in the long run because it makes the vets service deliverers rather than drug dealers only. The table also reveals that the vets, AHAs and CAHWs all have a niche in service delivery. The absence of any of the cadre would leave a gap in service delivery

The working area of the vets and the AHAs is restricted by:

- their mode of transport;
- the populations of livestock;
- credit sizes and availability;
- levels of practice diversification.

Lessons Learned

Diversification is necessary for businesses to be successful. Additional funds were needed to enable the vets to extend their businesses to include drug sales, clinical services and Artificial Insemination.

With a motorcycle, a vet or AHA can attend to more than ten animals in a day irrespective of the distance from their shop. Those practitioners with motorcycles have more successful businesses.

4.2 Community Based Animal Health Workers (CAHWs)

In the project area, many livestock diseases can be managed at the farm level but farmers lack the necessary expertise to prevent and treat disease. In order that animal health services reach deep into rural areas, a cadre of CAHWs were trained in basic animal healthcare enabling them to deliver services to farmers and to provide farmer to farmer training. CAHWs play a major role as the first line of defence in livestock disease management. The

major diseases in the project area, ranked by importance to farmers, is shown on the Table 7.

Table 7. Major Diseases in the Project Area (Meru Central and Meru South) Ranked by Farmers in Order of Importance. [Source: District Annual Report 1998]

Rank	Cattle	Goats	Sheep	Chickens	Pigs
1	Helminthiasis*	Helminthiasis*	Helminthiasis*	Helminthiasis*	Helminthiasis*
2	Anaplasmosis	Pneumonia*	Pneumonia	Coccidiosis*	Pneumonia*
3	Mastitis	Foot rot*	Foot rot*	Infections Coryza	Enteritis
4	Pneumonia	NSD	Enteritis*	Fowl Cholera	NSD
5	ECF	Orf	NSD	Newcastle Disease	Swine Erysipelas
6	RAB	Enteritis*	Prolapse	Salmonellosis	Salt poisoning
7	NSD	Blue tongue		Non specific	Ectoparasites*
8	Foot rot*	Ectoparasites*	Enteritis	Deficiencies*	
9	Enteritis*	Abortions		Fowl pox	Wounds*
10	Abortions	Abscess*		Deficiencies	Influenza Arthritis

Those diseases managed by CAHWs are indicated by *.

After the initial project survey in 1997, a team comprising FARM-Africa staff, a representative from the DVO, a social scientist and a trainer of CAHWs, reviewed the survey report and agreed on a training curriculum for CAHWs and the depth and methodologies of this training. The duties of a CAHW were agreed as follows.

- To castrate goats and de-worm, spray and treat minor wounds in all livestock.
- To detect important diseases and report outbreaks to the local veterinary officer.
- To train fellow farmers in maintaining the health of their livestock (farmer to farmer extension).



CAHW Selection

Farmers in the project area were asked to identify the essential qualities of a CAHW. From their information, FARM-Africa developed the following CAHW selection criteria.

- Willingness to serve the community and be responsible and respected members of the community.
- Physical fitness and ability to work.
- Candidates could be either men or women.
- Candidates should be settled members of the community who are prepared to serve for a reasonable period and are not likely to leave soon after training has been completed.
- Illiteracy should not be a barrier to training.

Farmers were then given one month to select two candidates fitting the above criteria to receive training.

Lessons Learned — CAHW Selection

The community wanted only literate farmers to be trained as CAHWs as they thought training of illiterate farmers would have a negative effect on their children's education, i.e. they did not want to create an impression that one can become a "doctor" without going to school.

Community involvement in decision-making and developing selection criteria enhanced accountability and effectiveness, and accelerated the selection process.

Trainees approved by the community were instilled with a sense of responsibility and commitment and were found to be more likely to remain active than those individuals who had been hand-picked by their relatives.

School leavers were often selected for training because they are literate. But unless their role as a CAHW offers them a living, they are unlikely to be interested in serving the community for a long period.

The selection criteria developed in Meru may differ from those developed by communities in other regions. The important issue is that the community themselves choose the criteria and select people using those criteria.

Women have proven to be very effective CAHWs particularly for treating goats. They are most likely to be involved in treating and feeding goats at their home on a daily basis in any case and this improves their practical knowledge of goat healthcare.

There was not enough business (in terms of numbers of livestock within the working area of a CAHW) for two CAHWs per group therefore only one was trained.

CAHW Training

The training comprised three phases, starting with a seven-day residential course after which the CAHWs started work in the field. The training approach was as follows.

- To be as practical as possible, using simple and participatory techniques.
- To include field work.
- To take place in the community itself.
- To involve as many farmers as possible during practical sessions — for example, trainees gathered at a different village on each day of the course and local farmers were requested to bring their animals for treatment.
- To assist illiterate trainees — simple pictorial treatment guides and price lists were prepared to serve as a reminder and to assist in recording payments received for the different services given.

At the end of the seven-day training, each CAHW was presented with a kit of drugs and equipment, on a cost recovery basis (see section 4.3). After three months, a three-day feedback workshop was held to assess the performance of the CAHWs and to share experiences. This involved all stakeholders: VOs, Divisional Livestock Extension Officers, farmers, FARM-Africa staff and frontline extension workers. After this workshop, two further training sessions were held, based on the needs identified during the feedback workshop, to provide additional skills and knowledge which farmers demanded. At the end of the training, CAHWs were presented with a Certificate of Attendance at a small graduation ceremony.

The trainers of CAHWs themselves received training to equip them with the skills needed to teach semi-literate farmers. Participatory techniques were taught to help trainers build on farmers' existing knowledge and impart new information. In 1997, courses were held in participatory training techniques and on goat medicine and management and annual refresher courses have maintained standards of practice and taught new information and techniques to correspond with farmer demands.

Lessons Learned — CAHW Training

A minimum level of literacy of farmers made training of CAHWs easier.

'Hands on' experience was found to be very effective in developing skills and building up confidence of CAHWs.

The non-residential training allowed participants time to attend to their other responsibilities as opposed to residential training.

Practical sessions took place in the community so farmers could bring their own animals for treatment during sessions which increased awareness about the CAHWs work.

CAHWs are trained and provided with drug kits by a variety of development agencies throughout Kenya. A nation-wide CAHW training needs assessment would improve the coordination of these practices.

Curriculum Development

The information from a disease survey conducted by FARM-Africa was used to develop a training curriculum for CAHWs. This included training on the current animal health problems identified and prioritised by farmers, as well as methods of treatment suitable for CAHWs to administer. The curriculum also included business management and the referral and reporting systems. The same team who agreed on the role of CAHWs, developed the training curriculum and laid down the training methodology that requires training to be given in phases with relevant lesson plans.

The curriculum consisted of:

- herd health and livestock diseases, treatments, prevention and control;
- drug handling, treatment and equipment use;
- husbandry techniques (e.g. docking, castration, de-horning);
- cost recovery and business management;
- surveillance, monitoring and record keeping;
- extension messages/services;

- field days, practicals and discussions;
- reviews and problem solving;
- trainee assessment.

The curriculum has been revised annually in collaboration with the GoK, using feedback from CAHWs, AHAs and the vets. Further topics have been included to reflect the increasing role and responsibilities of the CAHWs as they become more established within the animal health delivery system.

FARM-Africa was involved among other NGOs to develop an acceptable framework for a CAHW training national curriculum for KVB. The curriculum has been developed and tried by KVB.

4.3 Drugs and Drug Shop Establishment

The problem of ineffective drugs was identified as one of main limitations to improved animal health in the Meru region (Onim, Oendo & Peacock 1995). The town and rural drug shops established by the project have ensured the availability of high quality and reliable veterinary drugs to CAHWs and farmers in the project area, in addition to the wider community.



Meru Town Drug Shop

FARM-Africa has helped the vets and AHAs to form a consortium to purchase drugs in bulk at a discount. In addition, KVAPS had an agreement with drug manufacturers, which allowed KVAPS beneficiaries to procure drugs at subsidised rates, enabling vets to compete with pharmacies.

Vets obtain drugs at discounted prices of 10 to 20% (depending on the quantity) from a regular and reliable supplier. The AHA's shops are stocked from the private vets at a discount that allows AHAs to sell drugs at retail price while still making a small profit. The shops employ attendants who receive training from their employers on drug use and the keeping of proper sales records. The AHAs supply drugs to the CAHWs, again at a discounted rate. CAHWs mark up drugs sold to farmers by about 20%, but it is still cheaper for farmers to purchase drugs from CAHWs rather than meet the cost of travel to a rural or town shop.

Lesson Learned — Drug Supply

A sustainable supply of high quality and affordable drugs is essential to the functioning of the system. In Meru, the vets source drugs from reliable suppliers in Nairobi. The AHA rural drug shops restock from the vet clinics in the towns. The CAHWs restock their kits from either the AHAs or vets, depending on proximity.

This system has the following advantages.

- It ensures only high quality drugs are used.
- It ensures that drugs are administered correctly by trained personnel.
- Pooling resources by personnel for bulk purchasing makes drugs cheaper and therefore more affordable by poor farmers.

Professional linkages in the drug supply chain to CAHWs avoids the risk of fake drugs and expired products being sold.

Drug Kit Provision

After the initial training course, CAHWs were issued with a basic veterinary drug kit on a 60% cost-recovery basis. They made repayments in installments as the volume of their work permitted. Of the forty-four CAHWs issued with drug kits, 43% had completed the repayment after

three years. By the end of the project, 83% of the total loans to all CAHWs had been repaid. Cost recovery was delayed by the drought and no repayment was asked for or received during 2000.

Lessons Learned — CAHW Drug Kits

Cost sharing in CAHWs programme instills a sense of ownership in the project and reduces the possibility of dependency on an NGO.

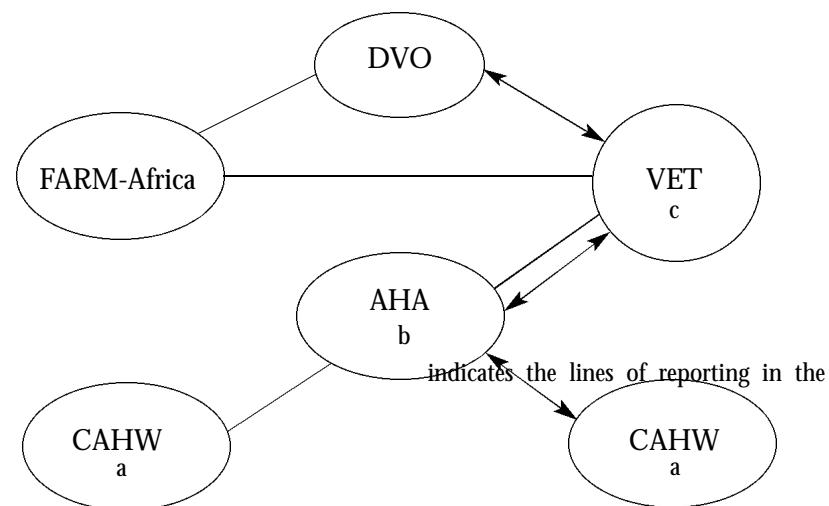
4.4 Monitoring

FARM-Africa developed a series of monitoring sheets for regular use by vets, AHAs and CAHWs (Annex 2-5). CAHWs keep records of the cases and farmers they attend and this information is copied to AHAs who pass it to the private vets and the DVO, with a copy to FARM-Africa. The vets and AHAs also keep records of their clinical services and drug sales, and compile monthly reports that include income/expenditure statements to help them monitor their performance and plan accordingly. Farmers also keep Goat health cards for purebred Toggenburgs and crossbreeds. In cases of outbreaks, prompt action is planned together with DVO's office on control measures to be undertaken.



Training Session for CAHWs in Meru Project

Figure 3. Animal Health Service Delivery Reporting System



The double headed arrow \longleftrightarrow
'without FARM-Africa' scenario.

A single line ——— indicates the lines of reporting in the 'with FARM-Africa' scenario.

- a CAHWs record daily treatments in an exercise book. At the end of the month this information is transferred to the FARM-Africa reporting sheet (Annex 2) and submitted to the AHA.
- b AHAs record daily treatments in an exercise book. At the end of the month, they transfer this information to the FARM-Africa reporting sheet (Annex 2). At this time, they also compile an income and expenditure statement for their business. These two reports, along with those submitted by the CAHWs are submitted to the vet.
- c Vets record daily treatments in an exercise book. At the end of the month, they transfer this information to the FARM-Africa reporting sheet (Annex 2). At the end of the month, they compile an income and expenditure statement for their business (Annex 4). These two reports, in addition to those prepared by the AHAs, are submitted to the DVO with a copy to FARM-Africa.

At the end of the project, the single line links will be broken and the role of FARM-Africa will cease. The reporting system should remain effective, maintaining an important link between CAHWs in the rural areas and the DVO office that needs regular and accurate information.

Table 8 on the next page shows a summary of the CAHWs work. Of the 44 CAHWs trained, 40 are still operational while four dropped out of service. Column 1 shows the number active in each division.

The animal health reporting system, where reports are generated from the practitioners to the FARM-Africa and MOARD offices, are very effective. The percentage of reports received over the three-year period was calculated by taking total number of months the CAHWs have been in operation, multiplied by the number of operational CAHWs in each division. This is taken as the expected number of monthly reports due over the period. The actual number of reports received over the same period was calculated and expressed as a percentage of the expected reports.

This is used to measure the effectiveness of the reporting system in the programme. Overall, the reporting system is 75% effective. The following information was generated by the reports as means of monitoring disease surveillance.

A total of 15,913 farmers received services from the 40 CAHWs from 1998 to 2001, which on average translates to 11 farmers per CAHW per month. The total number of animals treated by the same was 27,244 animals over the same period, which also translates to an average of 19 animals per CAHW per month. The percentage cases they were unable to treat and referred to the AHAs and vets were 4%.

The clinical sales given are turnover and not profits just to give an idea of volumes of transactions undertaken. This information helps us to make a judgement on the costs farmers pay for the services from these cadres of service providers.

Besides providing services to farmers, the CAHWs have been providing training to fellow farmer groups (farmer to farmer extension). A total of 62 groups training have been conducted over the period by the CAHWs to the dairy goat group members.

Table 8. Performance of the CAHWs in the Project Area per Administrative Units (Division) from 1998 to 2001

Divisions	No. of CAHWs Active	Percent Reports Received	No. of Farmers Served	No. of Animals Treated	Clinical Services Sales	Referral Cases Attended	Group Member	Training Conducted by CAHWS
Miriga Mieru	8	88%	4371	7202	302,449.5	483	784	8
Abo. Central	8	63%	2056	4995	115,013	218	338	12
Abo. East	5	89%	2747	3218	182,968	202	458	15
Muthambi	7	67%	2200	3848	124,638	35	277	7
Chuka	11	74%	4539	7981	337,884	159	500	20
Total	40	75%	15913	27244	1,062,953	1097	2357	62

Lessons Learned

Monitoring should be participatory and provide information that is useful to both practitioners and development agents. Feedback enables the practitioners to monitor their own progress and is essential for the continuity of reporting.

Impact on Disease Surveillance

The decentralised animal health system generates reports from the vets, AHAs and CAHWs. Copies of these reports are sent to the DVO who uses the information to compile District reports for Director of Veterinary Services. The information includes disease incidence and treatments given.

AHAs and CAHWs have been trained to participate in specific vaccination campaigns (see case study below). For example, during the vaccination programme for Newcastle disease, the CAHWs organised farmers to bring around 1,000 chickens in one day for vaccination. The CAHWs collected the fees from the farmers prior to the vaccination to enable them to purchase the vaccine from the AHAs.

After the establishment of the project the DVO, Meru Central, commented

that reporting of disease outbreaks in the project area had suddenly increased and that the department had conducted more vaccinations in the project area than outside it. The Veterinary Officer, Muthambi Division, reported that prior to the establishment of the system, no goat diseases had been reported, but that since the project started, many reports had been received concerning crossbreeds as well as local goats. Since the DAH system was introduced along with the establishment of two drug shops run by AHAs, disease treatments in Muthambi division have increased by 15% for cattle and 25% for goats (Table 9).

Table 9. Cases of Disease Treated in Cattle and Goats in Muthambi Division

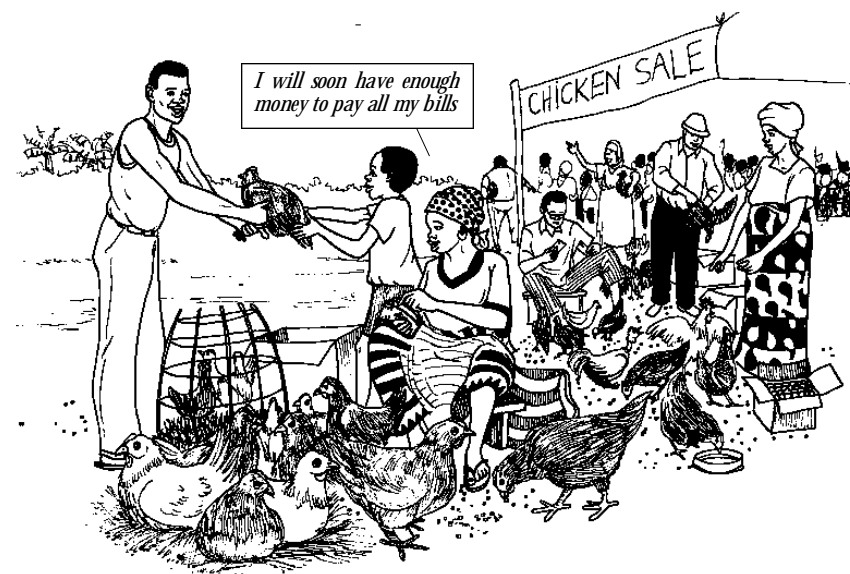
No. of Cases Treated	1997	1998	1999
Cattle	514	618	602
Goats	114	148	153

Source: DVO Annual Report, Muthambi Division

Case Study — Poultry Disease

Before the project began, Newcastle disease attacked chickens annually between August to October with high mortalities. After the CAHWs were trained on administering vaccinations in 1999, the mortality of chickens from Newcastle disease has been drastically reduced. At the end of a drought period, most farmers usually source breeding chickens because their flocks have been destroyed by Newcastle disease. The drought of 2000 was the longest in living memory, but in August to November farmers in the project area joined together and had their chickens vaccinated.

The Mutethia group in Gitije location of Muthambi Division wanted to start a poultry project but was reluctant for fear of losing birds to Newcastle disease. After CAHWs were trained, farmers had confidence that they could treat their chickens. Sales from chickens were used to purchase food during the drought, to pay school fees and other domestic needs. The market prices in September were KSh 100-300 (US\$ 1.30-3.80), and KSh 50-220 (US\$ 0.65-2.80) in October, depending on weight.



4.5 Supervision and Monitoring

Most of the animal health problems can be treated at the farm level, such as deworming and foot rot. Most of the procedures are curative, although CAHWs have been trained to give preventative health care advice. CAHWs refer approximately 7.5% of cases to AHAs or vets each month.

The monitoring system developed by the project has enabled CAHWs to be closely supervised by veterinary professionals. Only one case was known of a CAHW attempting to give injections and he was suspended for some months by the private vet. It was the farmers themselves who reported the CAHW to the vet, as the project had made farmers aware of the services they could expect from a CAHW. This system has enabled the CAHWs to maintain high quality services and to refer difficult cases.

CAHWs, AHAs and vets have kept consistent and comprehensive records because the recording required is minimal and the information gathered and feedback is given where necessary. Feedback to AHAs and vets is done on an individual basis. This has helped CAHWs, AHAs and vets to predict case loads and prepare drug supplies accordingly.

Refresher training for CAHWs, formerly provided by FARM-Africa, is now carried out by AHAs and Vets and paid for by the dairy goat groups. Due to the influence of the Project on good reporting procedures, Meru is one of the few places in Kenya where private practitioners have been providing regular, monthly reports to the DVO (Dr Njeru, DVO's office Meru Central)

Lessons Learned

Linking CAHWs to veterinary drug shops owned by professionals provides legal backup and ensures sustainability of the source and reduces incidence of drug abuse.

Supervision of CAHWs is required to ensure high quality services are provided and only high quality drugs are used.

CAHWs must understand the purpose of consistent record keeping and the benefit to them from feedback and analysis in predicting future business prospects.

4.6 Viability

Meru Animal Health Workers Group (MAHWG)

MAHWG is registered as an association with the Ministry of Culture and Social Services and acts as a forum for animal healthcare providers in the project area. It was established in January 2000, by veterinarians, AHAs and CAHWs, and complies with the current requirements regarding paraprofessionals working under a registered veterinary surgeon.

MAHWG has the following objectives.

- To act as a forum for the exchange of ideas with members.
- To organise future training such as refresher courses for CAHWs.
- To represent members in scientific workshops, meetings, seminars and disseminate resulting information to members.
- To develop linkages with other stakeholders such as District Veterinary Office, Meru Dairy Goat Breeders Association, drug suppliers and the community to enhance communication, drug supply, public relations and general well being of livestock.

In the absence of existing micro-finance institutions to cater for animal health workers, the group has raised money to start a revolving fund from which loans are made to members for drug purchases and the establishment of rural drug shops. Currently, loans from conventional institutions attract high interest rates and demand collateral that preclude small-scale borrowers such as CAHWs. Through the capacity building activities of MAHWG it is hoped that the decentralised animal health system will become more sustainable.

4.7 Impact

The DAH system was established in stages as vets, AHAs and CAHWs were recruited and began work (see table below). Data for the system as a whole is only available for thirty-three months (September 1998 to June 2001), although data for some service providers is available for forty-two months (January 1998 to June 2001).

Table 10. Start-up Dates for DAH Workforce

Date	CAHW	AHA	Vet
Dec 1997	20		
Apr 1998	24		
May 1998		3	1
Sep 1998		3	1
Total	44	6	2

The establishment of private decentralised animal health services has brought a range of veterinary services closer to rural farmers, improved management of notifiable diseases, and facilitated disease monitoring.

The project, at its inception in 1998, established two vets, six AHAs and 44 CAHWs in practice. By the end of 2001, one AHA and four CAHWs had dropped out of the system. All the vets were operational by the end of this period.

The overall drop out in personnel comprised 9.6% of the initial staff contingent.

In the year 2000, two new AHAs and eight CAHWs joined the system. Of these AHAs, the one from the Chuka division dropped out after barely a year. All these dropouts took place in Meru South districts. The dropout by the AHAs can partly be attributed to two reasons.

First, there was often a lack of self-discipline in financial management which led to misappropriation of funds; for example, using funds to purchase alcohol or for other purposes.

Second, domestic problems between man and wife have also contributed to dropout rates. Other contributing factors included lack of personal drive.

In both cases, counselling was unsuccessful and neither unsold drug stocks nor records of their disposal were provided thus leading to the conclusion that mismanagement forced the business to close.

The drop in number of CAHWs (9%) seems within reasonable levels and could be attributed to:

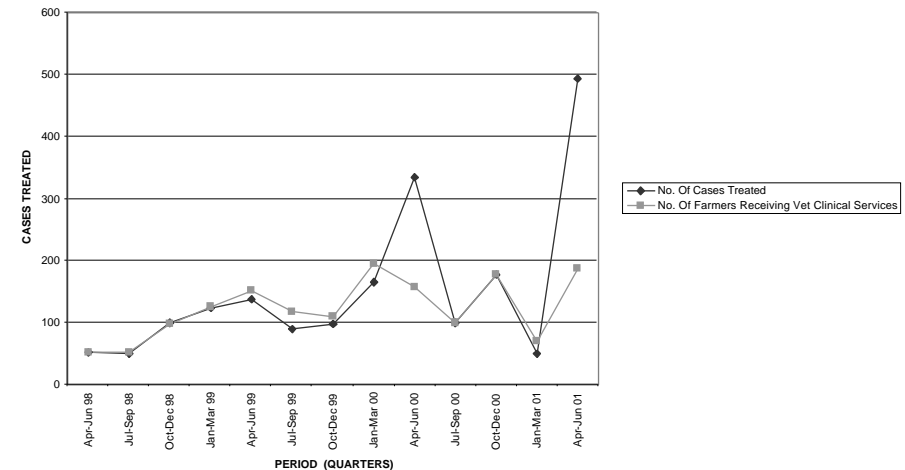
- availability of other, more profitable ventures for the CAHWs away from the project area (this was common with CAHWs who had secondary school education);
- mistrust by the group members and hence the stoppage of the CAHWs' operations by the group;
- lack of personal drive in the work.

Impact of Treatments

Treatments by Vets

The number of treatments given by the private vets is shown in Graph 2. The total number of cases treated between May 1998 and June 2001 (38 months) is 1,971. The average number of cases seen by each vet per month is 26. The total number of farmers who received services from the vets during that period is 1,591. The average number of farmers attended by each of the two vets per month is 21. The majority of stock treated by vets and AHAs were cattle (69%), followed by poultry (23%), goats (5%) and sheep (1%), pigs (1%) and dogs (1%).

Graph 2. Summary of Treatments by Private Vets 1998 — 2001



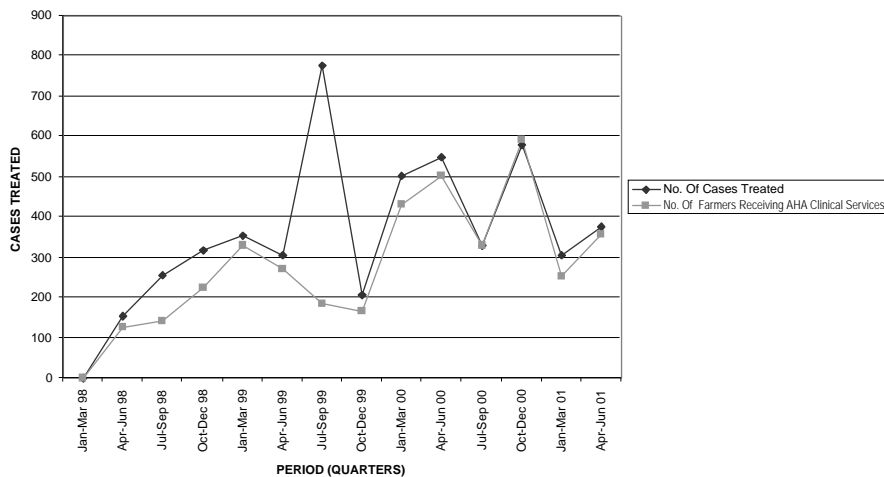
Treatments by AHAs

The number of treatments given by the private AHAs is shown in Graph 3. The total number of cases treated by the private AHAs from April 1998 - June 2001 is 5,013. This is a mean of 129 cases treated per month or 18 cases per AHA. The total number of farmers who received services from the AHAs during that period is 3,913. The average number of farmers attended by each of the AHAs per month is 14.

Two of the AHAs have acquired AI equipment, one of whom has also acquired a motorbike, a microscope and a fridge for the practice, using income from clinical services. This AHA moved his drug shop from the catchment area to a higher potential area, in the tea and dairy zone and has since repaid his loan. The project only started receiving reports from this AHA, who contributed more than half the caseload, in January 2000, hence the surge in workload at this time.

The tea and dairy farmers in this zone were not as badly affected by the drought as those in the project area. The increase in the number of treatments in July 1999 is due to poultry vaccination.

Graph 3. Summary of Treatments by AHAs 1998 — 2001



Treatments by CAHWs

The number of treatments given by the CAHWs is shown in Graph 4.

The total number cases treated by CAHWs between January 1998 and June 2001 is 21,472. A total of 13,812 farmers received these services. On average, only 20% of those farmers are project group members. Each CAHW served a mean of 7 farmers and treated a mean of 11 cases per

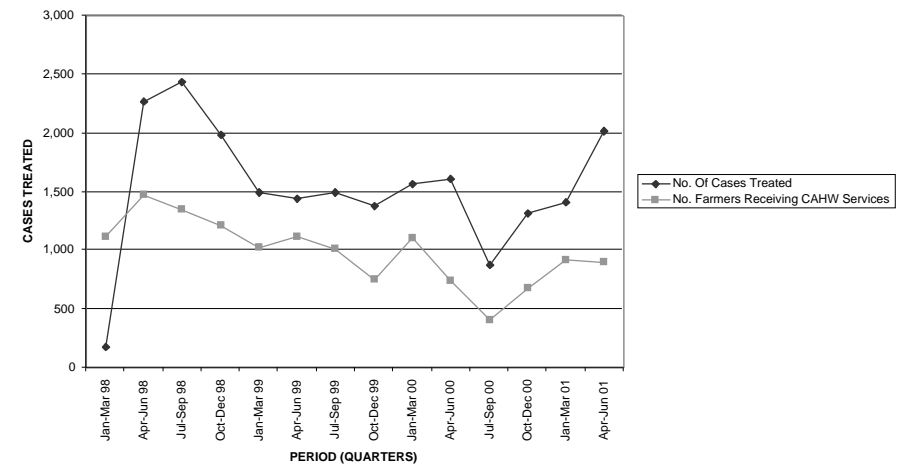
month. The majority of livestock treated by CAHWs were cattle (39%) followed by goats (32%), poultry (22%), dogs (5%), sheep (2%) and pigs (1%).

The majority of the treatments by CAHWs are for cattle because most of the work is outside of the project groups and most of these farmers own cattle.

The high proportion of goats treated by CAHWs is due to the fact that:

- goats tend to be kept by poorer farmers who access CAHWs more readily because of their proximity and affordable charges;
- CAHWs were trained primarily to handle goat health problems;
- the majority of treatments of goats are for preventative deworming which is done on a regular basis;
- more serious health problems are referred to AHAs and Vets whose treatment of goats is low.

Graph 4. Summary of Treatments by CAHWs 1998 - 2001



The first group of twenty-two CAHWs began work in December 1997 while the second group was trained in March 1998. Monitoring of farmers who are project group members and who receive services began in July 1998.

Drought hit Meru from October 1999 to October 2000. During this period, the income of livestock keepers declined and their purchasing power was eroded. In addition, Kenya was suffering economic recession. These two factors have had a significant impact on the performance of the animal health activities in the project area.

Accessibility by Poor Farmers

The decentralised animal health system has improved farmer access to veterinary services and drugs in areas where government services have either totally broken down or were non-existent. Prior to the project, the five divisions of the project area were served by three GoK vets and seven GoK AHAs. The project has helped to establish an additional two vets and eight AHAs in private practice and trained fifty-two operational CAHWs.

During the reporting period January 1998 to December 2001, the AH system has been active, the total number of cases treated is 30,331 which represents 28% of the total livestock population of the project area. Over 19,000 farmers have brought their livestock for treatment by the AH service providers. This represents 8% of the population in the project area.

However, a more representative figure can be attained from the household unit, as usually just one member of a household would seek a service provider. Of the total households in the project area (42,188), it is estimated that 46% accessed animal health services provided by the DAH system.

Affordability by Farmers

At first, farmers in project groups expected that CAHWs/AHAs would give them subsidised services compared with farmers not in the project groups and some of the community expected free services. Others, who were willing to pay, found the services provided by such a decentralised system are substantially cheaper than those provided by central service providers. The cost of a GoK vet in Meru South called to deworm a cow at a farm 14kms from the office will be nearly four times as much if he travels by vehicle or double if he travels by motorbike compared with a CAHW treating the same animal.



Table 11. Comparison of Pricing Between GoK Vets and CAHWs to Deworm a Cow [Source, personal communication Gitonga 2001].

Costs Incurred	GoK Vet Using Vehicle		GoK Vet Using Motorcycle		CAHW on Foot	
	KSh	US\$	KSh	US\$	KSh	US\$
Transport	350	4.50	100	1.30	0	0
Professional Fee	300	3.90	300	3.90	20	0.30
Drugs	130	1.70	130	1.70	120	1.50
Total	780	10.10	530	6.90	140	1.80

Lessons Learned — Farmer Affordability

The services provided by CAHWs are more affordable to farmers than those provided by a government vet because the former are based in rural areas and their overhead costs are minimal.

AHAs and vets have suffered when poor farmers default on payments for services during times of economic hardship (e.g. drought).

Effectiveness

Mortality

Pure Toggenburg Goats — the imported breeding stock of 130 adults were distributed to the farmer groups between December 1996 and June 1998. Prior to the establishment of the animal health component of the project in early 1998, the project vet was in charge of disease surveillance, treatments and follow up. Due to distance between the farmers and the FARM-Africa office (where the vet was based) cases were often reported late. After the beginning of 1998, timely reporting by CAHWs to the project vet or a private vet meant that cases could be attended to within a day of disease onset. The adult Toggenburg mortality rate was 5.1% in 1997 but fell to 3.1% in 1998. Mortality was mainly due to Pasteurellosis, as a result of stressful conditions such as changes in climate, diet and management.

Crossbred Goats — Mortality rates of crossbred and local goats cannot be provided because tracking them is a major undertaking, beyond the scope of the current project and would require a further study.

Change in Disease Pattern

During a survey carried out by the project in Chuka Division, farmers were asked to describe the diseases affecting their animals (see Table 12 below). Of these, CAHWs identified nine that they were able to treat.

Nearly 80% of these diseases could be controlled or prevented altogether by good husbandry if farmers were trained in appropriate techniques. During the life of the project, CAHWs conducted over sixty training sessions with farmers that were instrumental in raising awareness of livestock diseases and demonstrating simple preventive measures such as tick control.

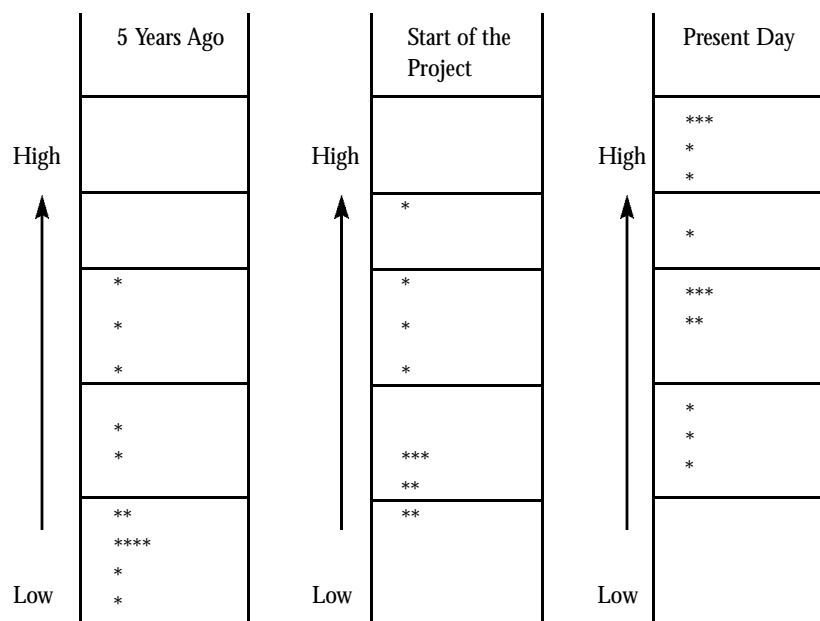
Table 12. Disease Incidence as Identified by Farmers in Chuka Division in 1998

Animal Disease	Times Cited
Worms	13
Mineral Deficiency	12
Anaplasmosis	12
Pneumonia	9
ECF	9
Malnutrition	8
Diarrhoea	7
Foot Rot	6
Abortion	5
Mange	4
RAB	3
Photosensitization	2
Dystocia	1

In 1998, a PRA survey examined farmer assessment of the status of on-farm animal health since the start of the project (Tibbo 1998). The impact of the health services was assessed for three different time periods: five years prior to the project, at the start of the project and at the time of the survey. Although the standard of health indicated started and finished at different levels, the overall trend for every group or individual farmer interviewed (project and non project) showed an improvement in health status since the start of the project (see Figure 4 below). The reasons given for the increase were as follows.

- Availability of project-trained CAHW or AHA (73% of replies).
- Farmers attended seminars and have implemented what they learnt about general hygiene (especially worms).
- Improved feeding.
- Improved housing.

Figure 4. Results of PRA Survey Showing Changes in Animal Health During Project



Animal Health System and Productivity Change

In all livestock production systems, several constraints have been identified. These include livestock diseases, lack of capital, expensive vet drugs and a lack of, or inadequate, vet services. The DAH system has had a direct influence on these constraints and has led to improvements in livestock performance generally and of crossbred goats in particular.

As CAHWs are based in the villages, most farmers are able to reach them. They offer training to fellow farmers in basic animal husbandry and this has led to an overall improvement in livestock productivity. Their training activities include regular deworming, castration, hoof trimming, proper housing and better feeding management. Coupled with the up-grading of local goats, this has led to improvement in mature weight and more profit.

Farmers have been selling goats to thirty-eight districts of Kenya and in other locations as far away as Rwanda and Tanzania.

Socio-Economic Status of CAHWs

The training received by CAHWs has improved their status within their communities.

In a wealth ranking exercise, 83.7% of CAHWs were among the top ten in their respective groups and only 13% was found among the poorest groups. Ninety-five percent of CAHWs hold leadership positions within their communities. Such positions include group executive committees, leaders in the Meru Goat Breeders Association and goat inspectors.

Women have been given equal opportunities for training as animal healthcare providers and comprise 42% of CAHWs, 50% of vets and 37.5% of AHAs in the private sector.

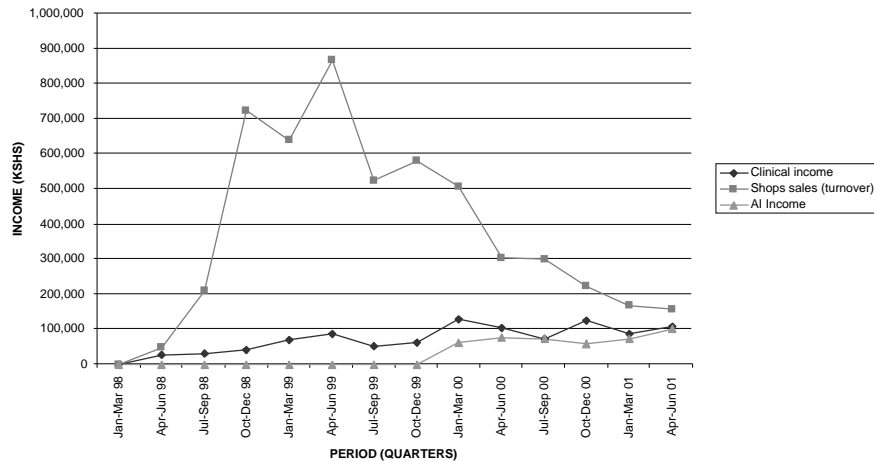
Income

Income from Private Veterinary Practices

The income earned by the private veterinary practices established by the project is shown in Graph 5.

The income from the private vet can be split between clinical income (15%), drug shop sales (78%) and AI (7%).

Graph 5. Summary of Private Vet Income Between 1998-2001



From January to September 1998, only one vet was operational. The sharp increase in income from shop sales can be attributed to the establishment of the second vet in September 1998.

The main clients of drug sales are CAHWs. Their purchasing power began to fall from mid 1999 but the turnover of drug sales has remained above KSh 150,000 (US\$ 1,923).

Shop sales also include goods such as fertiliser. The rains begin in March so there was a lot of fertiliser sold in early 1999.

The income from clinical services and AI has been steady. This is because the vets are stationed in the main towns and have developed a clientele ranging from middle-income earners to business people. These clients have good dairy animals that can pay for clinical and AI services. One vet began to provide AI services in January 2000.

The project has created considerable new employment opportunities for vets and AHAs in private animal healthcare practices who would otherwise be unemployed or under-employed. The vets and AHAs are making

sufficient income to support themselves, repay their loan and employ an assistant, thus creating even more jobs.

Income and Expenditure of Veterinary Practices

Meru Vet Services

Meru Veterinary Services, located within Meru Town, were established in 1998. It has three main activities; drug sales, clinical services and artificial insemination services. The clinic has a strong asset base composed of a motorbike, AI tanks, assorted surgical equipment, assorted AI equipment, furniture and fittings.

a) Drug sales

The main product lines are dewormers, acaricides, antibiotics, mineral salts and feeds. From Chart 1, the drug sales contribute 48% of the total business.

b) Clinical services

These contribute 25% of the total business. The most common cases attended include Anaplasmosis, Mastitis Pneumonia and East Coast fever.

c) AI accounts

AI accounts for 23% of the total amount of business. The monthly case load is 80 cases.

Chuka Vet Services

Chuka Vet Services are located in Chuka Town. It specialises in two main activities: drug sales and clinical services. Like Meru veterinary services, it has a strong asset base composed of a pick up vehicle, motorbike, fridge and assorted surgical equipment.

a) Drug sales

The main product lines include dewormers, mineral salts, acaricides, insecticides and feeds. The average gross profit margin on drugs is 20%.

b) Clinical services

The average monthly caseload is 23 cases. The current ratio for the Chuka Vet Services was found to be 4, which is greater than one and was obtained by dividing current assets by current liabilities derived above. Another indicator of risk and efficiency is the quick ratio, which is calculated by dividing liquid current assets by current liabilities and was 3.5. This is also greater than 1.

From liquidity point of view, all the indicators of risk management show that the business is solvent; that it can pay its debts when they fall due and that it is making enough marketable outputs to continue operations.

16% of the monthly turnover is client debt owed to the practice. It was established that the practice is capable of recovering such debts and meets its liabilities in four months. The debts owed to the practices are 12.6% of the current assets.

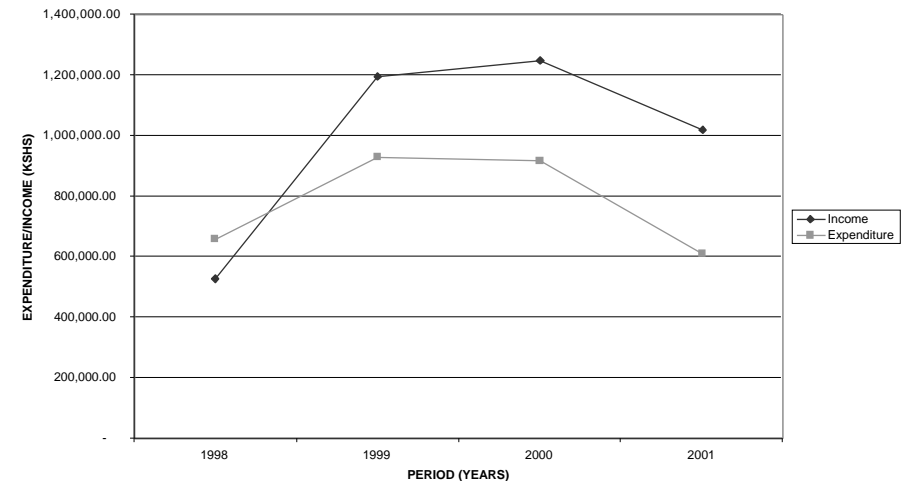
Town Drug Shops

The main sources of income for the drug shops are drug sales, AI and clinical income. Graph 6 shows that Meru Veterinary Practice has been able to keep its expenditure below the income for the three-year period and is a profitable enterprise. The first year shows that the income was lower than the expenditure. The above drug shop has three main sources of income: AI (23%), clinical sales (25%) and drug sales (48%), (See Chart 1). In addition, money owed to the drug shop by clients comprised 2% of the drug shop income. Drug sales seem to be the main source of income and this represents vulnerability in the business. In times of hardship it is likely that inputs such as deworming, spraying etc. are considered by farmers to be secondary to food and health and subsequently not purchased. AI is the second source of income and it is possible, in times of hardship, that the farmers opt for local bulls.

Though Chuka Vet Services (Graph 7 on next page) has kept its expenditure below the income, there is a downward trend observed in the practice. From the graph, it is obvious that money is being lost and could be causing low business. There is no evidence of expenditure eating up capital, though the volume of transactions is decreasing or there could be

capital investment causing the trend over years. It is important to note that the practice did complete loan repayment within three years instead of the five-year period anticipated.

Graph 6. Trends in Expenditure and Income of Meru Vet Services



Graph 7. Trends in Expenditure and Income of Chuka Vet Services

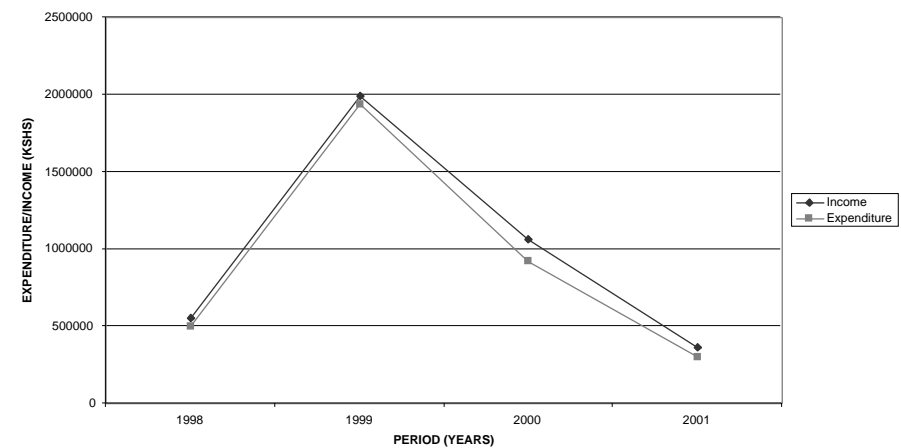


Chart 1. Income Sources for Meru Veterinary Services, May 1998 to December 2001 (Mean Annual Income)

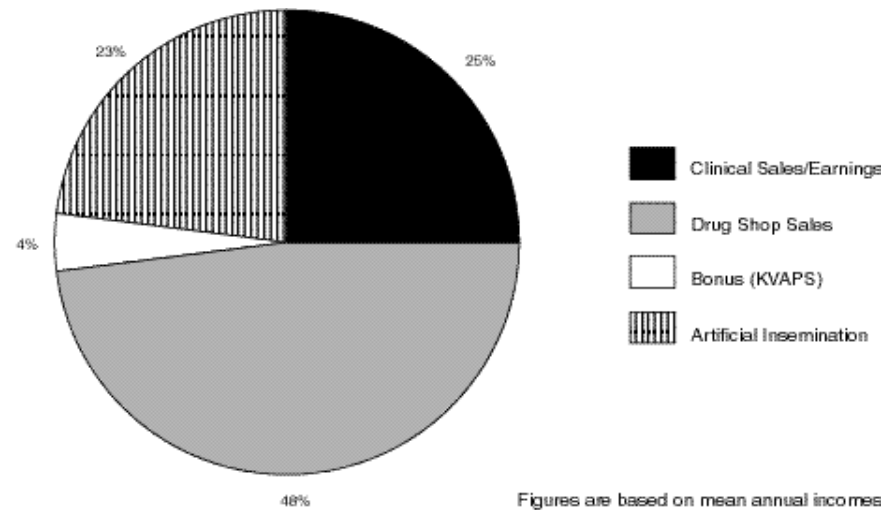


Chart 2. Chuka Town Drug Shop — Sources of Income, September 1998 to 2001 (Mean Annual Income)

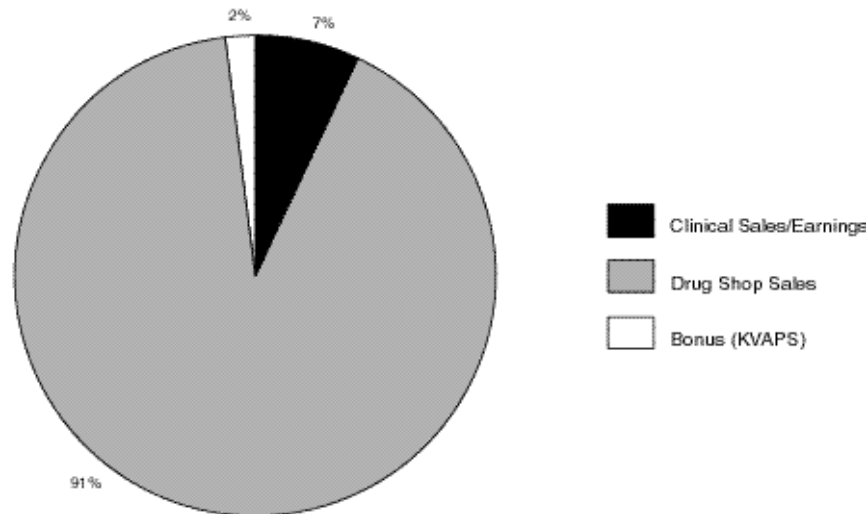


Chart 3. Sources of Expenditure for the Meru Vet Services

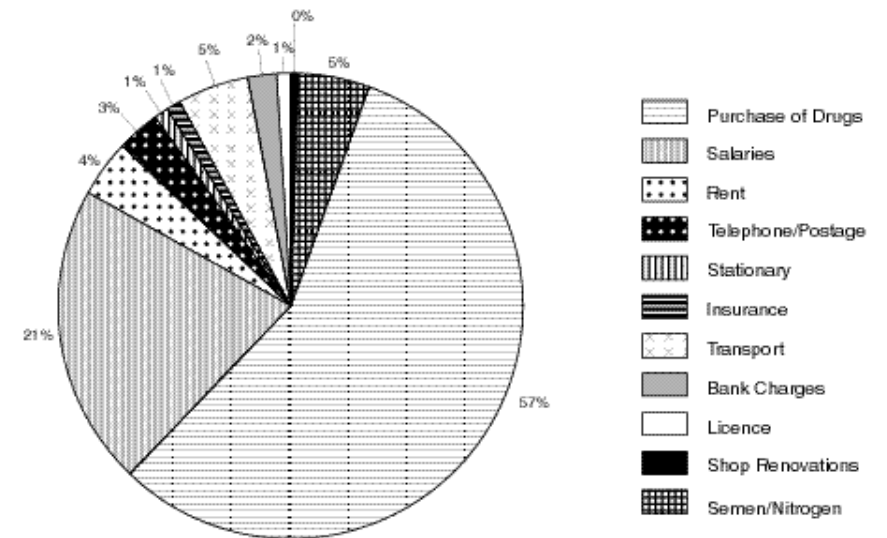
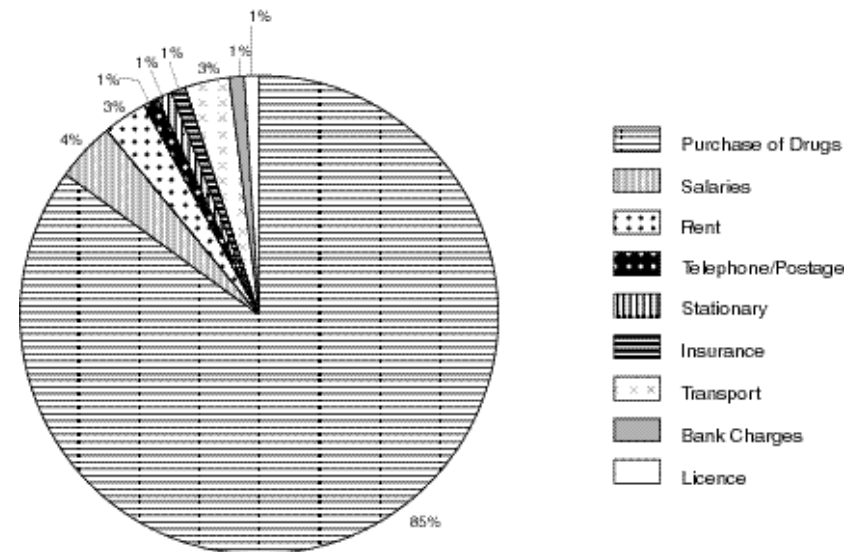


Chart 4. Sources of Expenditure for the Chuka Town Drug Shop September 1998 to December 2001

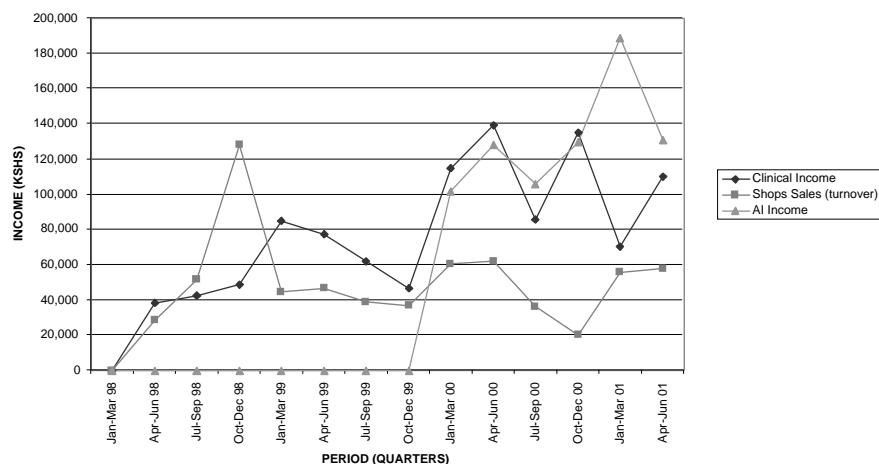


Income of AHAs

The income generated by the private drug shops established by AHAs is shown in Graph 8.

The income generated by the AHAs can be split between clinical income (42%), drug shop sales (27%) and AI (31%).

Graph 8. Summary of AHA Income Between 1998-2001



The main source of income for AHAs is clinical work. Two AHAs have diversified into AI using income generated from their business.

In October-December 1998, the three AHAs in Meru South became operational. From January 1998, however, the increase in income was reduced by the effect of El Niño. The drought from January 1999 affected clinical work and recovery began in January 2000. The increase in income was also due to competition from another AHA setting up a drug shop and providing AI services.

Case Study

In Abo East there are two private AHAs providing basic clinical services together with GoK AHAs. These provide competition for the project AHA, whose range is small (28km sq) compared to others even without transport. He also has few dairy goat groups to cover. However, he is one of the best performers in the project area because he has diversified his business (drug shop, grocery shop and through providing clinical services and vaccinations) and has negotiated a credit scheme with a dairy company that has been buying milk from farmers. The AHA provides services and at the end of the month invoices the company who deducts the fees from the farmers' milk sales.

Magundu drug shop obtains its drugs from Chuka Town Drug Shop whose income apparently as is seen in Chart 2 largely from drug sales.

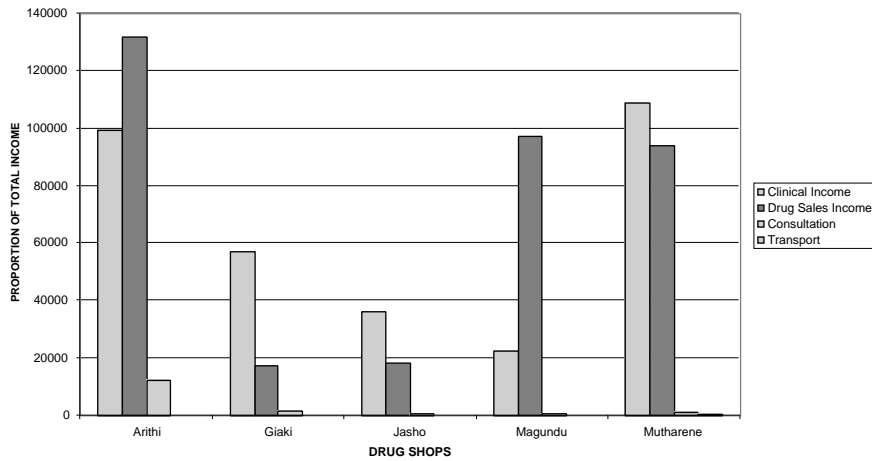
From table below, the rural practices operated by AHAs can be said to be solvent can pay their debts when they fall due. The current ratio was calculated for each and all the values are above 1. Bearing in mind that the AHAs have loan sizes of Ksh 50,000 each and that they have been paying, them back the asset value of some of the practices are quite good.

Apart from Arithi Drug Shop, all the others have high debt percentage when the debt owed is expressed as a percent of the current assets. Giaki Drug Shop is the highest risk, with debts totalling 35% of current assets.

Table 13. Indicators of Risk and Efficiency for Each Rural Practice Operated by AHAs as of June 2002

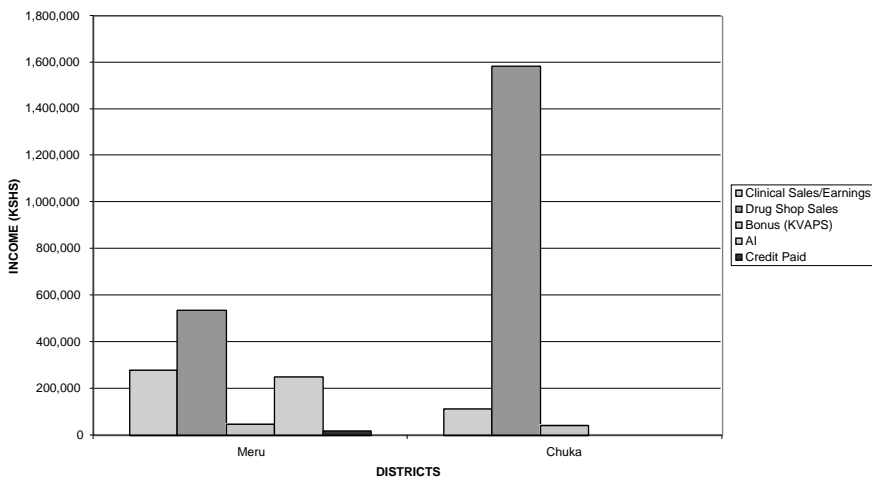
Drug Shop	Current Ratio	Quick Ratio	Debts/current Assets (%)
Jasho	2.4	1.2	6.7
Arithi	5.6	2.5	2.5
Mutharene	1.9	0.8	12.8
Giaki	1.4	0.8	35
Eliphelet	1.4	1.1	10

Graph 9. Sources of Income for Five Rural Drug Shops (1998 to 2001)



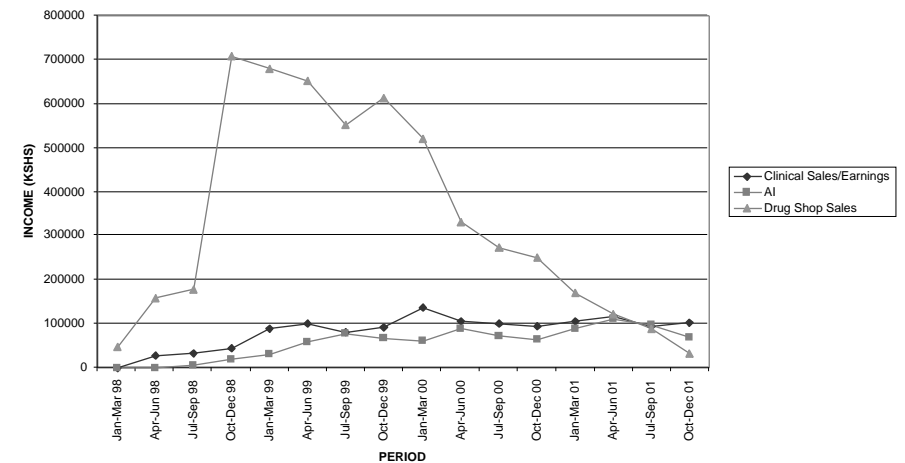
This means that Chuka Vet Services is likely to feel the effect of drought and subsequent reduction in purchases of services at the rural level. In other words, the whole animal health input supply chain is vulnerable to depression in the economy.

Graph 10. Comparative Sources of Income for the Town Drug Shops (vets 1998-2001)



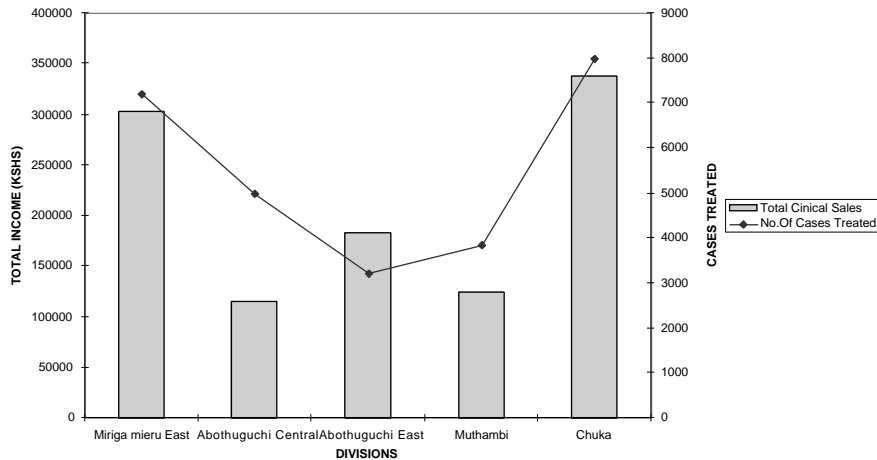
The Graph 11 below shows the combined seasonality of income for the two town drug shops. Income from the two vets has been lumped together under the possible three sources of income. It is observed from the previous graph, that the drug income illustrates seasonal fluctuations although it contributes to the overall business volume. The other two (AI and clinical service) demonstrate a steady increase and are less affected by the seasonality. As the businesses grow, there seems to be a trend towards more clinical work.

Graph 11. Seasonal Variation of Both Town Drug Shop Sources of Income (1998 to December 2001)



Income of CAHWs

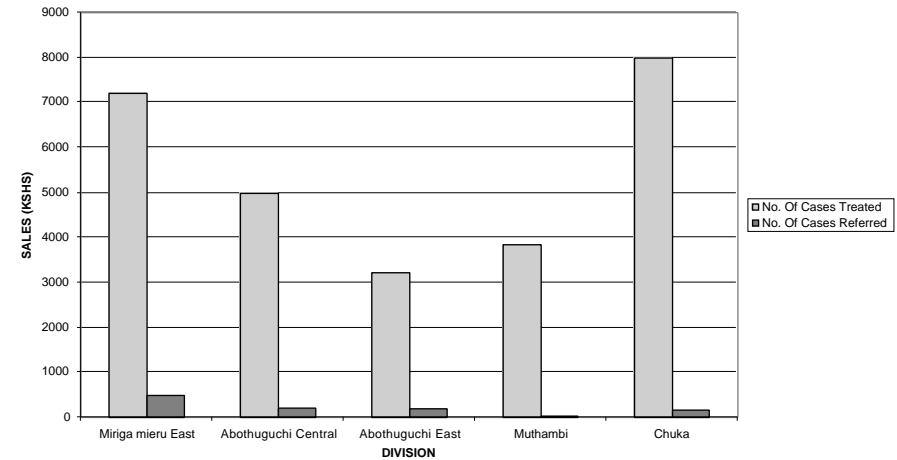
Graph 12. CAHWS Total Clinical Sales and Animals Treated per Division for the Period 1998-2001



The total income of the CAHWs from January 1998 to June 2001 is KSh 940,105 (US\$ 12,000).

The mean monthly income per CAHW is KSh 466 (US\$ 6). The CAHWs only source of income was from provision of services. Graph 12 shows the income (turnovers) accrued in each division. The clinical sale turnovers are a direct representation of total benefits accrued to the administrative unit in terms of income earned by individual CAHWs. The income is dependent on the number of animals treated by the CAHWs, hence can be used as an indicator of performance in terms of CAHWs' expected roles within the Community. Graph 13 shows the number of animals treated in each division and how many animals the CAHWs could not handle and had to refer to the vet or the AHA.

Graph 13. Number of Animals Treated by CAHWs and Referral Cases in each Division (1998-2001)



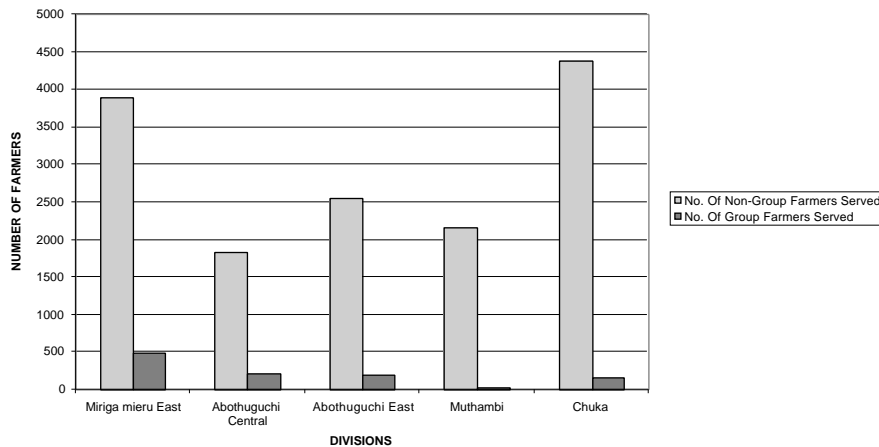
One would expect the clinical sales graph (Graph 12) to reflect that of the number of animals treated in each division. This is so with Chuka and Miriga Mieru East Division, taking first and second positions in both charts but Abothuguchi East division, which has lowest volume of caseloads, has surpassed Abothuguchi Central in volumes of income. On average, a CAHW in Meru Central earns Ksh 794 per month, while the one in Meru South earns Ksh 676 per month. Overall, each earn about Ksh 738 per month. The CAHWs, whilst providing affordable services, need to increase their profit margins.

Such disparities could be attributed to several reasons.

- Poor pricing of services.
- Most of the cases treated by the CAHWs in affected divisions may either have included very minor cases for which payments were very low, or goats or chicken were the main animals treated (the cost of treating just one animal for either species would be low).
- Levels of poverty in respective communities prohibit the use of CAHWs' services.

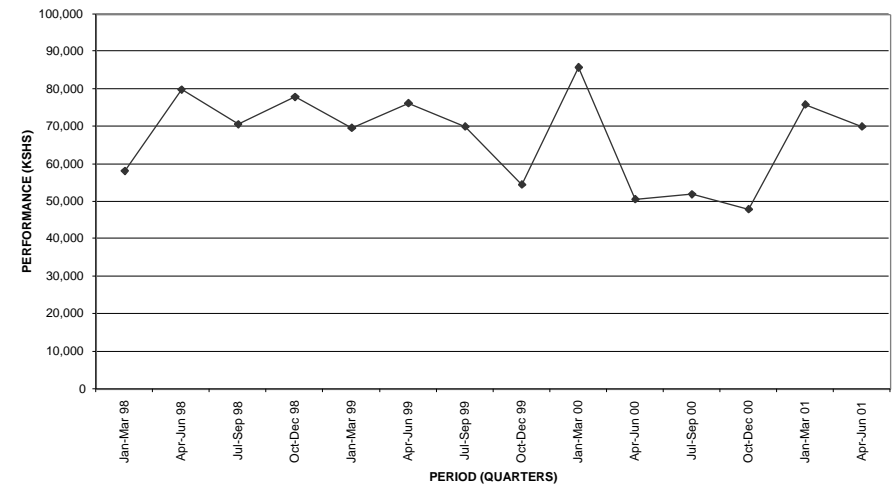
Referral cases were highest in Miriga Meru East (see Graph 13) and Abothuguchi Central Divisions. Overall they comprised 4% of the animals treated by the CAHWs. The implication here is that the majority of animal health problems observed at farm level can be managed by the CAHWs who have basic training, and the CAHWs themselves feel that they can handle many of the problems they encounter. A feedback workshop which brought together the GoK staff, the CAHWs and farmer representatives acknowledged the work done by CAHWs and that many of the problems they encounter may be health management related, such as deworming, wounds and tick borne diseases etc.

Graph 14. Non-Group Farmers and Group Farmers Receiving Services from CAHWs per Division (1998-2001)



Graph 14. shows the number of farmers whose animals were attended by the CAHWs and how many were members of the dairy goat groups. From the graph it can be seen that the majority of the animal health services beneficiaries (85%) were not actually dairy goat group members. Overall only 15% of the beneficiaries were from the groups. This shows that there was a significant demand for animal health services among non-group members, in addition to the needs of dairy goats group members alone, thus boosting the business for the CAHWs.

Graph 15. Summary of the CAHWs Performance 1998- 2001



The decline in CAHWs' performance over this period can be attributed to the following.

- Severe drought in the project area — the drought lasted until October 2001, greatly affecting farm production, and poor farmers' incomes. These farmers are the main clients of the CAHWs.
- Depressed national economy.
- Some CAHWs gave credit to farmers who were unable to repay them.

Market Share of Practitioners

The workload of veterinary surgeons appears low when compared to the workload of CAHWs and AHAs, who have a higher share of the clients. Yet veterinary surgeons earn higher incomes as they are able to charge more for their services since they handle cases of greater magnitude. CAHWs and AHAs deal with more basic cases for which they can only charge lower prices (see Charts 5 and 6).

Chart 5. Summary of the Income of Private Animal Health Service Providers in the Project Area

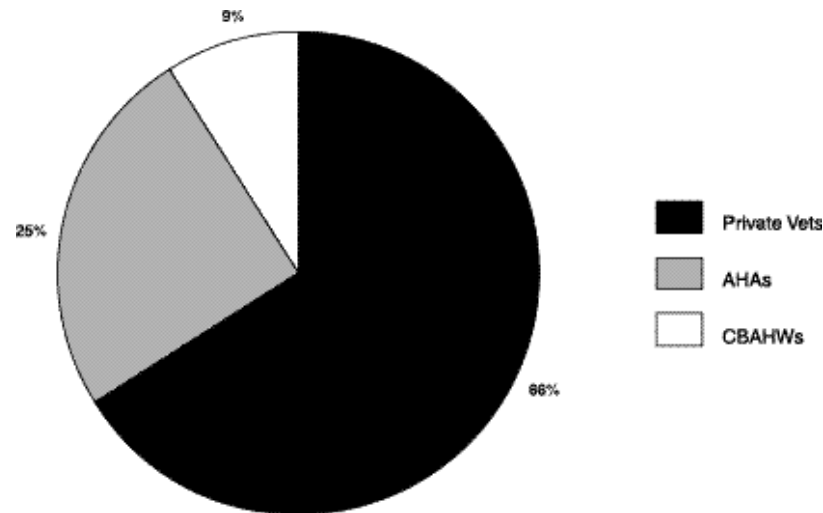
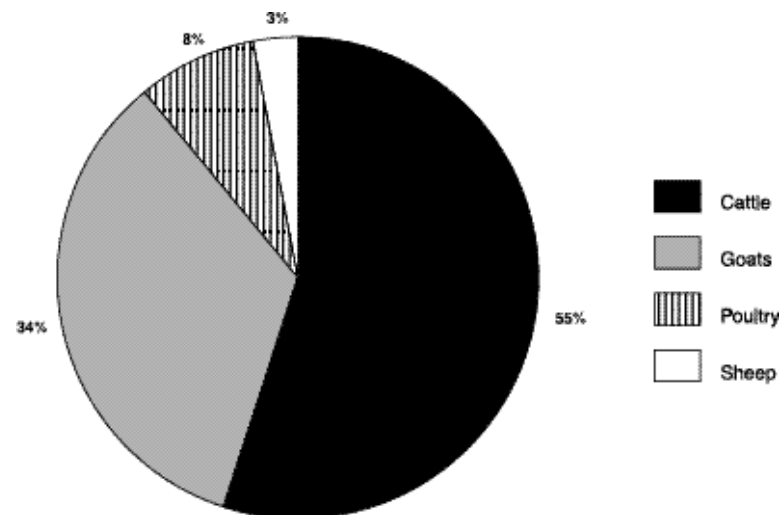


Chart 6. Percentage by Species of Cases Attended by Animal Health Service Providers 1998-2001



5. Major Conclusions and Key Lessons Learned

The veterinarian-supervised animal health system tested by FARM-Africa and the Department of Veterinary Services during 1996-2003 has proved to be highly effective at delivering high quality, affordable animal health care to livestock keepers in marginal farming areas of Meru South and Meru Central districts of Kenya.

The three levels of service providers — vets, animal health assistants (AHAs) and community based animal health workers (CAHWs) — have established financially viable enterprises providing their owners with a long-term livelihood as well as creating much-needed jobs in rural areas. Because of the improved disease measures farmers were encouraged and appreciated the Veterinary department more because of the quick responses they received through the reporting system. They also appreciated the role of the private practitioners in service delivery.

Over 80% of users of the service are from outside the FARM-Africa Dairy Goat Project, indicating that the system is meeting a real need of farmers in the area. Furthermore, the repeated use of all the service providers by farmers indicates their satisfaction with the quality of services offered.

The business management skills learned by vets and AHAs before taking out their loans was a key element of the success of the businesses, which underpinned the whole system. For example, it led them to adjust their costs to the seasonal demand for services, enabling them to maintain the profitability of their enterprises.

The diversification of the services and inputs supplied spread the risks to the business across several income streams and will contribute to the long-term viability of the enterprises.

The strong links between vets, AHAs and CAHWs created a forum for the establishment of the Meru Animal Health Workers Group (MAHWG). The MAHWG will provide vital support to members and help to expand

the system into new areas by offering loans at concessionary rates. The MAHWG will also be able to represent the interests of their members to the government.

The main impact of the system include:

- Increased access to veterinary services and drugs
- Reduced the cost of veterinary services and drugs at the point of delivery
- Improved disease surveillance, particularly of notifiable diseases, resulting in the faster response and more effective containment of disease outbreaks by the Veterinary Department when they occur.
- Increased awareness of notifiable diseases by the community and understanding of the measures that needed to be taken to control the diseases.
- The rapid and successful intensification of dairy goat production in the districts through good reproductive performance, low mortality and morbidity rates, resulting in and increase in the consumption of goat milk and significantly increased incomes from the sale of surplus stock.
- Improved reporting of diseases to the Department of Veterinary Services resulting in a better understanding of the disease picture of the district.
- Improved supply of a range of livestock and agricultural services, such as AI and crop inputs, in response to demands from farmers

The role of the vets

The vets play a vital role in supervising the system and ensuring its quality. They link the system to the Department of Veterinary Services and are able to negotiate discounts on drugs from reputable suppliers. Vets ensure offer technical backstopping to the AHAs and CAHWs and difficult cases are referred to them. They ensure that animal health assistants and CAHWs offer a quality service and are accountable to their clients. They may respond to complaints by farmers and are in a position to discipline those falling below agreed standards.

The role of the animal health assistants

Animal health assistants provide a critical link between vets and CAHWs. Their drug shops located, as they are, in rural areas ensure easy access to

drugs and services by both CAHWs and farmers directly. As they gain clinical experience AHAs are able, under the supervision of vets, to offer a wide range of effective clinical services close to the point of treatment.

The role of the community animal health workers

The CAHWs are the main point of contact for farmers and are able to offer basic services to their clients as well as report diseases to the Department of Veterinary Services. Their link to the neighbourhood AHA means that effective diagnoses of clinical cases can be made quickly and remedial treatment given early, resulting in good recovery rates. The knowledge and skills acquired by CAHWs improves their status in the community and enables them to act as educators of their fellow farmers.

Problems encountered

The onerous conditions imposed by commercial banks would have prevented the establishment of the system if FARM-Africa had not guaranteed the loans taken out by the vets and AHAs.

Although a fixed interest rate was negotiated with the banks they unilaterally applied charges, without warning, which significantly increased the monthly payments of the vets and AHAs. This forced them to adjust their business plan, reduce the monthly allowance taken from their business and in some cases delayed repayment of the loan.

Improvements to the system

The mobility of vets and AHAs was found to be a critical factor contributing to the success of the vets and AHAs' businesses and thus the success of the whole system. While the loan size of the vets enabled them to buy either a second-hand vehicle or a motorbike, the small size of the loan taken by the AHAs prevented them from purchasing transport and slowed down the development of their business. In future AHAs should take loans that allow them to purchase at least a motorbike.

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Annex 1

This annex presents two consultancy reports — *Economic Viability of Rural and Town Veterinary Practices* by Adrian Mukhebi and *An Application of the Durham Business Model* by Kajume (Deputy Director Veterinary Services) and Okwiri — which serve to demonstrate that the various economic units of the animal health system are viable at different income levels.

Economic Viability of Rural and Town Veterinary Practices⁶

1.1 Methods of Analysis

Data and Sources

The project animal health coordinator provided comprehensive data on monthly cash inputs and expenditure for two veterinary practices from April 1998 to December 2001, and for five animal health assistants (AHAs) from May 1998 to December 2001. Cash inputs represent cash received by the business from sources such as sales revenue, proprietor cash investments, loans, etc. On the other hand, cash outflow represents cash payments leaving the business for business expenses, loan repayments, etc.

Data Analysis — Cashflow

The animal health providers' (two veterinarians and five AHAs) data were subjected to a cash flow analysis. The data were summarised into mean annual cash flows for each vet and AHA practice. The mean annual cash flow was calculated as the average for each month from April 1998 to December 2001. The net cash flow is the difference between the cash inflow and cash outflow.

⁶ Consultancy Report by Adrian Mukhebi

Data Analysis — Benefit-Cost Ratios

A Benefit-Cost Analysis (BCA) was carried out for the vet and AHA practices. A budgeting model based on a spreadsheet was developed, including both cost and benefit components. Total costs and benefits for the vets and AHAs were summarised from the available animal health monthly cash flow data for the period April 1998 to December 2001. The streams of costs and benefits were discounted at 12% and the net present value (NPV) (the difference between the discounted streams of costs and benefits) and the BCR (the ratio of net present value of benefits to the net present value of costs) were derived as indicators of financial viability. For financial viability, the NPV must be equal to or greater than zero and the BCR must be equal to or greater than one. Sensitivity analysis was conducted on total costs and total benefits levels to determine breakeven percentage changes that would be required in order to reduce the BCR to 1.00, or reduce the NPV to zero.

2. Cash Flow and Benefit-Cost Analysis for Vets

Components of Cashflow

The three major components of cash inflow are vet drug sales (68%), clinical services (17%) and AI services (11%). There are two dominant components of cash outflow: vet drug purchases (73%) and salaries (12%).

Benefit-Cost Ratio and Net Present Value

Table 14 below provides a summary of the results of the benefit-cost analysis. The net present value (NPV) for vets is a positive £6,658 (UK sterling) over the four-year period 1998-2001 and the BCR is greater than 1.00 at 1.28. This indicates that if the current business trend continues, the vet practice would be financially viable. This profitability is bound to be higher in the subsequent years as the population of improved goats and therefore volume of business continues to grow in the Meru District.

Table 14. Measures of Financial Viability 1998 - 2001

Indicator of Viability	Private Vets	Private AHAs
NPV (UKP)	6,658	1,585
BCR	1.28	1.48

Sensitivity Analysis

The break-even sensitivity analysis results in Table 15 below indicates that the private vet practice would remain financially viable even if the current costs increased by 28% or the revenue declined by 22%.

Table 15. Break-Even Sensitivity Analysis

Variable	Private Vets		Private AHAs	
	Increase	Decrease	Increase	Decrease
Total Costs	28%		48%	
Total Benefits		22%		32%

3. Cash Flow and Benefit-Cost Analysis for AHAs

Mean Monthly Cash Inflow

The net cash inflow is positive for each year and appears to have doubled annually since 1999, illustrating a very positive trend.

Components of Cashflow

The top five sources of cash inflow for the AHAs are: clinical services (40%), vet drug sales (31%), loan (13%), own capital injections (10%) and AI services (5%). The main items of cash outflow are: vet drug purchases (36%), staff salaries (20%) and loan repayment (16%).

Benefit-Cost Ratio and Net Present Value

Table 14 above indicates that the NPV for an AHA practice is a positive £1,585 (UK sterling), and the BCR is greater than one at 1.48. This indicates that if the current business trend continues, an AHA practice would be financially viable. As for vets, the level of profitability for the AHAs is bound to be higher in the subsequent years as the population of improved goats, and therefore volume of business, continues to grow in the Meru District.

Sensitivity Analysis

The sensitivity break-even analysis in Table 15 shows that total costs could increase by 48% or total benefits could decline by 32% and the current trend in business performance would still be financially viable.

An Application of The Durham Business Model⁷

The CAPE unit of PACE and partner NGOs (SNV, VSF-Belgium, Oxfam, CIFA/COOPI, FARM-Africa) and the department of Veterinary Services commissioned a study to investigate and assess the economic potential/viability of the various CAHW delivery models found in Kenya. Below is the conclusion of the consultants on the FARM Meru animal health delivery system in Meru.

The consultants said that the animal health delivery system supported by FARM-Africa in Meru Central and Meru South districts is an excellent representation of the private veterinarian model. Examined in light of the Durham Business Model (developed by the Durham University Business School in the United Kingdom, which explores the following areas of a business: bases of start up and survival, base potentials for growth, the external environment, the internal environment and the future options for diversification), the team said the following can be noted.

⁷ Consultancy Report by Julius Kajume and Okwiri for OAU IBAR

Motivation and Commitment

Generally, the veterinarians, AHAs and CAHWs are fairly motivated and committed. The current profit margins realised across the board also help enhance their personal drive.

Ability and Experience

Although the private vet and the AHAs have adequate skills (and therefore adequate ability and experience base), the CAHWs' experience base is grossly inadequate, especially in an environment like Meru where skilled manpower is not in short supply. The stockowners are aware of these limitations, and so are the unemployed freelance AHAs and vets. This factor may limit the future survival of the CAHWs in this environment, rendering this model ineffective in this environment.

The Idea Base

There is demand for the services of the AHAs and the private vets especially in drier parts of Meru. It is therefore true that the idea is right and there is need for the services through the model. However, this target clientele (the drier parts of Meru) may not be suitable for a veterinarian. It is therefore not surprising the vets are concentrated in areas of high potential and diversifying into artificial insemination without paying attention to the needs and requirement of the AHAs and CAHWs in the target areas.

The team hopes that the recently established Meru Animal Health Workers Group (MAHWG) will help to refocus 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 Southern districts. The effort of FARM-Africa in creating this model is commendable. FARM-Africa should now take time to work on the necessary institutional linkages. In this regard, emphasis should also be put on continuing education and business training.

Resource Base

The Meru private model presents valuable lessons, especially with regard to resource use. The collateral system, including the requirement that the beneficiaries pledge sufficient securities including third party guarantees and contribute substantial owner-equity in the business is indeed a recipe for sustainability. The loan sizes for the vets, AHAs and CAHWs are indeed very modest, which has enabled the beneficiaries to pay back the loans within a record time.

Growth Factors

Apart from the CAHWs who are interested but limited, there is every indication that the model has potential for growth. The vets, AHAs and CAHWs see the business units as their own lifelines and strive to conduct their business units under a strong leadership base. The Thimangiri-based AHA has registered a tremendous growth within a spell of only two years, and now employs his younger sister (who is a recent AHA graduate) as his assistant.

As regards service delivery, both the vets and AHAs opt for motorbikes instead of luxurious vehicles. This has generally reduced their operational costs and made them more efficient.

The External Environment

FARM-Africa has provided a strong institutional support to this model. It has restricted its operations purely to provision of both technical advice and loan guarantees. The day-to-day management of the business units has solely been in the hands of the stakeholders.

Annex 2

MONITORING SHEET

Name:

Number

Location:

Sheet No.:

Date	Name of Farmer	Species	Disease	Treatment / Referral	Price	M/nm

DEATHS IN THE LOCATION

SPECIES	Cow	Goats	Sheep	Chicken	Pigs	Others
DEATHS						

OUTBREAKS:

COMMENTS:

Annex 3

LIVESTOCK DEATH CERTIFICATE THE CO-ORDINATOR DAIRY GOAT PROJECT

I have the honour to report the following deaths of the projects which occurred during.....

.....

Description of Animals Sex, Breed, and Approx. Age.	Identification Number	Causes of Death if known/P.MReport.

Date _____

Signature _____

Writing of approval

Title _____

Date _____

Station _____

.....
For: Project Co-ordinator

Annex 4

MERU AND THARAKA GOAT & ANIMAL HEALTHCARE PROJECT DRUG SHOPS MONTHLY MONITORING SHEET

OWNERS NAME:.....

DRUG SHOP NAME:.....

AREA.....

MONTH.....YEAR.....

CASH IN		CASH OUT	
ITEM	COST	ITEM	COST
Clinical sales/earnings.....		Purchase of equipment.....	
Shops drug sales.....		Purchase of drugs.....	
Consultation fee.....		Salaries.....	
Transport charges.....		Rent.....	
Loan.....		Telephone/postage.....	
Own contribution.....		Stationery.....	
Bonus (KVAPS).....		Loan repayment.....	
		Insurance.....	
		Transport.....	
		Bank charges.....	
		Licence.....	
		Others.....	
Total Cash in.....		Total Cash out.....	
Net Cash flow.....			
Opening Bank Balance.....			
Number of CBAHWs served by drug shops.....			
Number of groups served by drug shops.....			
CBAHWs monthly drugs supplies.....			

NAME	DRUG	AMOUNT	PRICES
.....
.....
.....

COMMENTS

Annex 5

GOAT HEALTH CARD

Identification **Tattoo**
Sex **Origin**
Breed **Sire/ID**
Date of Birth **Dam/ID**
FARMERS GROUP NAME

Treatments		Dewormers		Vaccinations		
Tarehe Date	Ugonjwa Diagnosis	Use & Dosage Treatment	Tarehe Date	Anthelmintic Use & Dosage	Tarehe Date	Chanjo Vaccination

Annex 6

INDIVIDUAL LOAN APPLICATION

Loan Application
 FULL Name: _____ ID No. _____
 Age: _____
 Occupation: _____
 Sublocation: _____ Village: _____
 Postal Address: _____
 Physical permanent residential address: _____
 Main Income: _____ Monthly approx. Kshs: _____
 Other sources of Income: _____ Monthly approx. Kshs: _____
 Total approx. Kshs _____

Loan amount requested Ksh. _____

Purpose of Loan: _____

Do you operate/maintain an account _____ if yes, where _____

Security: _____

I pledge to offer the following assets as security for the entire loan inclusive of interests and other charges.

1. _____ 2. _____

Previous loans: _____

Performance on previous loans, if any: _____

Have you been trained in any business aspects _____ if yes where _____

Place: _____ Date: _____

The undersigned party hereby accepts this document to be the final loan agreement as per the terms and conditions set out by FARM Africa.

I _____ (sign) _____ has accepted the terms outlined in this agreement and the loan shall be used for the intended purpose. With my signing of this application I agree to terms and conditions of this loan scheme.

Witness/Guarantor (Name) _____ Sign _____

Date _____

Witness/Guarantor (Name) _____ Sign _____

Date _____

Annex 7

Workshop Participants' Profiles

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Project Coordinator
FARM-Africa - Meru Tharaka Nithi
Dairy Goat and Animal Healthcare
Project

Anthony Murithi
Senior Monitoring Officer,
FARM-Africa MDG & AH Project

Lawrence Thiauru
Monitoring Assistant
FARM-Africa MDG & AH Project

Adan Wako
Livestock/Veterinary Facilitator
Marsabit/Moyale FARM-Africa

Mary Miningwo
Livestock/Veterinary Facilitator -
FARM-Africa

Fredrick Mugo Njeru
Veterinary Officer, Government of
Kenya

Doreen K. Ikunyua
Secretary - Deliverance Church Meru

J.W. Wanganga
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Chogoria

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Veterinary Officer
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Bonface K. Kaberia
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Nanyuki

Purity Gacheri
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Magundu

Gitonga Muthengi
CBAHW
Chuka Division

Maurice Kiome
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Alphonse Njeru
DLEO
Muthambi