

Strengthening the humanity and dignity of people in crisis through knowledge and practice



Community-Based Animal Health Workers in the Horn of Africa *An Evaluation for the Office of Foreign Disaster Assistance*

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Acronyms

ACF	Action Contre le Faim	LWF	Lutheran World Federation
ACTED	Agency for Technical Cooperation and Development	MARF	Ministry of Animal Resources and Fisheries (South Sudan)
AFD	Action for Development	MC	Mercy Corps
AH	Animal Health	MCF	malignant catarrhal fever
AHA	Animal Health Auxiliary or Assistant	MKU	Mount Kenya University
AHSP	Animal Health Service Providers	MLLTC	Marial Lou Livestock Training Centre
AHT	Animal Health Technician	MoA	Ministry of Agriculture (Ethiopia)
AISS	AECOM International South Sudan	MoARD	Ministry of Agriculture and Rural Development (Ethiopia)
AU/IBAR	African Union/Interafrican Bureau for Animal Resources	MP	Member of Parliament
AVTA	Africa Veterinary Technicians Association	NAHA	Nomadic Animal Health Auxiliary
CAH	Community-based Animal Health	NBEG	Northern Bahr el Ghazal
CAHW	Community-based Animal Health Worker	NCD	Newcastle disease
CBPP	contagious bovine pleuropneumonia	NGO	Non-governmental Organization
CCPP	contagious caprine pleuropneumonia	NIA	Neighbours Initiative Alliance
CE	Central Equatoria	NP	Non-professional
CES	Central Equatoria State	NSD	Nairobi sheep disease
COOPI	Cooperazione Internazionale	OFDA	Office of Foreign Disaster Assistance
CRS	Catholic Relief Services	OIE	Office International des Epizooties (World Organisation for Animal Health)
DCOP	Deputy Chief of Party	OLS	Operation Lifeline Sudan
DFID	Department for International Development (UK)	PARC	Pan African Rinderpest Campaign
DG	Director General	PASDEP	Plan for Accelerated and Sustained Development to End Poverty
DRR	Disaster Risk Reduction	PAVES	Pastoral Veterinary Services
DVS	Department of Veterinary Services	PCPD	Pastoral Community Development Project
EA	East Africa	PIDAD	Pastoralist Initiative for Development and Advocacy
EC	European Commission	PPP	Public Private Partnerships
ECF	east coast fever	PPR	peste des petits ruminants
ECHO	European Commission Humanitarian Aid Office	PSC	Public Service Commission
EU	European Union	RAIN	Revitalizing Agricultural/Pastoral Incomes and New Markets
EVA	Ethiopian Veterinary Association	REGAL	Resilience and Economic Growth in the Arid Lands
FAO	Food and Agriculture Organization	RSS	Republic of South Sudan
FH.KENYA	Food for the Hungry Kenya	RTA	Regional Technical Advisor
FMAR&F	Federal Ministry of Animal Resources and Fisheries (Sudan)	SPS	Sanitary and Phyto Sanitary
FMD	foot and mouth disease	SC	Save the Children
GDP	Gross Domestic Product	SCAHP	Somali Community Animal Health Project
GoSS	Government of South Sudan	SCI	Save the Children International
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit (German Agency for Technical Co-operation)	SMARF	State Ministry of Animal Resources and Fisheries (South Sudan)
HCS	Hararghe Catholic Secretariat	SORDU	Southern Rangelands Development Unit
HOD	Head of Department	SP	Stock Person
HS	haemorrhagic septicaemia	SPLM	Sudan People's Liberation Movement
ICRC	International Committee of the Red Cross	SS	South Sudan
IGAD	Intergovernmental Authority on Development	SSRA	South Sudan Rehabilitation Association
ICPALD	IGAD Centre for Pastoral and Livestock Development	TA	Technical Assistant
ICT	Information and Communications Technology	TOT	Training of Trainers
IR	Improving Resilience	UK	United Kingdom
IRC	International Rescue Committee	UMCOR	United Methodist Committee on Relief
ITDG	Intermediate Technology Development Group	UN	United Nations
KALT	Kenya Association of Livestock Technicians	UNICEF	United Nations Children's Fund
KASPA	Kenya Animal Scientist Practitioners	USAID	United States Agency for International Development
K-LIFT	Kenya Livestock Finance Trust	VSF	Vétérinaires Sans Frontières
KVA	Kenya Veterinary Association	VSVP	Veterinary Surgeons and Veterinary Para-professionals Act (Kenya)
KVAPS	Kenya Veterinary Association Privatization Scheme	WHO	World Health Organization
KVB	Kenya Veterinary Board	WV	World Vision
L & R	Livelihoods and Rehabilitation		
LEGS	Livestock Emergency Guidelines and Standards		
LO	Livestock Officer		
LSD	lumpy skin disease		

Executive Summary

Background

Community-based Animal Health Workers (CAHWs) were first trained in the Horn of Africa in the 1980s, when new ideas on rural development led some development organizations to work more closely with communities to prioritize and address local problems in a practical and sustainable manner. The initial results proved encouraging, and successes coincided with cutbacks to government veterinary services due to structural adjustment programs. With many remote livestock-rearing areas underserved, a phase of scaling-up of CAHW initiatives began in the early 1990s. Non-governmental organizations (NGOs) led this process across the Horn of Africa and elsewhere. Over time, CAHWs attracted the attention of government veterinary services, and by the mid-1990s, there were calls for CAHWs to be either formally recognized and regulated, or removed.

The US Office of Foreign Disaster Assistance (OFDA) commissioned a review of its CAHW projects in 1998. The review highlighted substantial achievements of CAHWs in terms of rinderpest control and basic clinical veterinary service provision, especially in remote or conflicted-affected dryland areas. The review recommended increased support to CAHW initiatives and, in particular, the development of enabling policies and institutions to allow the legal establishment of privatized veterinary services that could use CAHWs to deliver improved services in Africa's more remote, insecure, and underserved areas.

A third phase of CAHW project development commenced in the 2000s, with emphasis on gathering more evidence on CAHW approaches, defining good practice, and supporting policy and institutional change; evidence of the impact of CAHWs was presented at numerous national and international forums to assist policy processes. As the number of CAHWs increased and their impact became more widely known, humanitarian projects increasingly used them for emergency response and rebuilding livelihoods after disasters. Evidence showed that CAHWs can improve preparedness and resistance to emergencies such as drought. The use of CAHWs in emergencies highlighted some important coordination issues, such as the use of subsidized emergency drugs undermining privatization initiatives. By the mid-2000s, these and other issues influenced the need for guidelines and standards for livestock projects in emergencies. In 2005, NGOs were beginning to experiment with veterinary voucher schemes during drought, to both improve veterinary care and also support local, private services that were needed for post-drought recovery and clinical care during normal periods.

By mid-2005, the World Organisation for Animal Health (OIE), the Inter-African Bureau for Animal Resources of the African Union (AU/IBAR), and some national veterinary services in the Horn of Africa region had supportive policies for CAHWs. The challenge at this point was to update and refine policies, and to enact them. Regulatory bodies needed to be strengthened, and clear legislation was required to enable privatized veterinary services with CAHWs in dryland areas. At the same time, government veterinary services could benefit from the cost-effective disease surveillance and response capacity that CAHWs had demonstrated.

The OFDA evaluation of CAHW projects

In 2013, OFDA decided to again re-examine its support to CAHW projects through an evaluation. The objectives of the evaluation were set by OFDA as follows: *"The evaluation will determine if the OFDA-funded CAHW program has:*

- *Resulted in improved animal health and husbandry practices;*
- *Brought about greater access to animal health services;*
- *Resulted in improved livelihoods (including viable professional livelihoods for those trained) in long-term CAHW programming communities.*

The evaluation will also identify areas that could be improved upon in order to strengthen the CAHW program and make it more relevant in meeting current needs."

The evaluation team began a literature review in March 2013. The team then visited the same three countries as covered in the 1998 OFDA review, viz. Kenya, South Sudan, and Ethiopia, between June and December 2013. Each country assessment comprised three main activities: a field-level assessment of selected CAHW projects using participatory methods and interviews with community informants and CAHWs; key informant interviews with senior policy makers, legislators, and project implementers; a national CAHW workshop to feedback initial findings and discuss ways forward for CAHW development.

CAHWs as animal health service providers

During field visits communities were asked to assess the effectiveness of all their animal health service providers against criteria that included aspects of accessibility, availability, affordability, acceptability, and the quality of their work. The data collected were gender disaggregated, and the views of men and women informants were generally well aligned. CAHWs were seen as very accessible, available to meet needs, trusted, and affordable. No major issues with the quality of their services were identified. However, although CAHWs were available to provide advice, in many areas they rarely had stocks of veterinary drugs to hand, and commonly, they did not receive adequate support and supervision.

Government veterinary services were the least accessible and available service provider. In most pastoralist areas, they are rarely seen beyond vaccination campaigns. However, government vets scored well on trust and the quality of their vaccines. In Ethiopia, the government does still provide subsidized veterinary medicines through clinics, and this is complicating the privatization of services. Private veterinary pharmacies were generally seen as having the most available supply of vet drugs but at the highest cost. Trust in the quality of pharmacy drugs was quite variable and generally reflected whether the pharmacy was owned and managed by a veterinary professional. Itinerant drugs peddlers had largely been pushed out of business by CAHWs in Kenya. They were still present in Ethiopia, but people had little trust in them. Traditional healers and medicines were still in use in Kenya and Ethiopia and considered cheap and available but were only utilized for a very limited range of conditions.

OFDA-funded projects visited generally demonstrated incorporation of CAHW good practice into their design. However, there appeared to be weakness in the area of gender assessments to understand the opportunities and needs of female CAHWs.

Technical knowledge of CAHWs

Sixty-four CAHWs were interviewed to assess their apparent technical knowledge and 70% were found to have good knowledge. Lack of awareness of food safety issues by livestock owners meant that little emphasis was provided by any animal health service providers on drug withdrawal periods.

Assessment of improvement in livestock owners' livelihoods was linked to the impact of disease on livestock mortality, production losses of milk, and growth, fecundity, and capacity to exchange livestock.

Disease impacts and livelihoods

Across the evaluation sites, the livelihoods impacts of cattle diseases ($p < 0.001$), sheep and goat diseases ($p < 0.001$), and camel diseases ($p < 0.001$) were all significantly reduced for diseases handled by CAHWs compared with diseases not handled by CAHWs. In general, these results agreed with the results of community assessment of animal health service providers, where CAHWs in the three countries received high scores for recovery levels for treated livestock. Interestingly, there was also strong correlation between community views on drug quality and recovery rates.

CAHWs and humanitarian response

CAHWs mainly carry out vaccination and treatments during emergency response. Some NGOs also use them for community mobilization to support destocking and restocking. The *Livestock Emergency Guidelines and Standards* (LEGS), published in 2009, have proven useful, and significant trainings have occurred in the Horn of Africa. Other welcome innovations on emergency response were the use of emergency funds to help kick start private pharmacies managed by AHAs (Animal Health Assistants), and voucher schemes to support small pharmacy businesses during shocks. Good experience was being gained on the use of vouchers in Ethiopia, but more work was needed to address some of the implementation challenges. Communities had found vouchers to be fairer than vaccination/treatment campaigns as they could more effectively target the poor and vulnerable.

CAHWs and provision of veterinary public goods

CAHWs' involvement in provision of public goods was generally limited to vaccination campaigns organized by government veterinary services. Due to shortages of recurrent funding, such campaigns appeared to be increasingly infrequent and inadequate. The small stipend CAHWs are paid to assist these campaigns was reduced accordingly. CAHWs are willing to provide disease surveillance information to government, but no reporting relationship had been formalized with CAHWs.

Key constraints and issues

Declining incomes and drug supply— over time, CAHW income from animal health work was generally reducing and being replaced by activities such as casual labor, and livestock and crop production. Many CAHWs had reverted to merely providing technical advice to their communities. This was largely attributed to weak drug supply systems and inadequate guidance on how CAHWs should be supervised and supported.

The entrepreneurial spirit of the CAHW was a key factor affecting income. Some CAHWs, who took the initiative to travel long distances to resupply themselves, were doing relatively well. Similarly, CAHWs linked to private pharmacies or working in areas where there was particularly high demand for drugs were maintaining a relatively high income from animal health work. The situation was the worst in South Sudan, where the private sector had only really been established since 2009.

CAHW supervision— the supervision of CAHWs tended to reduce markedly once NGO support was withdrawn. Government veterinary services had little capacity to visit CAHWs or give them refresher training. Adequate supervision and regular refresher training are vital components of any community-based service. The minimum level of supervision required for CAHWs has not been defined in any of the countries. CAHWs linked to private pharmacies also lacked adequate supervision. The need to work more effectively with local government veterinary authorities to ensure adequate training and support for CAHWs working under their supervision was identified.

Business models— of the four business models assessed, the animal health assistant (AHA) model and the private pastoral veterinary practice model, where CAHWs purchase drugs from licensed private pharmacies managed by an AHA or vet, appeared the most viable. There were good examples of OFDA-funded NGOs supporting the establishment of these businesses. Where CAHWs are supervised by private AHAs, it remains important that veterinary authorities provide overall and effective supervision by government veterinary doctors.

Pharmacy owners identified seasonality of business and lack of access to finance as key constraints. Important lessons were noted on the need to support small businesses in the face of disasters through better use of vouchers. Associations and cooperatives utilizing revolving drug funds had generally failed in all areas. CAHWs working independently, accessing drugs using their own means, were not considered sustainable as they lacked supervision and regulation.

Policy and legislation on CAHWs— both Ethiopia and South Sudan had installed pro-CAHW policies, but veterinary departments were struggling to implement policy due to weak institutions. For example, statutory bodies to govern the veterinary profession have yet to be created. South Sudan veterinary services' capacity continues to be severely negatively impacted by insecurity and inadequate resources and vaccines reaching state veterinary authorities.

Kenya had undergone a turbulent policy process that resulted in a 2011 Veterinary Surgeons and Veterinary Para-professionals Act. The Act strengthens the Kenya Veterinary Board's capacity to regulate the profession. It does not allow any further CAHWs to be trained in Kenya, and existing CAHWs have been largely unsupported since 2011 due to lack of regulations to define their roles. Concurrently, Kenya has introduced a new constitution that devolves significant power to county authorities. Legislators from pastoralist counties may challenge existing legislation and policy in coming years to allow CAHWs to operate in underserved areas.

Veterinary pharmaceuticals— there was evidence of a significant drug quality problem existing across sub-Saharan Africa, but recent quantitative information was lacking. The evaluation found significant quantities of generic veterinary drugs in pharmacies but no credible system for checking quality. Whilst a veterinary feed and drug authority has been created in Ethiopia, it has yet to have any impact. The Kenya Veterinary Board now has the capacity to form a small Drug Inspectorate. Some projects had invested in CAHW cooperatives in the past but with limited success, whereas more promising were projects that supported links between CAHWs and private pharmacies.

Conclusions and Recommendations

The evaluation concluded that many of the challenges facing CAHW systems are at the level of veterinary governance, and the capacities of government veterinary departments to train, regulate, and supervise CAHWs and other para-professionals, and ensure the quality and reliability of supply of veterinary drugs that reach them. These challenges commonly relate to the protracted underfunding of state veterinary services, and continued grey areas in policy and strategy over the roles of the public and private sectors.

The evaluation's recommendations focus on organizations. NGOs, OFDA, and USAID projects are requested to keep abreast of and update best practice, to further develop guidance on the use of vouchers in emergency response, and to take advantage of mass communication technologies to keep livestock owners and consumers informed about issues such as food safety. Quantitative evidence on the state of the veterinary pharmaceutical trade and drug quality is urgently needed. National veterinary services need to continue to strengthen the institutions that can define and regulate roles, and to support access to quality drugs and vaccines whilst effectively monitoring the development of animal health services. Regional bodies such as the Intergovernmental Authority on Development (IGAD) have an important role in facilitating the exchange of knowledge and lessons between member states' veterinary services. Emergency and development donors need to continue to collaborate to support effective and legal private CAHW systems during normal periods so that they can operate effectively during emergencies. Emerging resilience frameworks provide a means to coordinate and harmonize these approaches.

1. Introduction

1.1 Background to the evaluation

Animal health delivery systems that build upon the knowledge, participation, and needs of livestock-owning communities were first proposed in the 1980s. They originated from new development approaches that put the farmer first by advocating interactive dialogue and negotiation between development agents and local communities. Communities that considered their animal health needs were not being met due to marginalization, poverty, or government veterinary service cutbacks sought project support. Often described as community-based animal health worker (CAHW) projects, these early initiatives were relatively small scale and facilitated by a range of organizations. In Asia, government veterinary services were closely involved, whereas in West Africa and South America, farmer's organizations supported the process. In East Africa, NGOs (Non-governmental Organizations) took a leading role. In the 1990s, initial successes encouraged the scaling up of CAHW projects. As they became more widespread, they were increasingly utilized to address humanitarian needs, especially in areas such as the Horn of Africa, where people were often very reliant on livestock for their livelihoods. In the late 1990s, sustainability issues began to emerge more clearly, and the proponents of CAHW systems sought recognition and institutional support from governments. Typically, this support was slow to materialize, and so practitioners and researchers invested more effort in assessments to examine the effectiveness and impact of CAHW project approaches. This evidence was fed into policy process, but with mixed results. Numerous national and international policy debates occurred from 2000 to 2010 and beyond on how CAHWs could be utilized to not only improve the livelihoods of poor livestock owners but also to support national animal health services.

In 1997, the US Office for Foreign Disaster Assistance (OFDA) commissioned a review of CAHW projects in the Horn of Africa¹ (Catley et al., 1998). The review covered Kenya, Ethiopia, and South Sudan and examined projects that were implemented by Tufts University in collaboration with UNICEF, the UN Food and Agriculture Organization (FAO), and the African Union's Interafrican Bureau of Animal Resources (AU/IBAR). The assessment highlighted the substantial achievements of CAHWs in terms of rinderpest control and basic clinical veterinary service provision. It showed that even in remote or conflict-affected areas, substantial moves towards private sector delivery were possible, with various types of cost recovery and private sector involvement in place. The review recommended increased support to CAHW initiatives, in particular the development of enabling policies and institutions within a wider context of the privatization of clinical veterinary services.

OFDA continued to support CAHW projects as a component of emergency response throughout the 2000s. This included publication of the first practical guidelines on CAHWs in 2002 (Catley et al., 2002a) and subsequent support to cash transfer mechanisms, particularly voucher schemes, to enable private CAHWs to work in disasters—especially drought. This support from OFDA was extensive and covered various emergencies in the Horn, and related to OFDA's long-term interest in livestock programming globally. OFDA published its own guidelines on livestock projects in 2003; it was the first major donor to do so.

In 2013, OFDA commissioned Tufts University to re-evaluate CAHW projects in the Horn of Africa to document experiences and issues since the 1998 review, and to guide future OFDA support. This report provides the findings and recommendations of that evaluation.

1.2 Context, scope, and objectives of the evaluation

The evaluation aimed to use the OFDA-commissioned CAHW assessment of 1997 as a reference point, and examine progress and issues during the last 15 years or so. It examined OFDA-funded and other CAHWs projects in three countries of the Horn of Africa, viz. South Sudan, Kenya, and Ethiopia, with a focus on pastoralist areas affected by frequent humanitarian crises. These crises included drought, conflict, and food price increases; sometimes in combination and usually within a context of weak governance or more marked long-term political instability.

Much of the early work on CAHW systems in the Horn occurred concurrently with livelihoods-based thinking and approaches. For humanitarian organizations, the notion of saving lives and livelihoods became important, and programs worked more clearly to support the local markets, services, and systems that could be used to both deliver assistance during emergencies and contribute to post-disaster recovery. This approach was central to the OFDA guidelines for livestock projects (OFDA, 2003), and livelihoods objectives were later used as the basis for the publication and promotion of *Livestock Emergency Guidelines and Standards* (LEGS). More recently, the livelihoods approach has been advanced into resilience concepts and frameworks. Whilst livelihoods thinking was not easily transferred to governments and regional bodies in the Horn, resilience approaches already have high-profile support from Intergovernmental Authority on Development (IGAD) and donors, e.g., under the IGAD regional resilience platform.

Given the number of CAHW projects receiving OFDA support in various countries, and because some of these projects were no longer running in 2013, this is not an evaluation at project level. Instead, it is a broad assessment that combines a review of a large body of existing research and evidence with field assessments in the selected countries. The evaluation aims to be strategic and forward looking.

The objectives of the evaluation were set by OFDA as follows: *"The evaluation will determine if the OFDA-funded CAHW program has:*

- *Resulted in improved animal health and husbandry practices;*
- *Brought about greater access to animal health services;*
- *Resulted in improved livelihoods (including viable professional livelihoods for those trained) in long-term CAHW programming communities.*

The evaluation will also identify areas that could be improved upon in order to strengthen the CAHW program and make it more relevant in meeting current needs."

1.3 Structure of the report

The main report is structured as follows:

- Section 2 summarizes the methodology used by the evaluation team;
- Section 3 provides an update for the more general reader on the three distinct phases of the development of CAHW projects from the 1980s to 2005, including the humanitarian role of CAHWs;
- Section 4 presents the findings of the evaluation and covers the period from 2005 to present with the focus on the effectiveness of CAHWs, the public good functions of CAHWs and the sustainability of CAHW systems;
- Section 5 gives conclusions and recommendations, not only to OFDA but to development-orientated partners.

¹ With an annual budget of just over US\$1 billion per year, OFDA responds to an average of 70 disasters in 56 countries every year to ensure aid reaches people affected by rapid-onset disasters.

2. Design and Methodology

2.1 Evaluation design

The evaluation design was based on two main approaches, viz. a literature review and country-level assessments.

Literature review: An extensive literature review was conducted, focusing on documents produced since the OFDA review of 1998. Where available, monitoring and evaluation reports of OFDA-funded projects were assessed, as were impact assessments and best practice guidelines from other major CAHW initiatives. Government and international agency policy documents and veterinary regulations from the three focus countries, where available, were also examined.

Country-level assessments: The country assessments comprised three main activities (see section 2.2):

- Field-level assessment of selected CAHW projects, using participatory methods and interviews with community informants and CAHWs;
- Key informant interviews;
- National CAHW workshops.

The evaluation was carried out between March 2013 and January 2014. An initial literature review was followed by country missions in South Sudan and Kenya (June/July 2013) and Ethiopia (November/December 2013), i.e., the same three countries covered by the OFDA review in 1998.

2.2 Methodology for country-level assessments

2.2.1 Community-level assessment

Community-level data collection: This activity used standardized participatory methods to collect community perceptions of the impact of CAHW services. A detailed list of methods and informants per site is provided in Annex 1. Key questions included the history of CAHWs in the location, changes in the impact of livestock diseases, and measurement of the accessibility, availability, affordability, acceptance, and quality of CAHWs relative to other service providers. Men and women participated in contributing community perceptions separately, and were asked about both female and male CAHWs.

In each location, CAHWs were interviewed using a semi-structured interview method. These interviews covered the technical knowledge of CAHWs, and their views on the key benefits and constraints of CAHW work. Levels of income from CAHW work were also assessed relative to other sources of income. Each CAHW was asked about their education and literacy skills, CAHW training/refresher training dates, diagnostic

skills for diseases (including postmortem signs) commonly seen in the area, treatment regimes, disease transmission and disease control strategies, drug handling and administration, and finally drug withdrawal periods.

Participatory methods and CAHW interviews were complemented with informal interviews with local NGO staff, government officials, and pharmacy owners and workers.

Site selection and samples: In each country, two areas were selected where active OFDA-funded CAHW projects were present (Table 2.1). Within each project area, specific locations were selected in consultation with local NGO staff. Therefore, all sampling was purposive, with selection based on the need to visit OFDA-funded projects, plus a range of security, cost, and logistical issues within the time available. The overall intention was to conduct up to 10 sets of participatory community sessions with both women and men in each country, totaling 60 repetitions across the three countries.

In total, 474 community informants (186 women, 288 men) were involved in the participatory sessions across the three countries, and 64 CAHWs (8 women, 56 men) were interviewed. No women CAHWs were located in project sites in Ethiopia.

2.2.2 Key informant interviews

Senior officials and staff of government organizations, veterinary boards and associations, NGOs, donors, international and regional agencies, pharmaceutical businesses' employees, and relevant research organizations were interviewed using a semi-structured approach, and either individually or in groups. In total, 54 key informants were involved in Kenya, 49 in South Sudan, and 24 in Ethiopia (total 127 key informants); a full list of interviewees is provided in Annex 2.

2.2.3 National workshops

National stakeholder workshops were carried out at the end of each country mission. OFDA-funded project-implementing partners were requested to attend, along with key informants from national and provincial government, veterinary statutory bodies, donors, international agencies such as the United Nations Food and Agriculture Organization (FAO), and those NGOs with significant experience of CAHW work. These workshops provided an opportunity for the evaluation team to share and discuss initial findings from field work and to gather participant's views on key obstacles and opportunities to the development of CAHW initiatives in the country going forward. Workshop participants numbered 37 in Kenya, 35 in South Sudan and 23 in Ethiopia (total 95 participants); a full list of workshop participants is provided in Annex 2.

Table 2.1
Countries, locations, and number of people involved in community-level assessments

Country, location (NGO)	Site	Community members			CAHWs		
		Women	Men	Total	Women	Men	Total
South Sudan							
Bor County (VSF, CRS)	Pabial cattle camp	13	15	28	0	1	1
	Kuadal cattle camp	15	12	27	0	1	1
	Bor Town	3	7	10	1	7	8
Aweil West (VSF/CARE)	Akwa-Ngap village	13	15	28	0	4	4
	Abyei/Nyamlei Thii	8	5	13	1	1	2
	Nyamlell Centre	0	0	0	1	5	6
Aweil N. (VSF)	Malual Loc	12	16	28	2	4	6
Totals – South Sudan		64	870	134	5	23	28
Kenya							
Turkana (IRC, LWF)	Kobuin	7	12	19	1	2	3
	Nalaptui	5	12	17	0	3	3
	Loteteliet	9	15	24	1	3	4
	Kalobeyei	12	11	23	1	3	4
Kajiado (CARE, NIA)	Elangata Wuas	9	16	25	0	3	3
	Enkaroni	8	9	17	0	1	1
	Iloodo-Ariak	7	11	18	0	6	6
Totals – Kenya		57	86	143	3	21	24
Ethiopia							
Somali Region, Shinile Zone (MC, SC, HCS)	Lasdere	2	12	14	0	1	1
	Kalabeydh	6	14	14	0	1	1
	Edshale	8	11	11	0	1	1
	Aramedow	8	11	8	0	1	1
	Aredaqufa	10	19	19	0	1	1
	Mudhibali	7	13	13	0	1	1
Borana Zone (CARE)	Harawayou	5	14	14	0	1	1
	Dikale	7	17	24	0	2	2
	Medhecho	12	21	26	0	2	2
Totals – Ethiopia		65	132	197	0	11	11
Total – all sites		186	288	474	8	55	63

2.3 Constraints

Due to time and access restrictions, the evaluation teams spent limited time in each community and project area; field work was carried out in remote areas, often accessed by air and then vehicle. Timing was to a certain extent dictated by flight schedules. Poor security was an issue in nearly all areas visited, with precautions having to be taken in the form of armed security guards and restricted driving hours and routings. This made local interviews more challenging, and movement beyond the safe areas was slow. Due to security restrictions, field work in the Somali

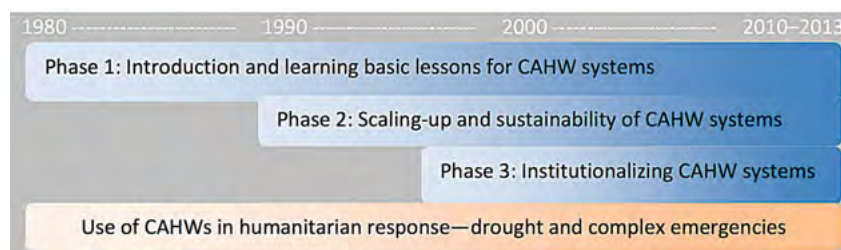
Region of Ethiopia had to be reorganized to a new location, and a Somali-speaking veterinary consultant replaced the expatriate team leader. This meant that the field work had a slightly different approach in Somali areas. Translators were utilized with all communities, and their selection and orientation also took time. In Kenya and South Sudan, women CAHWs were located and included in the field assessments, and community members were asked about female and male CAHW attributes. This was more difficult in Ethiopia, because almost no women CAHWs had been trained in the Somali Region.

3. Background and Context

From the 1980s to the present day, three distinct phases of CAHW project development are evident (Figure 1). Community-based approaches to animal health service delivery were first mooted in the 1980s. They were in response to growing demand from livestock owners and an awareness of the shortcomings of post-colonial veterinary services in the developing world. It took a number of years for awareness of the concept to grow, but from the early 1990s there was a global scaling up of the CAHW approach. This growth phase also increased the need to make the projects viable. Whilst improving animal health for farmers and communities, many CAHW projects remained unsustainable without NGO

or government support. The third phase, from the late 1990s to the present, focused on attempts to institutionalize CAHWs within national animal health policy and legislation, with emphasis on clinical, private sector roles. This was accompanied by concerted efforts to formulate best practice guidelines, to influence veterinary policy makers, and to put in place enabling policies and legislation. This third phase is ongoing, and the findings of the evaluation provide an opportunity to comment on progress to date. It was in 1998 that OFDA commissioned a review of CAHW programs, which constitutes a reference point for this evaluation.

Figure 3.1
Evolving CAHW systems in the Horn of Africa



From the 1990s, there was also increased use of CAHWs in humanitarian situations. In some countries, notably South Sudan, CAHWs were introduced and scaled up in a context of a complex emergency. In other countries, CAHWs were scaled up in more stable environments but were used to provide veterinary support during emergencies, especially drought, in pastoralist areas. There were also innovative uses of CAHWs in emergencies, including the use of veterinary voucher schemes in Ethiopia, and CAHWs became central to the veterinary chapter of LEGS.

3.1 The origins of CAHWs in Africa: Structural adjustment, community participation, and rinderpest eradication

State veterinary services in Africa in colonial and post-colonial times were primarily concerned with prevention of diseases affecting trade, such as rinderpest, or diseases that caused major losses on commercial ranches and farms. Government veterinarians led disease control programs, assisted by veterinary assistants (with 1–3 years of training). State services were generally free of charge or highly subsidized, and government staff commonly supplemented their incomes with private work. The few private veterinary practices that existed for livestock generally serviced commercial beef and dairy enterprises.

In contrast, livestock keepers or farmers living in remote areas were underserved, particularly for everyday problem diseases such as worms or ticks. Government strategies included some disease control in these areas, but mainly from the perspective of preventing disease spread to commercial farms and ranches. Pastoralists, who lived in remote, dryland areas with little infrastructure or services, were particularly poorly

served, yet they were also highly reliant on livestock for their livelihoods. Livestock losses from disease, thefts, and predators in pastoralist herds are largely avoidable, and relatively, disease is the most important cause of loss in normal years.² Such high mortality and impaired productivity contributed towards pastoralists' poverty and increased their vulnerability to disasters such as drought (IDL Group, 2003).

In the early 1980s, the cost of providing state veterinary services became an increasing burden for developing countries, and there was growing pressure to modify and adjust their approaches (De Haan and Nissen, 1985). Most national budgets allocated only 0.2% to 1.5% of GDP to the entire livestock sector. In addition to problems with inflation in the 1970s, the financial situation of national veterinary services was further aggravated by increases in personnel costs, which consumed 75% to 90% of the total livestock budgets. The impact of this was ineffective vaccination campaigns, inability to enforce sanitary laws and regulations, and government monopolies that increasingly stifled the availability of veterinary drugs (Leidl et al., 2004). This situation coincided with structural adjustment programs, designed for highly-indebted countries, which advocated redistribution of public and private goods. Downsizing of government services under structural adjustment was recommended, theoretically to focus government on public good functions such as disease surveillance and epidemic disease control, whereas the private sector role was to provide clinical services and work under state contracts (Leonard, 1993; Odeyemi, 1997). In part, the move towards privatization was influenced by project experiences and studies that showed that governments were not efficient managers of clinical services (e.g., Box 3.1).

Box 3.1

Financial inefficiencies in government-managed veterinary services in Ethiopia (source: Moorhouse and Tolossa, 1997)

A study to examine government veterinary service cost recovery covering 13 districts of Ethiopia gathered information from both government and private sector veterinary staff and livestock owners. At the time, 1997, as now, government policy aimed to construct veterinary clinics and staff them with government employees. The study's findings included:

- Each veterinary clinic covered an area of radius approximately 7.5 km, and so only around 28% of livestock had regular and relatively easy access to the government clinic;

continued on next page

² For example, research in Afar, Borana, and Somali areas of Ethiopia showed that disease was the main cause of livestock losses across camels, cattle, and sheep and goats in normal years (Catley et al., 2014a; also see McPeak et al., 2012).

- On average, drug revenues accounted for only 45% of total costs of providing the service (i.e., the government subsidy for the service was 55%);
- By comparison of the existing public sector delivery system with models of private delivery systems, it was calculated that staff costs in the private system per unit volume of drugs delivered would be 30% of those in public sector clinics;
- The retail veterinary drug market was very competitive, and private providers had to contend with the highly-subsidized public sector, and the “unofficial” private practice by public sector employees, plus the activities of informal or itinerant drug traders;
- Study findings indicated that the optimal animal health service delivery model would be a rural practice owned and supervised by a veterinarian, and comprising a practices-owned network of CAHWs;
- Contracting the implementation of compulsory vaccination programs to the private sector would be feasible and cost-effective if combined with community animal health-based private practices.

Subsequent privatization of veterinary services in the late 1980s mirrored the emphasis of government services on commercial livestock enterprises, and failed to meet the needs of poor, marginalized, and subsistence farmers. Constraints included government staff undermining private businesses by doing private work alongside government work (see Box 3.1), an unwillingness by relatively well-educated veterinarians to work in rural areas that lacked basic services, and weak enabling policies and institutions in some countries. Perhaps the strongest disincentive to private vets starting private practice in large, sparsely populated areas, especially areas with poor infrastructure, was basic economics. Here, the traditional veterinary practice, where a vet physically visits and treats livestock, becomes unviable due to the high transaction costs of delivery—it simply takes too much time and is too expensive to provide this type of service relative to the economic value of individual animals (Ellis and James, 1979; Odeyemi, 1999; Catley et al., 2004; Ly, 2003).³ The debate on how to provide veterinary services in such areas was taken up by the World Bank, NGOs, and the donor community in the mid- to late 1980s (De Haan and Bekure, 1991; Leidl et al., 2004). To varying degrees, there was recognition that para-veterinary workers were more likely to be the main service provider in rural areas, rather than veterinarians, and there was some convincing early economic analysis to support this view (Leonard, 1987).

The downsizing of state veterinary services in the 1980s coincided with new thinking on rural development strategies for resource-poor people living in complex, diverse, and risk-prone environments. This thinking built on the experiences and lessons from farming systems research in the 1970s (Cohen and Uphoff, 1980) and became known as the “Farmer First” approach. Over time, participatory approaches and

methods emerged, with an emphasis on learning from indigenous knowledge and systems, “bottom up” development, and working in partnership with communities rather than delivering “top down” technical solutions (Chambers et al., 1989). On the veterinary side, NGOs such as Intermediate Technology Development Group (ITDG), Oxfam, Heifer Project International, and Farm Africa spearheaded this approach in East Africa and the Horn and worked with communities to train the first CAHWs. CAHWs were known by various names at that time, e.g., “Village Animal Health Workers” were first trained in Nepal in 1981 (Stoufer et al., 2002), “Vet Scouts” were first trained in Kenya in 1980 (Young et al., 2003), and “Nomadic Animal Health Auxiliaries” were trained by GTZ in Somalia in the 1980s (Baumann, 1990).

To some extent, this first phase of CAHW project development continues today as new NGOs move into remote areas and set up projects. Many have limited or no experience with the approach, and some have limited in-house understanding of more general participatory rural development.

From the early 1990s, another strand of CAHW experience started to emerge and over time, became central to the acceptance of CAHWs by some African governments and regional organizations. This was the use of CAHWs for rinderpest eradication in conflict-affected areas where conventional government vaccination was unsuccessful or unfeasible. Rinderpest had a high profile in the international veterinary establishment and was subject to a long-running global eradication program, but global eradication was paralyzed due to persistent hotspots in the Horn of Africa. The introduction of CAHWs approaches in South Sudan and Ethiopia radically improved the situation (Box 3.2).

Box 3.2

The impact of CAHWs on rinderpest eradication

Ethiopia—In 1994, the Pan African Rinderpest Campaign (PARC) in Ethiopia trained 20 CAHWs in Afar Region and supplied them with heat-stable rinderpest vaccine. Prior to this activity, conventional, government vaccination campaigns had vaccinated around 20,000 cattle per year in Afar and achieved approximately 60% immunity. In 1994–95, the 20 newly-trained CAHWs vaccinated 73,000 cattle and achieved 83% immunity. No outbreaks of rinderpest were reported from Afar after November 1995 (Admassu, 2003).

South Sudan—Between 1989 and 1992, the UNICEF livestock program used conventional cold chains and vaccinated approximately 283,750 cattle against rinderpest per year. In 1992, the program came to a virtual standstill as insecurity disrupted cold chains and vaccination teams; only 140,000 cattle were vaccinated that year. In 1993, a CAHW program was developed in southern Sudan and in 1993, 1994, and 1995, CAHWs vaccinated 1,489,706, 1,743,033, and 1,070,927 cattle against rinderpest, respectively—up to a 10.6 fold increase in vaccination coverage (Leyland, 1996). Confirmed outbreaks of rinderpest decreased from 11 outbreaks in 1993 to 1 outbreak in 1997. There were no confirmed outbreaks of rinderpest in South Sudan after 1997.

3.2 Scaling-up and sustainability of CAHWs

Reports citing the effectiveness of CAHWs in Nepal, Kenya, Ethiopia, India, Sri Lanka, Somalia, Afghanistan, Bolivia, Thailand, and Malawi began to appear in the late 1980s and were generally qualitative and positive. CAHW performance in diagnosis, drug use, and disease

surveillance compared favorably with that of the field staff of government veterinary services. Although these reports were not based on quantitative studies and were seen by some to be unreliable (e.g., Martin, 2001), they were sufficiently encouraging to gain the attention of decision makers in government and the donor community. Notably, there were also few if any rigorous studies on government services in terms of disease

³ This challenge is also evident in remote areas of industrialized countries in Europe, North America, and South America.

control impacts, against which CAHW performance could be compared, and no standard indicators for measuring government veterinary services. There was also some acceptance that small NGO projects, implemented in resource-poor and remote areas, were unlikely to produce high-quality quantitative data on impact, and that investing in this—even if it was possible—could distract from the priority of addressing urgent needs (Catley, 1999b). Some CAHW projects were functioning in war-torn or other difficult areas where there were no government services at all.

Seeing is believing, and Young et al. (2003) noted that best advocates for CAHW systems were commonly those who had actually visited project sites, met livestock owners, and asked them how CAHWs compared with other service providers. Table 3.1 shows the results of interviews in three countries. More than 70% of livestock keepers who lived in villages which had CAHWs ranked these workers as their preferred animal health service provider.

Table 3.1
Preferences for veterinary service providers (source: Peeling and Holden, 2004)

Country and date of case study	Type of service provider (percentage of respondents who ranked this type as most preferred)				
	CAHW	Drug store	Traditional healer	Government veterinary worker	Other
Kenya (1997)	82%	11%	2%	4%	0%
Philippines (2001)	88%	0%	5%	5%	0%
Tanzania (2001)	71%	2%	12%	15%	0%

Initial experiences with CAHW projects were presented at national and international meetings and workshops. GTZ convened a series of regional workshops in Africa and Asia between 1984 and 1991 to discuss “primary animal health activities” (Leidl et al., 2004); ITDG organized an international conference on decentralized animal health care in 1991 (Young et al., 2003); and the World Bank and the UK Overseas

Development Administration funded a major international seminar on “Livestock Services for Small Holders” in 1992 (Daniels et al., 1992). As the momentum around CAHWs grew, African regional bodies and governments, UN agencies, and NGOs started to support CAHW projects, with the largest program evolving in South Sudan from 1993 (Box 3.3), with support from OFDA and other donors.

Box 3.3
Community-based animal health in South Sudan (source: Jones et al., 1998; Ibid., 2010)

Operation Lifeline Sudan (OLS) was a consortium of United Nations (UN) agencies and NGOs that was set up to deliver emergency relief to war-affected populations in Sudan. A CAHW program was initiated by UNICEF in 1993, with the goal of improving the household food security of pastoralists.

From 1993–4, in response to the main priority of livestock owners, rinderpest vaccination was the main activity. Working in cooperation with local counterparts, 40 CAHWs underwent a 10–day training in the 1993.

The CAHWs were supervised by Stockmen and received refresher training after six months. The success of the vaccination and very high demand for animal health services encouraged OLS to invite more NGOs and establish broader CAH in both government- and rebel-controlled areas. By 1998, over 1,000 CAHWs had been trained through the support of 13 NGOs. Furthermore, a training center for Animal Health Assistants (AHA) to supervise the CAHWs had been built and was operational.

By 2001, there were approximately 1,400 active CAHWs supervised by 180 AHAs, Stockpersons, and Veterinary Assistants, and supported by 35 veterinarians and livestock officers working for 16 NGOs plus FAO in collaboration with local partners.

A review of 60 CAHW projects in 25 countries and four continents identified a number of factors that contributed to their success (McCorkle and Mathias, 1996):

- The importance of an initial joint appraisal with livestock owners to ensure the activities build on existing service provision and social structures, and to ascertain the disease profile of the area;
- Trainee selection based on joint understanding of the attributes of a good CAHW—most projects saw this as vital for livestock owner acceptance, support, and long-term sustainability;
- The importance of refresher training and follow-up supervision;
- CAHWs not being salaried by government or NGOs, but receiving a proportion of drug revenue; The importance of systems for re-supplying CAHWs with drugs.

The same authors observed that:

- There was no particular pattern emerging on training or follow-up training, as this was largely governed by the

availability of funds;

- Few women were being trained as CAHWs;
- Few CAHW projects had successfully transitioned to local control though the use of revolving funds or community-run drug stores, although most projects had not been running long enough to make conclusions on long-term sustainability;
- Few projects took account of recurrent or hidden costs when claiming CAHW services were cheaper than their formal sector equivalents;
- Official certification of trained CAHWs was rare;
- Tensions existed between public and non-paravet private-sector veterinary services;
- CAHWs were either seen as a threat to authority and earnings or as valuable front-line practitioners funneling first-hand epidemiological information to public-sector agencies and/or providing valuable extension messages to the livestock owners.

In terms of sustainability, a key issue was how to set up drug supply systems for CAHWs that would continue to function when NGO funding

ended. Among central government policy makers and within some NGOs, there was an insistence that either government or NGOs were needed to deliver free or subsidized services (ultimately using funds provided by aid donors), because livestock keepers were too poor to pay. At policy level, this position related to pastoralist areas being viewed as “low potential” in terms of contributing to national economies, and general economic development strategies. However, on the ground the situation was very different in some areas. One example was the Somali pastoralist areas of the Horn (covering all of Somalia), and parts of Kenya, Ethiopia, and Djibouti. Here there was a well-established livestock export trade and increasing commercialization that dated back to the 1950s or before. Various reports showed that pastoralists of different wealth groups were willing to pay for veterinary care, and the key issue was accessibility of services, not cost (e.g., Catley, 1999a). This view was supported by experiences from the GTZ NAHA system in the 1980s with the Somalia government, which used a full cost-recovery system (Baumann, 1993). Later, simple models of private delivery were developed by ActionAid in Somaliland, based on veterinary pharmacies in urban centers supplying networks of CAHWs, as well providing an “over the counter” service (Catley, 1996). This approach was then further adapted in the neighboring Somali Region of Ethiopia, where Save the Children UK supported private pharmacies and CAHWs with the local government from 1996 (Gebreab, 2000), and where by 2013, there were 37 pharmacies across the region (Catley et al., 2014b).

Despite successes with the use of CAHWs for rinderpest eradication (see the OFDA review by Catley et al., 1998), community support for CAHWs, and a clear economic rationale for supporting the wider use of CAHWs in the region, a key concern in the late 1990s was that CAHWs were essentially still illegal and not supported by policy or laws. At this point, it was felt that more evidence on the impact of CAHWs on livestock health and livelihoods, as well as further economic analysis of different service provision options, would lead policy makers to a more supportive position. One key organization in this regard was the African Union’s Interafrican Bureau for Animal Resources (AU/IBAR), which received financial support from OFDA via Tufts University (Catley et al., 1998) and from the UK Department for International Development (DFID). The DFID

support to IBAR and its CAHW work related to an agenda of poverty alleviation, and a DFID-sponsored review of more than 800 livestock projects funded by various donors concluded that *“years of interventions to directly improve the skills, technology and even the livestock holdings of the poor have, in most cases, yielded no real demonstrable effect. Community animal health programmes are one of the few approaches to date which have been shown to have a positive impact”* (LID, 1999).

3.3 Institutionalizing CAHWs

By the early 2000s, two key topics dominated dialogue on the development of CAHW systems. Firstly, could CAHWs be supported by governments and legalized; and second, if CAHWs were not to be employed by government, how could they become financially sustainable? These critical aspects of institutionalizing CAHWs required enabling policies and legislation to be put in place, along with formal mechanisms for quality control of CAHWs and veterinary medicines. While this section describes progress up to 2005, the evaluation findings show that the process was ongoing in 2013, as described later in section 4.

Through the 1990s, tensions grew between the veterinary fraternity and the advocates of CAHWs; furthermore, CAHW projects continued to receive donor support. For example, in January 1998, the Kenya Veterinary Board (KVB) placed a full-page advertisement in national newspapers pointing out that under existing legislation, it was illegal to train CAHWs and that any vets who did so risked being struck off the veterinary register. This threat actually galvanized the proponents of CAHWs in Kenya to gather further evidence and invest more time in mobilizing stakeholders (Young et al., 2003). Most CAHWs were trained in remote, underserved areas, commonly in collaboration with district-level government staff. Government veterinarians working at field level recognized the value of CAHWs and usually appreciated the NGO support as their own recurrent budgets continued to be cut. It was primarily central, senior policy makers and veterinary academics who were skeptical about the utility of CAHWs. These same individuals dominated veterinary statutory bodies, academia, and national associations. The key arguments against CAHWs are presented in Box 3.4.

Box 3.4

Five arguments in pro-CAHW policy debate (adapted from IDL and McCorkle, 2002)

In the early 2000s, opposition to CAHWs among veterinary policy makers, professional bodies, and academics was often intense, emotive, and vocal. The key arguments on both sides were summarized as follows:

1. “We’ve already been doing this CAHW thing for decades. It doesn’t work and there is nothing new you can tell us about it.”

A key difference between CAHWs and the old colonial veterinary services employing Vet Scouts as vaccinators and assistants was the interactive participation of communities in prioritizing activities within the projects.

2. “These CAHWs are illiterate and backward. There is no way they can diagnose and treat diseases.”

This was a reasonable assertion for a veterinarian with a university education. However, most of the evidence indicated that for relatively simple treatments and diseases with clear clinical signs, CAHWs were able to diagnose or refer cases, and that their drug management in terms of dosage and storage was better than untrained farmers using drugs bought from shops.

3. “The international community will say we have a second-rate veterinary service if we legalize these CAHWs.”

CAHW advocates argued that CAHWs could be in line with the international guidelines of the World Organisation for Animal Health (OIE) if recognized and regulated by national veterinary services. They act as the hands and ears of disease control strategies in remote areas.

4. “We already have thousands of retrenched but well-trained government animal health professionals and technicians. Why can’t these people provide the service?”

CAHWs are usually part-time workers who also make a living from rearing livestock. Their expectations are lower, and they have an element of community support. Unlike more highly trained individuals, CAHWs move with the herds in pastoralist areas. There is evidence that shows that more highly trained personnel are not willing to work in remote areas (Sidibe, 2003; Umali et al., 1992).

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5. “This is just another donor-driven approach like structural adjustment. We’re fed up with donors telling us what to do. All these people conducting studies on CAHWs have been bought off by donors.”

The Paris declaration on aid effectiveness does not support this claim. Furthermore, there is nothing to stop national policy makers from gathering evidence to guide them.

In Kenya, the effectiveness and sustainability of CAHWs was investigated. One study found no significant difference in livestock production parameters between animals under the care of vets and those under CAHWs. The study recommended the institutionalization of CAHWs (Mugunieri et al., 2004). Another study showed that 70% of CAHWs **“were continuing to offer adequate animal health services three years or more after their initial training and the withdrawal of donor support,” and that “the CAHW system can be viewed as an initial stage in the process for extending quality private sector veterinary services”** (Rubyogo et al., 2005b).

The discussion between stakeholders around CAHWs was particularly robust in East Africa, where the veterinary fraternity had enjoyed high-quality training and relatively strong national veterinary services in the post-colonial period. In order to address the concerns of policy makers, a substantial amount of evidence was gathered in the early 2000s on three main issues:

- What impact did CAHWs have on livestock health and production, which included investigating fears that CAHW activities would result in higher levels of drug resistance and drug residues in the food chain?
- How could CAHWs be sustainable?
- Could CAHWs be a useful adjunct to government disease control and surveillance systems?

Concurrently, there was a distinct move towards stronger research design and methods for gathering evidence, and various studies were published in peer-reviewed journals. By 2005, significant evidence had

been collected on the issues above. Box 3.5 provides a summary of key CAHW impact data for Africa, as presented in 2004. Back in 1998, the OFDA review of CAHWs had also compiled evidence to show that CAHWs were highly effective in vaccination campaigns (Catley et al., 1998).

In AU/IBAR, this evidence was used to prompt discussion on CAHW systems within governments and the OIE, and the process benefited from the status of AU/IBAR as the leading livestock policy organization, with all African states being members of the AU. In 2002, AU/IBAR organized an international conference on primary animal healthcare in Mombasa, Kenya, where much of the new evidence was presented and discussed, including papers by Chief Veterinary Officers and senior epidemiologists from Africa (Sones and Catley, 2003). This event, together with various national-level learning and policy processes, contributed to significant shifts in policy towards CAHWs across the Horn of Africa region and further afield from the mid-2000s.

Box 3.5

Studies on CAHWs in East Africa and the Horn of Africa

CAHWs and disease surveillance—Innovative research was carried out to show how CAHWs could effectively be utilized to complement and even outperform government disease surveillance (Allport et al., 2005; Catley et al., 2004; Mariner, 2002). By 2005, with donor and NGO support, South Sudan had one of the most effective disease surveillance systems in the region. This surveillance was primarily geared toward confirmation of the eradication of rinderpest and was highly reliant upon CAHWs (Jones et al., 2010; OIE, 2009).

Economics of service delivery—Cost benefit studies showed that CAHWs were an essential component of veterinary privatization in pastoralist areas (Kaberia, 2002; Riviere-Cinamon and Eregae, 2003; Leonard et al., 2003). Research comparing different models of private animal health service delivery in Kenya showed the most efficient model in remote areas was one where Animal Health Assistants supervise and supply CAHWs with drugs, with both working under the authority of government veterinary doctors (Okwiri et al., 2001). Furthermore, studies had shown that the ethical management of veterinary drugs improved through CAHWs (Tadele, 2004; Peeling and Holden, 2004; Admassu et al., 2005; Rubyogo et al., 2005a).

Technical performance of CAHWs—In Kenya’s Mwingi District, a study was conducted looking specifically at Kenya Veterinary Board concerns around the diagnostic abilities of CAHWs and drug use. The study used an examination of CAHWs designed by a professor at the Faculty of Veterinary Medicine, University of Nairobi, and 90% of CAHWs passed the test (Rubyogo et al., 2005a).

Livelihoods impacts—In Ethiopia, a national-level multi-stakeholder team was set up to examine CAHW impacts, comprising government vets and representatives from the Ethiopia Veterinary Association, University of Addis Ababa and NGOs (Hopkins and Short, 2002; Admassu et al., 2005). CAHWs were found to be an essential component of an effective animal healthcare delivery system, and were much appreciated by livestock owners.

Examples of shifts in policy towards CAHWs included:

- **Global**—At the international level, the World Organisation for Animal Health (OIE) confirmed that veterinary para-professionals—including CAHWs—were an important adjunct to improving the quality of veterinary services, as long as their roles, levels of supervision, and reporting relationships were clearly described and administered (OIE, 2003). This was a key milestone in enabling CAHW systems to be institutionalized, as countries could no longer use lack of recognition by the OIE as a reason for not supporting CAHWs.
- **Africa**—AU/IBAR published its *Policy Guidelines on*

Community-based Animal Health Workers, which included indicators for the assessment of CAHWs (AU/IBAR, 2003a). These documents were sent to Chief Veterinary Officers across the continent. AU/IBAR also produced policy briefs on CAHWs and a series of training videos for CAHW programs and related policy issues.

- **National-level**—With AU/IBAR support, some countries in the Horn of Africa started to integrate CAHW delivery systems into national disease control and surveillance systems:
 - In Sudan, the Undersecretary of Sudan’s Federal Ministry of Animal Resources and Fisheries (FMAR&F) formally

approved the creation of a CAH Unit within the Department of Animal Health and Epizootic Diseases Control. A committee was formed by the Minister of FMAR&F to develop a legal framework for CAHWs. This committee recommended that the regulation of CAHWs should be at the state level, and the Sudan Veterinary Council should identify and specify the job descriptions of CAHWs (OIE, 2009). Furthermore, there should be a National Unified Curriculum for the training of CAHWs and adequate levels of supervision and monitoring, with coordination by implementing NGOs.⁴

- Uganda's Ministry of Animal Industry and Fisheries (MAAIF) agreed that CAHWs could work in the underserved pastoralist area of Karamoja and began the process for agreeing on a standard CAHW training curriculum.
- The Government of Ethiopia issued an Animal Diseases Prevention and Control Proclamation in 2002 that recognized CAHWs as a cadre of "Animal Health Representative."⁵ The same proclamation committed to the establishment of an Ethiopian Veterinary Council plus renewed efforts to privatize veterinary services. Concurrently, the Ministry of Agriculture established a CAH Unit within the Veterinary Department, which prepared CAHW Minimum Standards and Guidelines⁶ and established a program for training the trainers of CAHWs.

In Kenya, the policy process did not go smoothly. Following a series of national workshops, the KVB and the Department of Veterinary Services (DVS) approved detailed minimum standards and guidelines for CAHWs in 2001 (KVB, 2002). These standards were to be incorporated into a new animal health policy. This policy document was completed in early 2002 (MoARD, 2002) and a draft submitted to the Permanent Secretary, Ministry of Agriculture and Rural Development for further scrutiny. Due to some unfortunate drafting errors, the new Veterinary Practitioners Bill defined CAHWs as "Veterinary Surgeons," and this provoked a very strong reaction at the Annual Kenya Veterinary Association Meeting in Kakamega, where delegates determined to oppose any further moves to legalize CAHWs.

3.4 CAHWs in humanitarian response

3.4.1 Complex emergencies

The previous sections summarize a large body of practice and learning around CAHW approaches in the Horn, and focus on what many readers will view as development issues. These include approaches to improving the sustainability of CAHW services through links with the private sector, or ways to integrate CAHWs into official disease surveillance systems. Yet some of these experiences took place in complex emergencies in the Horn, with some programs entirely dependent on humanitarian, not development, aid. The best example is South Sudan, where the introduction of CAHWs in the early 1990s took place within the

UNICEF Household Food Security Program under Operational Lifeline Sudan. The program involved coordination and implementation of CAHW projects by UNICEF, with coordination of multi-donor support of up to 13 NGOs, following common CAHW selection, training, and drug supply approaches. The system grew to include 1,400 CAHWs, with supervision by better-qualified para-professionals and NGO veterinarians, and probably represented the largest well-structured and coordinated CAHW program in the world—but with humanitarian funding to NGOs or UNICEF (Catley et al., 2008). A peace agreement in January 2005 ended the long-running conflict between northern and southern Sudan, and the status of the CAHW program in 2013 is described in section 4.

Parts of the Somali Region of Ethiopia were also characterized as a complex emergency when private CAHWs were introduced in 1996, followed by a program to support private veterinary pharmacies in the region. At various points over the next 10 years, this program received humanitarian funds; funds aimed at post-conflict rehabilitation, funds under returnee projects, as well as development funds. In addition to protracted conflict, drought was a major problem in the region. As described below, this led to the testing of veterinary voucher projects with CAHWs and private pharmacies.

3.4.2 CAHWs and drought response

There is a long history of veterinary interventions during droughts in the Horn of Africa, dating back to the colonial period. Typically, government responses and those of the United Nations Food and Agriculture Organization (FAO) were based on vaccination or prophylactic treatments of livestock using government or aid agency staff, and with free or heavily subsidized service provision. To a large degree, these approaches had become normalized by the mid-2000s, although the impact on livestock health or people's livelihoods remained largely unknown. As CAHWs became established, they were used in drought response in countries such as Kenya, Somalia, and Ethiopia but were usually given short-term employment or per diems, and were required to give free or subsidized services.

During the 1990s, various countries in the Horn of Africa implemented national veterinary privatization programs under the wider structural reform efforts mentioned in section 3.1. With funding from donors such as the European Union (EU) and World Bank, these programs included training of veterinarians in small-business management and planning, and various loans and grants to enable the establishment of private veterinary practices. In general, pastoralist areas were excluded from these programs, but more progressive NGOs recognized the opportunities for private sector veterinary services in pastoralist areas, and so relatively small-scale veterinary private-sector support projects also started in the drylands. However, as these projects were implemented, it became clear that the free supply of drugs during drought was an important constraint to new veterinary pharmacies (Aklilu, 2003). The contrast between the development and drought approach is summarized in Box 3.6, and shows the importance of livelihoods-based approaches that supported rather than undermined local service providers.

Box 3.6

Development vs. emergency veterinary programs in Ethiopia, late 1990s

Development approach:

- Privatization of clinical veterinary services supported by government policy since 1993;
- Numerous programs to assist rural private practitioners (degree and diploma holders) to set up private clinics and pharmacies, funded by EC, World Bank, DFID, USAID, and others;
- Enabling legislation for private para-veterinary professionals.

Emergency interventions:

- Designed without involvement of local private sector;
- "Truck and chuck"—dumping of large quantities of free veterinary medicines;
- Limited epidemiological basis for vaccination programs, e.g., targeting 20% of population;
- Funded by the same donors who fund development;
- Undermines local private practitioners, i.e., the services needed for recovery.

⁴ <http://sites.tufts.edu/capeipst/files/2011/03/Anon-Sudan-CAHW-Legislation.pdf>.

⁵ Defined as a "person trained in basic animal health care" representing a community.

⁶ <http://sites.tufts.edu/capeipst/files/2011/03/Anon-Ethiopia-Minimum-Standards.pdf>.

It was the kind of contradictory development—the emergency programming illustrated in Box 3.6—that prompted a workshop at AU/IBAR in 2004 that brought together practitioners from Kenya, Ethiopia, South Sudan, Sudan, the Democratic Republic of Congo, and Somalia to review experiences of livestock projects in complex emergencies and protracted conflicts (AU/IBAR, 2004). This workshop recommended the development of livestock standards for emergencies, which in turn led to the first steps to develop LEGS in 2006. By the end of 2005, however, there were no standards in place and very limited experience of using

alternative, private-sector-based approaches to deliver veterinary care during drought. The exception was work by the International Committee of the Red Cross (ICRC) in northern Kenya in 2004, which piloted a veterinary voucher scheme, with promising results (Mutungi, 2005).

This section has sought to cover the recognition and development of CAHWs, particularly in the Horn of Africa, up to the end of 2005. The findings of the evaluation relate to the subsequent uptake and further development of CAHW systems within the Horn of Africa, particularly projects supported by OFDA.

4. Findings

This section summarizes the main findings of the country-level assessments; more detailed findings are presented in Annex 3 (Kenya), Annex 4 (South Sudan), and Annex 5 (Ethiopia), including a breakdown of results by gender where possible.

4.1 Effectiveness and local sustainability of CAHWs as veterinary service providers

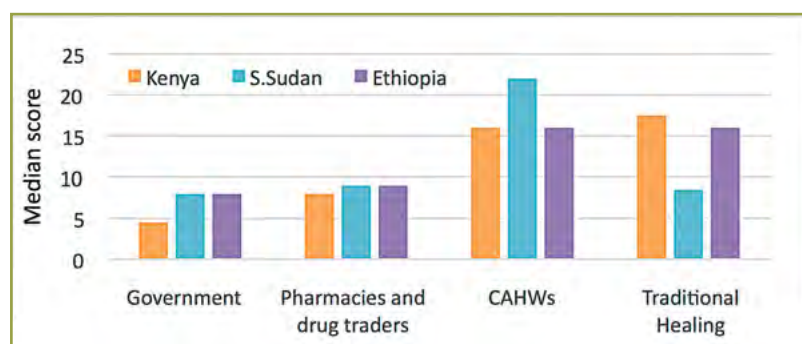
At the community level, an effective and sustainable animal health service provider (AHSP) needs to be accessible (close by), available (e.g., have medicines in stock), affordable (relative to the economic value of livestock), acceptable (e.g., trustworthy and culturally acceptable), and provide quality (e.g., sick animals should recover). A weakness in any one of these five indicators will limit the overall effectiveness and

sustainability of the service. Across three countries, four main AHSPs were identified, viz. government veterinary services, CAHWs (established by NGOs), traditional healers/medicines, and private pharmacies (including “agro-vet” stores selling veterinary medicines).⁷ Given the gender dimension of the evaluation, it was noticeable that women and male informants tended to provide a similar assessment of CAHW and other services, and therefore the results presented in this section are mostly combined results from men and women. Where opinions differed, we describe the differences in the text, and results by gender are also presented in Annexes 3 to 5.

4.1.1 Accessibility

Findings on the accessibility of AHSPs were consistent between men and women, and between the three countries (Figure 4.1).

Figure 4.1
Relative accessibility of animal health service providers



Results derived from matrix scoring of AHSPs; see Annex 1 for details of the matrix scoring method.

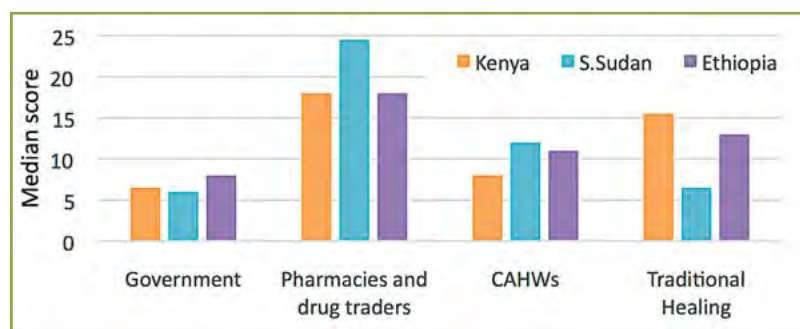
CAHWs and traditional healers/medicines were the most accessible AHSPs due to the physical presence of these services in communities, and in contrast to urban-based government services or pharmacies. Government services were the least accessible, and typically, were only encountered during vaccination campaigns. In Kenya, the transhumant management of stock was reflected in CAHW accessibility. Women appreciated female CAHWs (where present) more than male CAHWs, as the former tended to have more predictable routines and could be easily found when needed. Conversely, men tended to say female CAHWs were less accessible, as they did not move with the livestock or were constrained by their domestic responsibilities. In South Sudan, traditional medicines received relatively low scores because they have been largely replaced by modern medicines.

4.1.2 Availability

The relative availability of veterinary medicines, and AHSPs for consultation or advice, are summarized in Figures 4.2 and 4.3 respectively. Private pharmacies and agro-vet shops were consistently seen as the most available year-round provider of services. Although urban and less accessible, they were open most days and for long hours, and so relatives and neighbors travelling to town could normally buy treatments for sick livestock. Pharmacies did not sell vaccines as government veterinary services still controlled and supplied vaccines in all three countries. Only Ethiopian government veterinary services now sold veterinary medicines on a regular basis through clinics and animal health posts. However, Ethiopian veterinary services had low availability relative to private pharmacies due to irregular and insufficient stocks of medicines and staff absences.

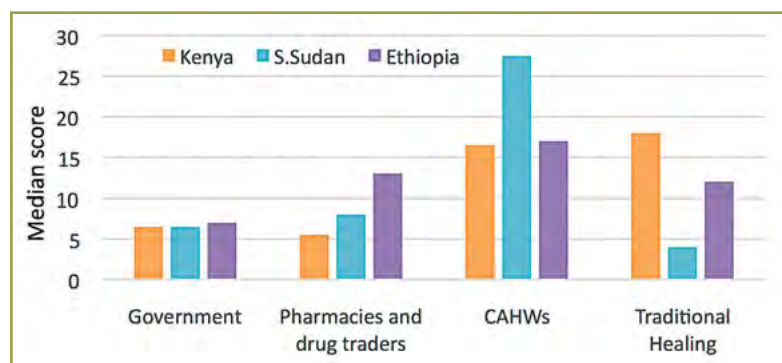
⁷ In Ethiopia, this category included itinerant traders. These are people passing through the area selling drugs, usually at weekly markets, and drugs are commonly brought across the border from Somalia. In Kenya, itinerant traders had largely disappeared after CAHWs started operating.

Figure 4.2
Relative availability of veterinary medicines supplied by animal health service providers



Results derived from matrix scoring of AHSPs; see Annex 1 for details of the matrix scoring method.

Figure 4.3
Relative availability of animal health service providers for advice, consultation, or assistance with administering medicines



Results derived from matrix scoring of AHSPs; see Annex 1 for details of the matrix scoring method.

In Kenya and South Sudan, government only supplied medicine as part of emergency campaigns and so, understandably, scored low for medicine supply. Traditional healers and medicines scored well in Kenya and Ethiopia, as the remedies grew locally.

CAHWs scores for availability varied. Typically, CAHWs had had better supplies of medicines when they were first trained or linked to NGO distribution points. In most locations, CAHWs stated they did not have sufficient funds to purchase new stocks of medicines. In Kenya, there was a dramatic decline in CAHWs handling medicines since the 2011 Veterinary Surgeons and Veterinary Para-professionals (VSP) Act decreed that only people with two years of training should handle veterinary drugs (also see section 4.3.4). Although CAHWs scored low for drug availability in all areas (Figure 4.2), they scored highly for being available for consultation (Figure 4.3). Livestock owners still valued their diagnostic advice and assistance in administering drugs purchased elsewhere, with the latter service normally provided free of charge in Kenya and South Sudan; in Ethiopia, there were reports of CAHWs charging an administration fee. Male CAHWs were generally seen as more available, as they had fewer social and movement restrictions. Traditional healers and medicines were also seen as readily available in countries that still used them, i.e., mainly Kenya and Ethiopia.

Government veterinary services were considered to be the least available in all three countries. In all three countries, government staff were restricted by lack of funds, transport, and per diems. They were normally only seen when there was a vaccination campaign or very serious disease outbreak.

In most areas, private pharmacies did not score well, because they are urban based and rarely give advice. Furthermore, they are considered

to be more expensive than other drug sources (see affordability below). In some locations, pharmacies were considered more available, e.g., in the Somali Region of Ethiopia where, through government, NGO, and FAO support, they were relatively well established. Itinerant traders did not score well in Ethiopia, and this actually brought down the overall score for pharmacies and drug traders. In Kajiado County, southern Kenya, the pharmacies scored better, as they were run by qualified pharmacists and veterinary assistants who stocked higher-quality drugs and provided advice.

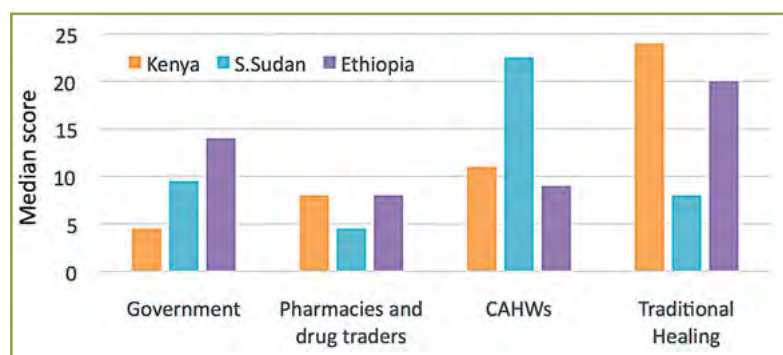
4.1.3 Affordability

Private pharmacies were considered the least affordable AHSP in all areas (Figure 4.4). This reflected the fact that they have to charge commercial rates and frequently grapple with severe logistical/supply constraints and related transaction costs. For example, in South Sudan, drugs that used to be bought from Khartoum via Darfur into northern Bahr el Ghazal now have to be purchased from Uganda or Juba. Livestock owners in South Sudan noted that drugs from pharmacies frequently cost 50% more than drugs from CAHWs.

Although CAHWs scored relatively well for affordability, in South Sudan and Kenya this was usually with a qualifying comment such as “if they have any drugs.” The CAHWs in South Sudan were particularly poorly supplied with medicines, but the livestock owners still remembered when they had cheap “NGO” drugs.⁸ Livestock owners appreciated the fact that CAHWs in Kenya and South Sudan were frequently flexible on pricing and would provide drugs on credit but unfortunately, this may also explain why CAHWs frequently complained that they had no capital to purchase drugs!

⁸ Before the official end to the civil war between north and South Sudan in January 2005, when the Comprehensive Peace Agreement was signed, CAHWs received subsidized veterinary medicines from NGOs. This practice was much reduced from 2005 onwards.

Figure 4.4
Relative affordability of animal health service providers



Results derived from matrix scoring of AHSPs; see Annex 1 for details of the matrix scoring method.

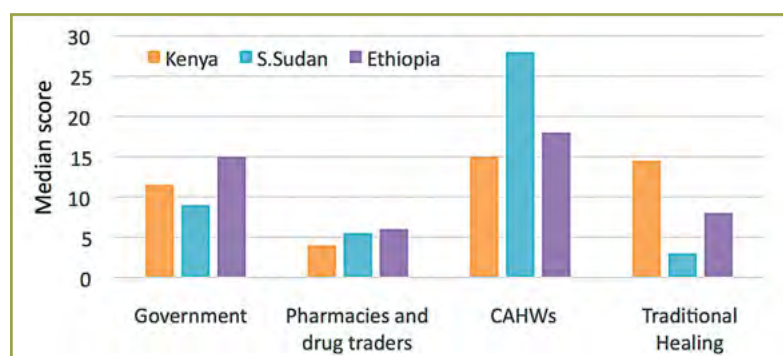
In the Shinile area of Ethiopia, CAHWs were considered relatively expensive because they would add a 25% surcharge on the drugs they bought from government clinics or private pharmacies. This surcharge could increase if the CAHW had to travel to a remote area. The CAHWs were also charging for services; for example, injecting animals with drugs the owner had bought from the pharmacy. The situation in the Somali Region of Ethiopia may reflect the greater emphasis on establishing private pharmacies in this area, with some linkages to CAHWs. Informants seemed not to resent the 25% surcharge; they merely informed the evaluators of the system that was in place. Government veterinary clinics were considered to be relatively affordable in Ethiopia, but this reflects a subsidized system.⁹ Government veterinary services in Kenya have not supplied drugs for many years and so did not get any significant score. The government in South Sudan ceased selling subsidized drugs in 2009.

Traditional healers and medicines were the most affordable AHSP. For example, once advice has been received, the herbal remedies are free to collect. Traditional herbal treatments were recognized as free in South Sudan, but people rarely seemed to use them.

4.1.4 Acceptance

A measure of acceptance by the community was whether they trusted the AHSP, and CAHWs consistently scored well on trust (Figure 4.5). This indicated a level of community involvement in the selection of CAHWs, with selection of individuals who were known and expected to behave well. In South Sudan, CAHWs were particularly trusted, as informants remembered their long years of service during the war. In Kenya, women trusted female CAHWs more than male CAHWs, because they tended to respond in a timely way and communicate politely.

Figure 4.5
Relative acceptance of animal health service providers—who can we trust?



Results derived from matrix scoring of AHSPs; see Annex 1 for details of the matrix scoring method.

Government veterinary services consistently scored moderately well on trust. Although government staff were rarely seen in areas visited, people generally respected their advice and recognized the quality of the medicines and vaccines they supplied.

Pharmacies were the least trusted AHSP in nearly all areas. Livestock owners were generally suspicious about the quality of the medicines and fearful of being cheated with expired drugs. In Ethiopia, itinerant drug traders were less trusted than pharmacies, often scoring zero on trustworthiness. In Kajiado, the pharmacies were seen as trustworthy by some men. Kajiado women, who would rarely go into a pharmacy, were less trusting of them.

4.1.5 Quality

4.1.5.1 Relative quality of animal health service providers

The quality of AHSPs was assessed in terms of the AHSP being able to meet a wide range of animal health related needs, sick animals recovering after treatment, and the quality of medicines supplied (Figures

4.6 to 4.8). The range of services provided by AHSPs varied by country. In Ethiopia, CAHWs and government provided a similar range of services, being both clinical care and vaccination programs whereby CAHWs worked with government (Figure 4.6). In contrast, in Kenya many CAHWs were less involved in vaccination, due to their unrecognized status, and so provided a relatively narrow range of services. In South Sudan, CAHWs were involved in both treatment and vaccination, whereas government only provided treatments during emergencies. In all three countries, government was associated with disease surveillance and outbreak response, albeit delayed response in many cases. The quality of the medicines provided by government during emergency responses was appreciated, although the source of these medicines is often NGOs or FAO. Government was also credited with training CAHWs in Kenya and Sudan.

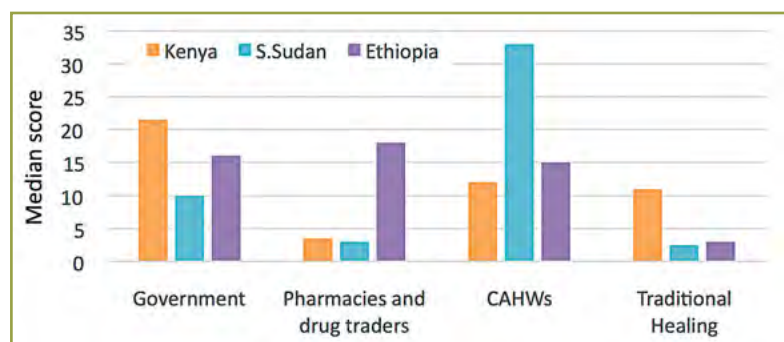
In all three countries, pharmacies provided mainly over-the-counter sales of medicines, i.e., a limited range of services. In Kenya, women scored female CAHWs more highly for the advice they receive, whereas in

⁹ Regional governments in Ethiopia buy veterinary medicines from private importers at commercial rates. However, administrative and transport costs are not considered when setting medicine prices at the point of sale in government clinics, i.e., the system has hidden subsidies.

South Sudan, male CAHWs were seen as much more able to give a range of services by both men and women. This reflected the “cattle culture” in South Sudan, which strongly values the ability to handle larger stock.

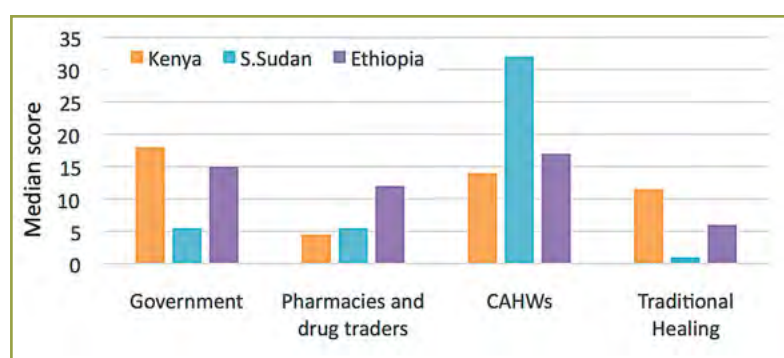
Traditional medicines and healers generally scored lower, because people felt that traditional methods were only effective against a narrow range of problems, such as parasites and dystocia.

Figure 4.6
Range of services provided by different animal health service providers



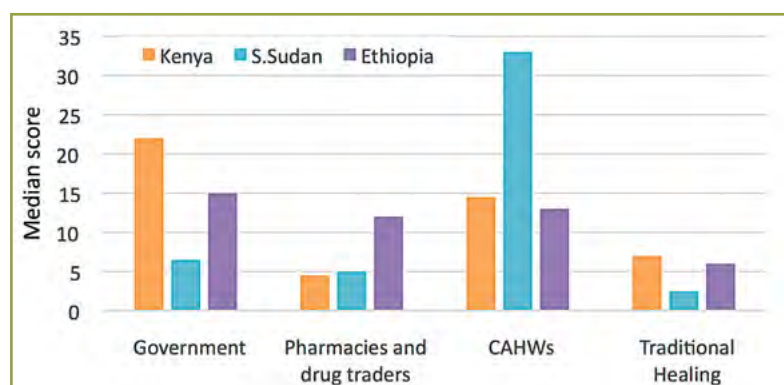
Results derived from matrix scoring of AHSPs; see Annex 1 for details of the matrix scoring method.

Figure 4.7
Recovery from disease attributed to different animal health service providers



Results derived from matrix scoring of AHSPs; see Annex 1 for details of the matrix scoring method.

Figure 4.8
Relative quality of medicines supplied by different animal health service providers



Results derived from matrix scoring of AHSPs; see Annex 1 for details of the matrix scoring method

In terms of sick livestock recovering from disease, levels were similar and relatively high for CAHWs and government in Kenya and Ethiopia (Figure 4.7), and especially high for CAHWs in South Sudan. The latter related to past CAHWs’ activities rather than their current capacity. Similarly, government services scored well in both Kenya and Ethiopia but not in South Sudan, where services had deteriorated since the new government took over animal health services from NGOs.

Private pharmacies in Ethiopia also received a high score. In general, the findings for pharmacies seemed to depend on the quality of the management of the pharmacy, which was generally viewed as lower in Kenya and South Sudan. Traditional healers and medicines again had reduced scores because of the very limited number of problems they

handled effectively.

The local assessments of drug quality (Figure 4.8) mirrored levels of recovery (Figure 4.7), indicating the critical importance of drug quality for effective treatment outcomes. Ethiopian private pharmacies scored well in this area, though itinerant drug traders did not. There was a notable distrust of private pharmacies in Kenya and South Sudan, although informants did not specify types of substandard products. Poor recovery levels can be due to misdiagnosis and/or mistreatment (use of the wrong drug; low dosages, incorrect administration, etc.) or substandard or fake drugs. The evaluators were unable to check all these parameters, but did check the quality of CAHW technical skills (see below).

4.1.5.2 CAHW technical capacity

Standardized interviews with CAHWs in all three countries showed that:

- More than 70% of CAHWs (n=64) had apparent technical competence.¹⁰ There appeared to be no difference between male and female CAHWs in terms of their knowledge;
- CAHWs generally had good knowledge of the clinical signs, postmortem signs, and modes of transmission of the common livestock diseases;
- CAHWs were generally able to describe drug dosages (by size of the animal) and routes of administration for the drugs used to treat the common diseases of sheep, goats, cattle, and camels;
- CAHWs knew about the concept of drug withdrawal periods but generally could not specify the period for particular drugs. This failing related to the problem that livestock owners rarely respected withdrawal periods for milking or culling;
- CAHWs were familiar with livestock handling and drug administration routes;
- CAHWs were aware of the need to clean and sterilize syringes and needles, and store medicines in cool, dark places;
- There was no notable difference between literate or illiterate CAHWs. Literate CAHWs were able to check expiry dates on drugs directly, whereas illiterate CAHWs commonly had an educated/literate relative or person within the community to assist them with this;
- There was a good correlation between refresher trainings undertaken and knowledge.

There were remarkably few exceptions to the above findings. One was a newly trained group of CAHWs in Shinile, Ethiopia, who had been trained by local government veterinary staff with inadequate training experience, through a translator, and without using local disease terminology. CAHWs were found to be treating animals with multiple drugs as they were unsure of which was the correct one for a given disease or clinical sign. All of these failings showed that the training had not followed the Ethiopian government's minimum standards and guidelines for CAHWs (MoARD, 2009a; 2009b).

A key finding was that the level of supervision, which can act as a form of refresher training, had dramatically fallen in areas where NGOs had either ceased working or handed supervision over to government veterinary services or private pharmacies. NGOs often had dedicated

staff supervising CAHWs. Private pharmacies observed by the evaluation team sold drugs but rarely had the capacity to supervise or visit CAHWs. CAHWs reported the only time they were visited by government staff was during a vaccination and treatment campaign. Commonly the government staff visiting remote areas would be an Animal Health Assistant (AHA) rather than a veterinarian. This lack of supervision appeared to be contributing to a gradual erosion of CAHW technical knowledge.

4.2 Impact of CAHWs on diseases and livelihoods

Table 4.1 shows the main livestock health problems reported in the six evaluation sites and is based on translations of disease names from local languages (Dinka, Turkana, Maasai, Somali, and Oromiffa).¹¹

CAHWs handled a wide range of livestock health problems across the six evaluation sites, but with variations in the problems covered. An assessment of livelihoods impacts on a disease-by-disease basis was not feasible given the complexity of the impacts from different diseases, and uncertainties over the level of impact that can be expected from some treatments. Overall disease impacts included:

- Livestock mortality—either acute deaths due to diseases such as anthrax or blackleg, or deaths after chronic disease such as trypanosomiasis;
- Production losses—milk losses are particularly important in pastoralist herds with immediate food security implications, especially for children and if disease occurs at times of year when children are particularly dependent on milk. Poor growth and body condition reduces the sale value of livestock;
- Herd growth—is affected by mortality, and diseases that reduce fertility or milk supply to offspring; herd growth is the key strategy for building financial assets in pastoralist herds;
- Social transfers—gifts and loans of livestock, and sharing of products such as milk, are critical in pastoralist communities; traditional social support systems depend on livestock transfers to poorer households, and marriage involves bride wealth payments in livestock.

With these issues in mind, the method for measuring the livelihoods impact of diseases used a generic impact indicator, intended to encompass all of the major impacts of a disease. The method also included a comparison of disease impacts over time for diseases handled by CAHWs and diseases not handled by CAHWs.

¹⁰ The term "apparent technical competence" is used as it was not possible in the time available to see CAHWs working. The assessment of was based on the opinion of the interviewer following questioning of the CAHW and inspection of equipment. All the interviewers were vets with significant clinical experience.

¹¹ The evaluation team included field veterinarians with long experience of indigenous knowledge and local disease terms in the project areas.

Table 4.1
Livestock diseases handled and not handled by CAHWs

Livestock species	Disease/problem	Kenya		Ethiopia		South Sudan	
		Turkana	Kajiado	Shinile	Yabello	Bor	Aweil
Cattle	Rinderpest						
	FMD						
	LSD						
	Ephemeral fever						
	MCF						
	Rabies						
	Anthrax						
	Blackleg; blackquarter						
	Pasteurellosis						
	CBPP						
	Brucellosis						
	Botulism						
	Trypanosomosis						
	East Coast Fever						
	Babesiosis						
	Fasciolosis						
	Helminthosis						
	Mange						
	Tick infestation						
	Lice infestation						
	Bloat						
	Mastitis						
	Horn cancer						
Sheep, goats	Sheep and goat pox						
	Orf						
	Nairobi sheep disease						
	PPR						
	CCPP						
	Pasteurellosis						
	Heartwater						
	Helminthosis						
	Mange						
	Tick infestation						
	Lice or flea infestation						
Camels	Camel pox						
	Pasteurellosis						
	Anthrax						
	Lymphadenitis						
	Non-specific coughing						
	Non-specific diarrhea						
	Trypanosomosis						
	Helminthosis						
	Mange						
	Tick infestation						
	Twisted neck syndrome						
	Paralysis						

Handled by CAHWs



Not handled by CAHWs



Not mentioned



Figure 4.9
Changing livelihoods impact of cattle diseases

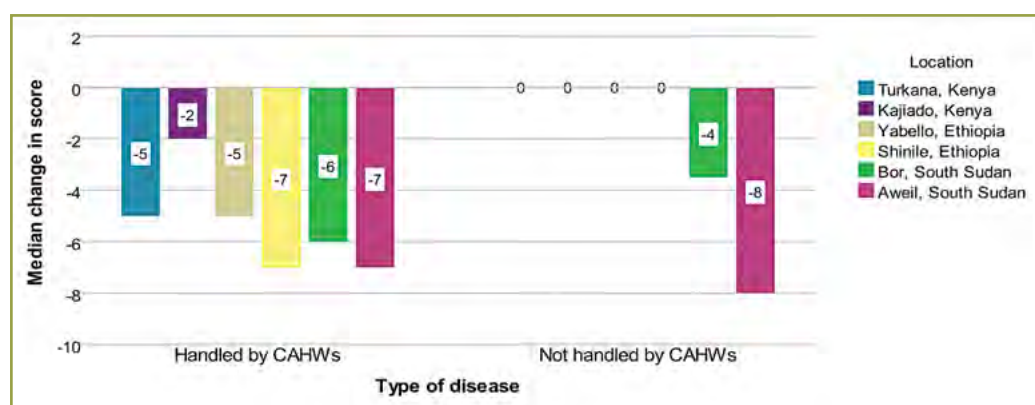


Figure 4.10
Changing livelihoods impact of sheep and goat diseases

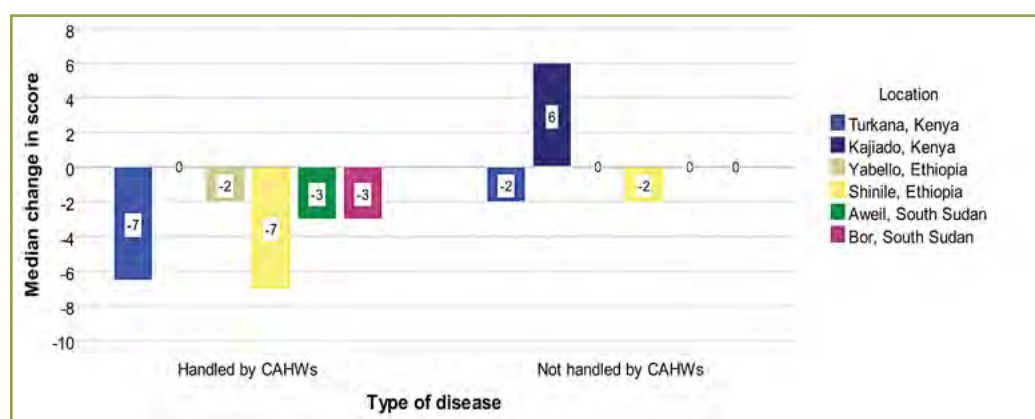
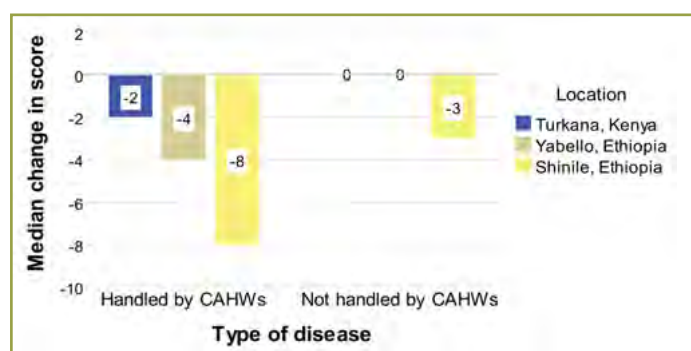


Figure 4.11
Changing livelihoods impact of camel diseases



A total of 810 disease impact scores were collected from the six evaluation sites, and results are summarized in Figures 4.9 to 4.11. The general pattern was that for diseases handled by CAHWs, there was a more marked reduction in livelihoods impact compared to diseases not handled by CAHWs. Across the evaluation sites, the livelihoods impacts of cattle diseases ($p < 0.001$), sheep and goat diseases ($p < 0.001$), and camel diseases ($p < 0.001$) were all significantly reduced for diseases handled by CAHWs compared with disease not handled by CAHWs.¹² In general, these results agreed with the results of matrix scoring of AHSPs, where CAHWs in the three countries received high scores for recovery levels for treated livestock (Figure 4.7).

4.3 Public good functions of CAHWs

Relative to the clinical activities of CAHWs described above, overall the CAHWs in all three countries were less involved in public good activities

such as disease surveillance or control of zoonoses. A general finding was that unless CAHWs are remunerated for these activities or receive other incentives, then levels of work will be low. This finding should be viewed against a broader context in which government funding to veterinary services is very constrained in Kenya, Ethiopia, and South Sudan.

4.3.1 Public health issues: drugs and human health

The evaluation found that training of CAHWs in public health issues was variable, and depended on the issue in question. For example, most CAHW trainings covered milk and meat withdrawal periods for veterinary drugs, and this has public health implications, as does correct disease diagnosis and drug administration. As already noted, although CAHWs are trained on topics such as withdrawal periods and can advise livestock keepers accordingly, it falls to the livestock keeper to adhere to this advice or not. It was beyond the scope of the evaluation to assess local behaviors on these and similar issues, although it seemed that CAHWs did

¹² The Mann Whitney test was used to compare scores of diseases handled and not handled by CAHWs.

not usually offer advice on withdrawal periods because the advice was unlikely to be followed.

Some CAHWs have been trained to carry out simple human treatments¹³ but the practice seemed not to continue beyond the project end date. Most links to human health have been through extension services. CAHWs in South Sudan were briefly utilized in guinea worm disease control by carrying extension messages and prevention tools¹⁴ to remote areas (Catley et al., 1998). The evaluation team could find no recent links between provision of community human health and CAHWs.

4.3.2 CAHWs and zoonoses control

Table 4.1 shows that while various zoonoses were reported in the evaluation sites, only anthrax was consistently handled by CAHWs. Other zoonoses such as mange, and lice or flea problems were also handled in some locations. For anthrax, CAHWs could be involved in vaccination programs, or advise on the safe disposal of carcasses.

4.3.3 CAHWs and disease surveillance

None of the three countries covered by the evaluation had formal disease reporting mechanisms using CAHWs. Despite this, there were notable similarities across the three countries in how CAHWs were viewed by government in terms of disease surveillance tasks. In general, governments felt that CAHWs should report disease outbreaks on behalf of their community, and in all areas visited, county- or district-level government veterinary staff had lists of trained CAHWs. In Kenya, some county veterinary staff had renamed CAHWs “community disease reporters” and expected them to provide written disease reports; for this reason, only literate CAHWs were recognized. In Turkana County, where NGOs were funding disease surveillance, literate CAHWs were provided with mobile phones and some air time to report diseases to the county veterinary authorities.

However, little credible disease surveillance using CAHWs was observed in any of the six evaluation sites. A key weakness seemed to be the limited or delayed government response to reports of disease outbreaks and therefore, limited incentives for CAHWs to report diseases. Other weaknesses included incomplete lists of trained CAHWs, and some CAHWs had never been issued with training certificates.

CAHWs reported that they frequently move with transhumant herds, and they appeared willing to cooperate with animal health surveillance and control across large and remote areas. The evaluation team noted that CAHWs were present in border areas and in areas of insecurity, where conventional service providers are normally highly restricted.

4.3.4 CAHWs and vaccination programs

There is ample evidence of CAHW effectiveness in vaccination campaigns, especially during rinderpest eradication where CAHWs achieved high coverage and immunity rates (Box 3.2); CAHWs received special acknowledgement for their role in AU/IBAR’s account of the eradication of rinderpest from Africa (AU/IBAR 2011).

These campaigns have historically relied upon extra-budgetary funds. PARC cost approximately US\$106 million, and of this amount US\$76 million was provided by donors (AU/IBAR, 2011). The last rinderpest vaccinations in East Africa were in 1998. Outside of such campaigns, government veterinary services rely heavily on recurrent budgets, and these are rarely sufficient to carry out widespread or effective vaccination. A further consideration is that in economic terms, not all livestock diseases that are preventable using vaccination are public goods. Despite this, governments continue to control the vaccination of most if not all diseases, even when some of the diseases in question are private goods. This behavior has implications for private sector development and CAHW activities and sustainability.

In all field sites visited by the evaluation team, vaccination was found to be irregular and incomplete due to shortage of government funds and vaccine supply. Where vaccination was occurring on a more regular basis, it was due to funding support from NGOs (Turkana) or FAO (Ethiopia). Effective vaccination had largely ceased in South Sudan due to logistical and budgetary constraints.

In all areas visited, CAHWs were continuing to be used as assistants for vaccination through mobilization of livestock owners, handling livestock, and actual vaccination. In Kenya, government veterinarians explained that the 2011 VSVP Act does not allow a person with less than two years of training to do animal health work (unless they own the animal being treated), and therefore CAHWs only held the animals for vaccination. However, the CAHWs advised that they (unofficially) continue to do vaccinations.

In all areas, CAHWs were paid a small daily stipend for supporting vaccination. In some areas, such as Turkana and South Sudan, this was virtually their only income, as they no longer sold veterinary drugs. In South Sudan, despite the existence of an official vaccination calendar, vaccination was erratic and amounts of vaccine sent to the county level were grossly inadequate when compared to need. As a result, CAHWs’ income from vaccination work was almost negligible.

4.4 Sustainability of CAHWs

4.4.1 CAHW income

It was assumed that the sustainability of CAHWs related to the levels of income received from their animal health work, and these ranged from 0% to 34% of total income (Table 4.2).

Table 4.2
Sources of income from CAHWs in 2013

Country/area	CAHW work	Livestock rearing	Cropping	Cash from work	Business	Bush meat	Fishing	Remittances
Kenya								
Turkana	23%	55%	7.5%	—	11%	3%	—	—
Kajiado	4%	61%	0%	—	35%	—	—	—
S. Sudan								
Bor	34%	19%	19%	20%	1%	—	1%	6%
Aweil	25%	7%	39%	0%	11%	—	4%	2%
Ethiopia								
Somali	22%	36%	26%	0%	—	—	—	—
Borana	0%	61%	25%	19%	—	—	—	—

¹³ The Wajir South Development Association in the mid-1990s as cited by Riviere-Cinnamond and Eregae 2003.

¹⁴ Simple filtered drinking straws and filter clothes for straining copepods (small crustaceans), which act as secondary hosts for the guinea worm larvae, from drinking water.

CAHW income varied widely within and between locations:

- **Ethiopia**—In Shinile, CAHWs were making some income, but in Yabello, they reported making no income, as they no longer had any drugs to sell, and, despite assisting with government vaccination work, they had not been paid. These CAHWs did not know if they would ever be paid;
- **Kenya**—Turkana had higher levels of NGO activity than Kajiado due to recent drought responses in Turkana. CAHWs in Turkana appeared to be better off in terms of income derived from CAHW work. Over 50% of Kajiado CAHWs had no income and were not linked to the government or any private pharmacies. One Turkana CAHW was getting 50% of his income but travelling long distances to buy and then sell drugs;
- **Sudan**—CAHWs in Bor were relatively better off because there was an ongoing ECF outbreak creating high demand for their services. In Bahr el Ghazal, some CAHWs had no drugs and relied on occasional vaccination pay, whereas others were very entrepreneurial, travelling to the state capital to resupply themselves with drugs. One female CAHW in Bahr el Ghazal was making over 80% of her income from drugs sales and would soon open her own small pharmacy.

Most CAHWs reported that their income from animal health work reduced once facilitating NGOs withdrew from the initiative. This was particularly acute in South Sudan. NGOs handed responsibility for animal health service delivery to the government following the comprehensive peace agreement in 2005, and many CAHWs believed they would be employed by government. The 2006 livestock policy of the new government confirmed that CAHWs should work in the private sector. However, due to conflict, lack of infrastructure, and excessive taxation of transit goods, private pharmacies have been slow to establish in South Sudan. Consequently, an estimated 70% of the 4,000 CAHWs trained up to 2005 have found alternative work, primarily in the army. The remaining 1,000 CAHWs struggled to access drugs from the few pharmacies available in major towns. They occasionally get daily work when the government carries out vaccination or emergency drug distributions.

Where CAHWs are regularly restocking themselves from private pharmacies, they did generally manage to negotiate preferential prices from the pharmacies. All the OFDA-funded NGOs were facilitating linkages between CAHWs and pharmacies.

4.4.2 Constraints reported by CAHWs

All CAHWs confirmed that they value the knowledge they have gained and use this to treat their own livestock and provide advice to neighbors. Indeed, one key benefit of being a CAHW was the respect gained from the community, but in areas where CAHWs no longer had drugs, this recognition was reducing. Major constraints common to CAHWs in the three countries included:

- **Lack of an adequate drug and equipment supply**
Reduced income driving CAHWs to look for alternative sources of income.
CAHWs losing respect when the community comes to them for help but they have no drugs;
- **Reduced income from government vaccination and treatment campaigns**
Government vaccination campaigns were becoming increasing infrequent unless NGOs or FAO were providing support.
In areas where vaccines were in short supply and cost recovery was involved, government staff were avoiding using CAHWs to maximize their own income;
- **Vast areas to cover and lack of transport, restricting access**
Most CAHWs move by foot and range 20–30 km.
Many complained there were not enough CAHWs;
- **Limited business skills and losing capital**
Many communities still expect CAHW services to be subsidized or free.

Difficulty in denying loans or payment in kind;

- **Insecurity**
Veterinary drugs are small, high-value items and are stolen;
- **Minimal supervision and infrequent refresher training**
In the absence of private vets and NGOs, government veterinary staff provide supervision. This appears to be weakening, and refresher training is rare unless an NGO facilitates the cost of it;
- **There is no diagnostic back-up or referral service.**

When asked what opportunities CAHWs saw for the future, the common responses included either government employment or access to soft loans plus technical and business training to allow the CAHW to either get more drugs or establish their own drug stores.

4.4.3 CAHW linkages with drug suppliers

It has long been recognized that the most practical and legally acceptable model of private veterinary practice in pastoralist areas is an urban-based pharmacy managed or staffed by a veterinary professional or para-professional who supports a network of CAHWs (Catley et al., 2002b; AU/IBAR, 2003b). This model takes account of two key factors:

- Business viability in remote dryland areas requires a high volume of drug turnover and, if possible, contract vaccination and disease surveillance work from government;
- OIE guidelines state that veterinary para-professionals, including CAHWs, should only work under the supervision of veterinarians.

The evaluation found CAHWs working in four types of business model:

- i. The independent CAHW model, where CAHWs buy veterinary drugs from wherever they can;
- ii. The association model, where CAHWs are organized into associations or cooperatives to manage a pharmacy;
- iii. The AHA model, where CAHWs purchase drugs from licensed private pharmacies managed by an AHA or equivalent;
- iv. The Private Pastoral Veterinary Practice (PPVP) model, where CAHWs and AHAs are linked to a pharmacy owned by a veterinarian who provides drugs and supervision.

The independent CAHW model was most common, but while also noting that most CAHWs supplemented their drug sales with other income sources (see Table 4.2). In theory, many of the CAHWs operating in this way worked under the supervision of a government veterinarian. In practice, this supervision did not amount to any substantive interaction or support, although CAHWs may be called to assist with vaccination campaigns from time to time. Unless CAHW supervision and support mechanisms are defined and executed, this model does not meet OIE standards. None of the three countries examined had defined supervision and support for CAHWs, although Ethiopia had government minimum standards and guidelines for CAHW training, and, in Somali Region, a well-established government desk for CAHW coordination. Kenya now has defined working relationships between veterinary professionals through the publication of regulations accompanying the 2011 VSP Act. However, these same regulations do not recognize CAHWs.

The association or cooperative model was also seen in all three countries, but in nearly all of the cases examined, they had commercially failed or were failing. This does not mean they had not met other objectives, such as providing a forum for community and individual development.

The evaluation found numerous examples of AHAs managing private pharmacies in all three countries, and Okwiri et al. (2001) had predicted, over 10 years ago, that this model would likely to be the most viable. Most OFDA-funded NGOs were linking the private pharmacies managed by animal health professionals with CAHWs. Where possible, these NGOs were also supporting the pharmacy owners with training and introductions to wholesalers. As noted in section 3, private veterinary

pharmacies in the Somali Region of Ethiopia grew from 1 pharmacy in 1996, to 37 pharmacies in 2013 (Catley et al., 2014a).

Seventeen pharmacies were visited during the field work. For nearly all pharmacies, links to CAHWs were confined to sales of drugs rather than any technical oversight and supervision. For pharmacies with no links to NGOs, CAHWs were commonly given discounted prices as regular customers rather than because they had trained as CAHWs. There appeared to be almost no supervision of the owners of these pharmacies by the local or national veterinary authorities, bar the granting of commercial licenses.

Two examples of the private pastoral veterinary practice model were seen during the evaluation. Both appeared financially sustainable and technically successful. One, the Pastoral Veterinary Services (PAVES) was established with NGO support in 2001, in Kapenguria, Kenya (Ririmpoi, 2002). In 2009, the PAVES veterinarian supplied drugs to six AHTs, who in turn supplied CAHWs living in dryland areas. The business had diversified into agro-chemicals and household goods to take account of seasonal demand. The county veterinary authorities had used the business for vaccination campaigns and disease surveillance (Ngeiywa and Masake, 2009). This model, whilst successful in relatively secure and slightly higher-potential dryland areas, has yet to be replicated in more remote, marginalized, and insecure dryland areas (Bekele and Akumu, 2009).

4.4.4 Pharmacy constraints

Common key constraints listed by the pharmacies included:

- Supply logistics in an environment of high transportation costs, insecurity and theft, border and district check points, inadequate currency exchange mechanisms, and long delivery times;
- Managing seasonal demand for veterinary drugs—all pharmacies mentioned this as a key challenge, with highest demand being in the rainy season. Careful stock management was required to avoid drugs expiring at the end of the season;
- Lack of credit facilities for major purchases;
- Competition from subsidized drugs sold by government clinics and staff or brought to the areas for emergency response campaigns;
- Livestock owners complaining about high prices, not taking advice and subsequently underdosing their stock;
- No clear regulations on licensing or supervision by government veterinary authorities. This only applied to pharmacies managed by veterinary professionals.

4.4.5 CAHWs and emergencies

Significant progress has been made by the humanitarian community in ensuring livestock-related livelihoods are protected before, during, and post emergencies. The livestock sector appears to have taken up best practices advocated by LEGS. Since its publication in 2009, significant training of trainers and practitioners has taken place. The evaluation found a range of livestock emergency responses were being used, from emergency offtake to feeding breeding stock and restocking. CAHWs' involvement in these initiatives included:

- Reporting the severity of the emergency, e.g., drought or flood;
- Community mobilization;
- Assisting the selection of small ruminants for restocking;
- Animal health provision to restocked households (including poultry);
- Meat inspection for slaughter destocking and feeding initiatives (CAHW had also been used for testing milk quality for a feeding program in northern Bahr el Ghazal);
- Participating in emergency vaccination and treatment campaigns;
- Provision of extension messages at market days;
- Providing drugs and services within voucher schemes.

OFDA-funded NGOs were all cognizant of the need to build

sustainable animal health delivery systems that could continue to operate during emergencies, particularly droughts. All had attempted to link CAHWs with private drug supply systems. Tensions were noted in areas where NGOs had directly supported government to carry out emergency vaccination and treatment campaigns, particularly when free or subsidized drugs undermined the private sector, or the government vaccination teams did not involve CAHWs in the campaigns.

In the Somali Region of Ethiopia, NGOs and FAO have used emergency supplies of veterinary medicines as credit or "kickstarts" for private pharmacies, and this support was an important part of the overall move towards privatization of clinical veterinary services in the region. It showed how some humanitarian funds were used within an overall development framework of privatization, in line with regional government policy. A review in 2013 indicated that approximately 48% of pharmacy drug sales were to CAHWs, but with a very wide range from 3% to 90% of sales to CAHWs, depending on the particular pharmacy (Catley et al., 2014a).

Further afield, the question of how to ensure sustainability in the face of serious drought remains a significant challenge. Private pharmacies visited during the evaluation complained about emergency veterinary responses continuing to undermine their business viability through free or subsidized drugs and services. The humanitarian community is beginning to address this, e.g., FAO in Addis Ababa announced, in 2011, that they would stop distributing free vaccine and drugs during future emergency responses. Most OFDA-funded NGOs do refrain from doing this.

The evaluation noted interesting outcomes following the 2011 drought that affected NE Kenya and Somalia, as nearly all of the private pharmacies that had been supported by NGOs were reported to be put out of business. Most livestock moved from the areas to escape the drought and left these pharmacies with no business. The positive impact of some of these pharmacies, linked to CAHWs, had been noted by Bekele and Akumu (2009) just a year before the drought. They had recommended a voucher scheme be put in place well in advance of any drought, but this appears not to have been done.

Some NGOs are now building substantial experience with veterinary voucher schemes, especially in Ethiopia. Clearly, these schemes can support small private pharmacies in times of drought in pastoralist areas. Some of the modalities of veterinary voucher schemes have been described (FAO, 2011a; Regassa, 2010), but significant knowledge gaps remain. The basic model is one of distributing vouchers to the community-selected beneficiaries. These vouchers can then be traded for CAHW drugs and services. The CAHWs get reimbursed by a private pharmacy in the form of drugs. The incentive for the CAHW is the additional drugs s/he is restocked with. The facilitating NGO nearly always works at the pharmacy level, reimbursing vouchers for cash. The incentive levels for CAHWs vary between NGOs, but appeared to be around 20–30% in the more successful schemes. Key challenges that need to be addressed include:

- The large organization workload to get a voucher scheme operational (this may include training/refresher training CAHWs and training private pharmacies on the technical backstopping for CAHWs);
- Working out the value of the voucher, which drugs/treatments might be used, where it might be used, and for how long;
- Managing migration, as livestock may move far away due to the emergency;
- CAHWs not having sufficient initial drug stocks and local pharmacies not having sufficient capital to loan drugs to the CAHWs on a large scale;
- When to end the voucher scheme;
- Deciding whether to issue vouchers for complementary services and products such as animal feed and water.

The evaluation was advised that communities that have experienced voucher-based animal health relief thought these schemes were better than blanket coverage through mass vaccination and treatment

campaigns. For example, campaigns often favor the better-off pastoralists, who have access to more labor and can take advantage of the presence of vaccination teams. In contrast, voucher schemes are local, targeted, and flexible, and this helps female-headed households, the disabled, and the poor.

4.4.6 Supervision and training

Effective training and supervision of CAHWs are fundamental requirements of successful CAHWs projects (Iles, 2002). Standard CAHW curricula and training guidelines were formulated in all three countries in the early 2000s. The curricula have government endorsement and recognition in Ethiopia and South Sudan. The Kenyan curriculum, although produced by the KVB, was never officially endorsed for use. Despite this, it has been used by many NGOs and government staff to train CAHWs up to 2011. There are few guidelines for refresher training, as these are normally tailored to needs and experience of the CAHWs. The evaluation found that OFDA-funded NGOs had been using recognized CAHW trainers and training curricula relevant to the country. Knowing who a recognized trainer was had challenges. Certification of the trainers of CAHW trainers by government in Ethiopia and South Sudan was weak, and not evident at all in Kenya. With no institutional memory, it was relatively easy for organizations to use untrained trainers for CAHW training and refresher training. The evaluation found one example of this in Ethiopia that resulted in CAHWs with poor technical skills (Annex 5). The problem becomes more acute when government takes responsibility for the supervision of CAHWs and does not necessarily have the resources or expertise to continue their training.

A common complaint from CAHWs working under government supervision was that they did not receive sufficient supervision or ongoing training. None of the countries visited had regulations stipulating the level of supervision and continuing professional development required for CAHWs. Defined training and supervision is a requirement according to OIE standards for quality national veterinary services. Several of the CAHWs interviewed during the evaluation stated they have never been issued any training certificates.

4.4.7 Policy and institutional issues

Overall, the evaluation found that Ethiopia and South Sudan had installed pro-CAHW policies, but both were struggling to implement this policy due to weak institutions. For example, neither country has an autonomous statutory body to govern the veterinary profession, as recommended by the OIE. Statutory bodies are essential because they define the roles and responsibilities of various cadres of the animal health profession and enforce accompanying regulations (Economides, 2007).

Despite pro-CAHW policies in Ethiopia and South Sudan, both countries appeared to be quite reliant upon NGOs and FAO to ensure CAHWs are trained and supported. NGOs are increasingly channeling this support directly through state or regional veterinary authorities. Ethiopia has inevitably achieved more than the new government in South Sudan in terms of enabling CAHWs, particularly at regional government level, and has also done so via the Ethiopian Veterinary Association (EVA), a strong national-level body supportive of veterinary-supervised CAHWs.

In contrast, Kenya has experienced a turbulent policy process, resulting in anti-CAHW policies. Although bodies such as the KVB are potentially strong, their position on CAHWs has been inconsistent, and the aspects of legislative reform dealing with para-professionals were mishandled. The KVB is in a position to implement parts of the 2011 Veterinary Surgeons and Veterinary Para-professionals (VSPV) Act and its regulations. However, the policy process appears far from over in Kenya, as the recently promulgated constitution has given significant power to county authorities, who may well challenge current policies and legislation.

4.4.7.1 South Sudan

The policy on CAHWs in South Sudan was established through the first MARF Policy Framework in 2006. Subsequent policy frameworks have continued to endorse CAHWs as a legitimate and valued AHSP. It has

never been national or state-level MARF policy to employ CAHWs. They should primarily work from within the private sector but are requested to work during government vaccination campaigns, when they are paid a proportion of any cost-recovery fees. However, at the end of the war in early 2005, CAHWs had expected to be employed, and when this did not happen, an estimated 70% of them found alternative work.

The privatization of veterinary services has been very slow in South Sudan. MARF's initial policy of purchasing drugs and distributing them to government veterinary staff did not encourage private investment in pharmacies, although routine government drug procurement ended in 2010. Currently, MARF only purchases emergency drugs and retains the authority to purchase and distribute all vaccines. MARF justifies this control as a quality control mechanism. MARF has developed a national vaccination calendar but vaccine stocks rarely meet requirements.

South Sudan has a standardized CAHW training curriculum, but levels of supervision required for CAHWs remains undefined. A Veterinary Act was drafted in 2011 but has yet to be passed by parliament. Until that happens, South Sudan will remain without a statutory body to regulate veterinary service delivery. Even with a statutory body, it will likely take many years for regulatory authorities and systems to be established. This includes the registration and control of veterinary drugs. South Sudan veterinary services currently appear to be unable to meet their basic commitments to CAHW supervision or vaccination services due to budget, staff, and transport deficits. There is currently no detailed strategy for the privatization of veterinary services or support to primary animal health care. Whilst state governments have their own agriculture and livestock strategic plans, there seems to be no state-level veterinary legislation. The current civil conflict in South Sudan will further discourage investment and the establishment of private pharmacies.

4.4.7.2 Ethiopia

Ethiopian veterinary services have been involved in CAHW initiatives since the mid-1970s. The effectiveness of CAHWs in the Afar Region (Admassu, 2003) in the early 1990s influenced the development of CAHW projects across the region. The training of key policy makers in participatory impact assessment and then exposing them to CAHW projects in 2001 (Admassu et al., 2005) appears to have been a key policy milestone. In 2002, the Animal Disease Prevention and Control Proclamation (267/2002) officially recognized CAHWs as a cadre of veterinary service provider. Concurrently, a privatization and community-based animal health unit was established within the Department of Veterinary Services. This unit not only trained CAHWs directly but also developed national minimum standards and guidelines for CAHW projects. This standard was upgraded in 2009, with the addition of training guides for CAHW trainers and trainers of trainers. Regional veterinary authorities have also been supportive of CAHWs, e.g., a CAH unit was established within the veterinary department of the Somali Regional government in 2004. To improve the licensing and regulation of veterinary medicines, a federal-level veterinary feed and drug authority has been established that is distinct from the human drug administration and control agency.

Unfortunately, the development of the institutions supportive of CAHWs and enabling privatization of veterinary services in Ethiopia remains slow and uneven. The privatization and community-based animal health unit was closed when the Ministry of Agriculture was restructured and became a State Ministry, and the establishment of a veterinary statutory body (mentioned in proclamation 267/2002) has not happened. The roles of the public and private sectors in animal health services remain largely undefined, and the government continues to construct new veterinary clinics and animal health posts, while also allowing private pharmacies. A 2012 review estimated that government veterinary services continue to satisfy some 30% of the demand for veterinary drugs and clinical services through the establishment and maintenance of veterinary clinics and animal health posts in rural areas nationally (MoA/EU, 2013); the Ministry of Agriculture estimates that drugs sold through these outlets have a 45% subsidy. In contrast, in the mainly pastoralist Somali Region of Ethiopia, it was estimated that private pharmacies now deliver more than 85% of veterinary drugs to the region, or more than

seven times the value of drugs provided by government. In absolute terms, the drugs delivered by private pharmacies were valued at US\$3.1 million in 2012 (Catley et al., 2014a).

The veterinary drug control authority has yet to have an impact. The evaluation found that most private veterinary pharmacies remain unlicensed, and there are concerns that the quality of veterinary drugs is declining. This was difficult to verify, although informants frequently mentioned the increasing importation of Chinese drugs and the problem that regional governments were obliged, procedurally, to always select the cheapest quotation from suppliers. Some informants cited a survey of veterinary medicines in 2010 showing that 50% were substandard, but the survey report had not been released and no action has yet been taken to address this problem (Pers. Comm., 2013). The MoA is currently formulating a road map for the privatization of veterinary services, and it is hoped that new proclamations for the establishment of a statutory body, an Ethiopian Veterinary Council, will be approved by parliament in 2014.

4.4.7.3 Kenya

Up to 2011, Kenya had no clear position on the use of CAHWs. NGOs scaled up the use of CAHWs in underserved areas throughout the 1990s, facilitated by a somewhat laissez-faire attitude by the DVS. In 1998, Kenya's statutory body, the KVB, published an article in national newspapers reminding veterinarians that CAHWs were illegal and threatened disciplinary action against those who trained them. This article sparked a round of national animal health policy workshops that resulted in two key events. First, the KVB produced a standardized training curriculum and guidelines for CAHWs, to be used by the DVS and NGOs in selected districts on the basis of signed memoranda (Young et al., 2003). Second, the Kenya Association of Livestock Technicians (KALT) realized that they were unrecognized in the existing legislation governing the veterinary profession, and so decided to form their own Livestock Technicians Council (separate from the KVB) through an act of parliament. There followed several years of policy discussion and legal disputes that reached the highest levels of government.

Feeling threatened by growing number of CAHWs, the Kenya Veterinary Association (KVA) refused to allow the KVB CAHW curriculum to be endorsed. However, recognizing the business case for using CAHWs

to establish private pastoralist veterinary practices, the KVA Privatization Scheme (KVAPS) argued in favor of CAHWs (Karani et al., 2009). KALT, which was also in favor of CAHWs, succeeded in forming its own council through the Livestock Technicians (KALT) Bill 2009. However, the KALT bill was trumped, when references to animal health care were removed from it and the VSVP Act was passed in 2011. This act was not without controversy, and KALT petitioned the high court to have wording on the employment of para-professionals within the bill changed. This was eventually changed by mutual agreement.

The VSVP Act restricts the provision of animal health care in Kenya to people with at least two years of training, and gives significant powers to the KVB to enforce regulations. In 2011, the KVB allowed existing CAHWs to continue working but stated that no further CAHWs could be trained. Under new regulations, which were gazetted in March 2013, the KVB is allowed to raise substantial revenue from its membership and from licensing of veterinary training institutions. It is now in a position to regulate private pharmacies, veterinary clinics, and training establishments, and two inspectors have been employed.

Key informants generally agreed that the new VSVP Act and its institutions are appropriate for private veterinary services in Kenya's high-potential farming areas. However, major doubts were raised by senior legislators and administrators from Kenyan counties with large pastoralist populations about the suitability of the new act for underserved and remote areas. Under Kenya's new constitution, new county administrations are responsible for animal health service delivery, whilst the national government is responsible for regulating the veterinary profession. The modalities of this new arrangement are still being debated. If a compromise cannot be reached, the new constitutional allows at least three ways for the VSVP Act to be amended.

All the above issues were debated at length during the evaluation workshop convened in Nairobi. The KVB is proposing to use veterinary interns to provide services in dryland areas as a way of boosting the number of professionals working in these areas. Unfortunately, their plans are currently unfunded and, with continued government cuts to the agriculture budget, seem unlikely to be funded. Following the Nairobi workshop, there appears to be some recognition within the KVB that special conditions may need to be applied in dryland areas to ensure adequate veterinary service provision.

5. Discussion and Conclusions

5.1 Evaluation design, interpretation of findings, and limitations

The evaluation design included a comprehensive literature review and interviews with many key informants involved in CAHW systems or veterinary services more generally in South Sudan, Kenya, and Ethiopia (Annex 2). However, at field level, the evaluation worked in only six project areas and focused only on OFDA-funded projects. Therefore, it is difficult to extrapolate the findings from the field assessments to a wider area, or more generally to all OFDA-funded CAHW projects. The evaluation did not conduct field-level assessments in other countries in the region, such as Eritrea, Somalia, or Sudan, where a wider range of experiences with CAHW projects may be available. Also, the evaluation did not measure the impact of OFDA-funded work in a particular area relative to CAHW activities funded by other donors.

Given the qualitative evaluation design, validation partly depends on the extent to which the evaluation findings agree or disagree with other information and studies. The following sections include reference to this secondary information from the three countries, as well as more general discussion.

5.2 OFDA Evaluation Question 1: Have CAHWs improved animal health and husbandry?

5.2.1 The technical basis for CAHW systems in pastoralist areas

Pastoralists in East Africa often have limited or no formal education, and, compared to national education coverage, pastoralist areas consistently have very low education services and attainment. How then, could pastoralists be trained as CAHWs to improve basic veterinary care? The answer lies in the indigenous knowledge of African pastoralist communities and their detailed understanding of the clinical signs of disease, postmortem lesions, age-specific morbidity and mortality by disease, seasonality of disease occurrence, and the role of disease vectors such as ticks and biting flies. This knowledge was documented in the region in the colonial period (e.g., Hunt, 1951; Mares, 1954) and later was further documented by veterinarians working in South Sudan (Schwabe and Kuojok, 1981), Somaliland (e.g., Edelman, 1994), and other countries.

In the 1980s, participatory, community-based approaches to rural development started to emerge, and central to participatory rural appraisal and "bottom up" development was the principle that rural people were knowledgeable, conducted their own trials, and were innovators (Chambers, 1983). Many of the first NGOs to support CAHW-

type approaches applied this thinking to pastoralist areas, and “ethnoveterinary knowledge” (e.g., McCorkle et al., 1996) became critical to the overall concept of CAHW systems and good-practice approaches for training them (e.g., Iles, 2002). In summary, using adult-learning techniques that recognize the existing knowledge of trainees, it was shown that very rapid training could be used to consolidate diagnostic skills and teach people how to use selected veterinary medicines correctly—even when the trainees were illiterate. Over time, epidemiological studies helped to show that the indigenous animal health knowledge of pastoralists had scientific credibility, and in terms of clinical diagnosis, pastoralists compared favorably to veterinarians and in some cases, outperformed them (e.g., Catley, 2006). The scientific literature now includes epidemiological studies with a wide range of pastoralist ethnic groups across the region.

5.2.2 Impacts on animal health

Prior to the evaluation, numerous reviews, impact assessments, and studies had shown how CAHWs had improved animal health in different parts of the region. The impacts of CAHWs on rinderpest eradication in Ethiopia and South Sudan are well documented and verified (see Box 3.2), and various evaluations and studies have reported the positive impacts of CAHWs in terms of reduced mortality or other impacts in Kenya (e.g., Holden, 1997; Odhiambo et al., 1998; IDL Group and McCorkle, 2002; Peeling and Holden, 2004; Bekele and Akumu, 2009), South Sudan (e.g., Blakeway, 1997; Catley, 1999b), and Ethiopia (e.g., Fox et al., 2003; ACF, 2003; Tadele, 2004; Abebe, 2005; Admassu et al., 2005; Acacia Consultants, 2006). These reports used either interviews with livestock keepers or systematic participatory methods to assess impacts on disease, but probably the most convincing was a comparison of disease-specific case fatality rates in herds treated by CAHWs compared with herds where untrained herders treated their animals (Bekele and Akumu, 2009):

For those diseases for which a curative treatment strategy was used by CAHWs, case fatality rates in CAHW-treated herds were significantly lower than owner-treated herds (at the 95% confidence level) for 9 out of 11 diseases assessed. In terms of clinical significance, fatality following CAHW treatments was lower for all 11 diseases. When viewed in combination with the quality of the drugs which CAHWs were sourcing from private pharmacies, this result showed that for the diseases in question, CAHW treatments had far better impact on livestock survival relative to treatments administered by untrained herders.

Our results are in agreement with these previous reports, as shown by comparing “recovery from disease” using different AHSPs (Figure 4.7). In general, there is considerable evidence that well-trained CAHWs who are supplied with good-quality medicines can prevent or treat livestock effectively. This finding fits with the theoretical basis for CAHW approaches in pastoralist areas, viz. that the strong indigenous livestock knowledge of pastoralists makes it relatively easy to train them in the use of veterinary medicines, if the right training methodologies are used.

In terms of improved animal husbandry, participatory assessments of the main livestock-related problems in pastoralist areas consistently show that disease, water, insecurity, and access to rangeland are the main constraints. Compared to other livestock production systems where husbandry problems can be important, pastoralists generally have strong husbandry and animal management knowledge and skills, and so CAHW training focuses on animal health rather than husbandry.

Most of the OFDA-funded projects we visited incorporated CAHW good practice into their design. It can therefore be assumed that the CAHWs in these projects have improved animal health and through this the livelihoods of the livestock owners and communities where they operate. The evaluation found one or two OFDA-funded projects that did not fully comply with good practice in the area of effective training, supervision, and linking CAHWs to sustainable drug supplies. These

shortfalls were to some extent associated with handing responsibility for implementation over to local veterinary authorities. Whilst such partnerships have been advocated as a way of supporting local government to take responsibility for animal health, it is important that NGOs remain fully aware of good-practice guidelines and influence veterinary authorities to take them up.

The assumed technical abilities of CAHWs as described in section 4.1.5.2 agreed with other numerous studies that show most CAHWs retained high levels of technical capacity (Mugunieri et al., 2004; Rubyogo et al., 2005a; Mravili et al., 2009; Asmare, 2010; EVA, 2010; FAO 2011b).

5.3 OFDA Evaluation Question 2: Have CAHWs improved access to animal health services?

Low accessibility of animal health services in pastoralist areas was one of the main factors that influenced the design of CAHW approaches in the late 1980s. These areas are characterized by relatively small human populations moving with large numbers of animals to remote grazing areas, and in a context of limited infrastructure and communications, and frequent insecurity. Typically, fixed-point services have not performed well in these areas due to problems such as high transaction costs and the low appeal of the drylands for veterinarians. By being located in communities and having capacity to travel with mobile herds, CAHWs were seen as a solution to the accessibility issue.

The findings presented in section 4.1.1 show that in the evaluation field sites, the accessibility of CAHWs was far better than that of government services, or private pharmacies (Figure 4.1). Traditional healers were also very accessible, being located in or close to communities. These findings are similar to many other studies and reviews of CAHW services in the region where accessibility was measured (e.g., Tadele, 2004; Abebe, 2005; Admassu et al., 2005; Asmare, 2010). However, the evaluation also highlighted some concerns. Critically, good accessibility per se does not equate to a better service, because an AHSP also needs to be available, affordable, acceptable, and deliver a good quality of service. A service provider needs to perform well across all five of these basic service indicators to be sustainable. Although CAHWs generally do perform well for each of these five indicators (Figures 4.2–4.8), at least relative to other AHSPs, it was also clear that the availability of CAHWs was declining in some areas:

- In South Sudan, it was reported that after the end of the civil war 70% of CAHWs sought employment with the new government and many joined the army (section 4.4.1). The state veterinary authorities and the fledgling private sector are still establishing themselves, and the privatization of services was delayed by conflict, severe logistical issues, and many years of subsidized drugs and vaccines. NGOs drug support was subsidized during the war years and by MARF up to 2009. OFDA-funded NGOs met by the evaluation team in South Sudan were very aware of the current need to link CAHWs to the private sector and were doing what they could in this area with the support of MARF;
- In Kenya, the 2011 VSP Act prevented the training of new CAHWs. The lack of clarity in the Act on the roles of existing CAHWs¹⁵ also led most NGOs to back away from supporting CAHWs. Up to 2011, there were some innovative NGO projects linking CAHWs to the private sector. This included establishing some private pastoralist veterinary practices that are still functioning. Kenya was also one of the first countries to use veterinary vouchers in drought response (Mutungi, 2005; Ngeiywa and Masake, 2009; Bekele and Akumu, 2009). Unfortunately, whilst the VSP Act is being enforced, government veterinary services continue to be cut back in pastoralist areas. For example, in areas such as Kajiado County, where there is very little NGO activity, CAHWs were

¹⁵ Regulations to accompany the VSP Act were not published as of March 2013.

essentially unsupervised and inadequately supplied. Most had become inactive, whilst the government does not have the resources to carry out adequate vaccination or disease surveillance. The situation was better in recently drought-affected areas such as Turkana, as NGOs were assisting the government to provide some vaccination services. Private pharmacies have multiplied in pastoralist areas, and some provide good-quality products with advice. However, the numerous small agro-vet stores are largely distrusted by the livestock owners;

- In Ethiopia, the situation was mixed. In the Somali Region, the regional government, NGOs, and FAO had supported CAHWs and private pharmacies since the mid-1990s, and a review in 2013 reported that around 48% of pharmacy sales were to CAHWs; here there were 37 private pharmacies and around 750 CAHWs; the main concern was drug quality (Catley et al., 2014b). In contrast, around Yabello, private pharmacies were far less well established, and average CAHW income from animal health work was zero. This was despite a long history of NGO CAHW projects in the area, long-term support to cooperatives with limited success (e.g., see Abebe, 2005), and relatively few pharmacies. In both regions, the situation was complicated by a government strategy of constructing more animal health posts, although with limited budgets for staffing or drugs. It seemed highly unlikely that government budgets would increase sufficiently to make these posts fully functional.

A general picture, therefore, is that in parts of Kenya and Ethiopia, and much of South Sudan, CAHWs services are in decline due to governance and drugs supply issues. Although CAHWs have improved accessibility to veterinary care, this progress has not been sustained and, other than traditional healers, veterinary services in some pastoralist areas are becoming increasingly weak.

5.4 OFDA Evaluation Question 3: Have CAHWs improved livelihoods?

5.4.1 Livelihoods of livestock keepers

Due to the complexity of measuring the impacts of the prevention or treatment of different diseases on livelihoods, the evaluation used generic livelihoods impact indicators, designed to capture all of the major economic, food security, and other impacts of diseases. The results are shown in Figures 4.9 to 4.11, and the specific diseases handled by CAHWs are listed in Table 4.1. Overall, the findings are consistent and show that from the perspective of community informants, the negative livelihoods impacts of disease were more reduced for diseases handled by CAHWs relative to disease not handled by CAHWs. Statistically, this difference was significant. As noted in section 4, scores for South Sudan were likely affected by past performance of CAHWs, probably before 2005, when the OLS program provided strong coordination of vaccination and supplied drugs.

Although the evaluation did not compare communities with and without CAHWs, other studies have made the comparison. An example is a study from Kenya which showed that cattle mortality was 8% higher in households without CAHWs, and mortality in sheep and goats was 15% higher. Respondents also scored their ability to “survive future drought.” The scores were 30/100 for communities without CAHWs and 70/100 for communities with CAHWs (IDL Group and McCorkle, 2002). In terms of the impacts of vaccination and treatments, expected impacts vary by disease and the specific preventive or curative approach that is used. While space limitations prevent a detailed disease-by-disease analysis, some general issues were:

- Vaccination is generally assumed to be an effective means of disease prevention, and rinderpest eradication in South Sudan and the Afar region of Ethiopia is a good example of how CAHWs can function (Jones et al., 2010; Admassu, 2003).

However, some strategies for the control of other diseases in pastoralist areas, particularly during drought emergencies, require continual review (e.g., Catley et al., 2009). Studies on the possible benefits of CBPP and FMD vaccination in South Sudan are available (Zessin and Carpenter, 1985; Barasa et al., 2008), although it seems also feasible to handle CBPP with antibiotics (e.g., Huebschle et al., 2006) and clearly, this is a common practice by CAHWs;

- The efficacy of anthelmintic and trypanocidal drugs is well documented, and treatments can be assumed to be effective if the disease diagnosis is correct, if the right dose and drug administration is used, and if the drugs are of sufficient quality. CAHWs diagnostic skills and drug use is described in section 4.1.5.2;
- Table 4.1 shows that CAHWs treated various viral diseases, and this included the use of antibiotics to treat or prevent secondary bacterial infections. This is a common veterinary practice, but the impacts, even when used by veterinarians, are not well understood—especially for viral disease outbreaks in pastoralist areas. There are indications in the literature that antibiotic use is recommended to treat secondary infections, e.g., to prevent deaths due to pasteurellosis during outbreaks of Nairobi sheep disease (Edelsten, 1975);
- Diseases in camels are a particular challenge as these are well known by pastoralists, but less well described in the veterinary literature. For example, common camel health problems such as coughing and twisted neck syndrome have no clear cause.

In general, the results on livelihoods impacts agree with similar studies (e.g., Abebe, 2005; Admassu et al., 2005) and seem to be highly plausible given the technical abilities of CAHWs (section 4.1.5.2) and the livelihoods of pastoralists, whereby livestock and livestock products are the basis for household economies.

5.4.2 Livelihoods of CAHWs

Most CAHWs were found to be obtaining a proportion of their livelihoods from animal health work (Table 4.2), but this proportion was reducing. Income was also quite variable between CAHWs. It appeared that the more entrepreneurial CAHWs with easier access to veterinary drugs were managing well.

5.4.3 The sustainability of benefits from CAHW programs

Although this evaluation and previous assessments often show that CAHW programs provide livelihoods benefits, the evaluation also showed how these benefits are increasingly fragile in some areas. The common reason for the low resilience was weak institutional support, albeit for slightly different reasons in the three countries:

- In Kenya, the VSP Act prevented CAHW training and was vague on the roles of existing CAHWs. Therefore, mechanisms to provide quality control for CAHWs and certification were unclear, as were systems for supplying existing CAHWs with drugs. Many NGOs took the view that CAHWs were illegal and could not be supported by their programs. Inevitably, in this environment, CAHWs cease working and are no longer available for work in normal periods or emergencies. Kenya has the most potential to regulate veterinary clinics and businesses selling veterinary drugs through a new veterinary drug inspectorate established by the VSP Act. Whether the KVB will gain the resources to access remote pastoralist areas remains debatable. Under current legislation, CAHWs would not be recognized as a legitimate part of a private pharmacy;
- South Sudan—as a new state, South Sudan has a supportive policy environment in terms of CAHWs being legal and recognized, but has made limited progress with the privatization of veterinary services. As such, CAHWs have limited access to drugs and so cannot function, other than to support government vaccination campaigns. Some government

veterinarians have long experience of the principles and practice of CAHW programs. South Sudan has no guidelines or policy on how CAHWs can be linked to private pharmacies, and also lacks official guidelines on CAHW training, supervision, and refresher training;

- Ethiopia—has supportive policy and legislation for CAHWs, and official minimum standards and guidelines for CAHW training. However, there are no guidelines on how to ensure linkages between CAHWs and private pharmacies, and there was continued confusion as government constructs new animal health posts in areas where the private sector can operate. In some areas such as Borana, government and NGOs had persisted with cooperative approaches for sustaining CAHWs but with limited success. The Somali Region is a somewhat atypical but relatively successful case in terms of private sector development and CAHWs, and here the key issues include drug quality control and the limited capacity of central government to test imported products repeatedly.

Unfortunately, none of the countries had adequate institutions in place to regularly ensure drug quality nor to support or regulate private pharmacies linked to CAHWs.

Veterinary drug quality appears to be a major problem across much of sub-Saharan Africa. In response to reports of anthelmintic resistance (Wanyangu et al., 1996), drug analysis in Kenya in the late 1990s concluded that “Many anthelmintic preparations marketed in Kenya are clearly of very poor quality” (Monteiro et al., 1998). Growing resistance to the limited number of compounds available to treat trypanosomiasis also stimulated analysis of trypanocide quality. In West Africa, 70–100% of trypanocides did not conform to what was stated to be in the product according to the data sheet supplied. Similar analysis of other therapeutic groups suggests as many as two-thirds of antibiotics and anthelmintics do not conform to data sheets (Van Gool 2008). This included products bought from formal and informal markets. Whilst this evaluation was unable to quantitatively analyze drug trade or drug content, the evaluation team noted significant increase in the use of generic drugs¹⁶ in pharmacies visited, and numerous reports were received from livestock owners questioning drug quality. The increased use of generic drugs without mechanisms to ensure consistent quality does not boost confidence that quality is improving. Both Sudan and Ethiopia have veterinary drug inspectorates, but there was no indication that they are effective. In Ethiopia, government tendering rules ensure the cheapest tender is contracted, and this system may encourage the importation of cheap, lower-quality drugs, especially given limitations with testing drugs (Morton et al., 2007).

Drug resistance and quality are vital issues, as CAHWs and poor livestock owners with limited resources need to avoid drugs that are ineffective. Whilst it is difficult for private vets and private pharmacy owners to build reputations when selling substandard products, pharmaceutical industry commentators state that many vendors of veterinary drugs knowingly sell substandard products either because the profit margins are higher or because they can’t compete on price if they stock quality products. There appears to be a race to the bottom, with lack of regulation and reduced purchasing power speeding up the process (Leyland, 2012).

There were no policies or regulations in any of the countries that governed how private pharmacies should interact with and support CAHWs. The evaluation found that in most cases any linkage was purely based on the CAHW being a regular customer rather than working under any technical oversight from the pharmacy owner.

Private veterinary pharmacies interviewed all faced significant challenges to their viability (section 4.4.4), but severe drought appears to be a major threat to small veterinary businesses. Many of the most

successful examples appear to have received NGO or FAO support to get established. There appeared to be no state-supported institutions in place to help pharmacy owners to access business training or financing. None of the countries visited had mechanisms for contracting the private sector to provide vaccination or disease surveillance on behalf of the state.

Sudan now has a detailed plan for the privatization of veterinary services. Ethiopia hopes to produce a road map for privatization to accompany new policy proclamations in 2014. Kenya’s veterinary privatization scheme KVAPS has supported private vets in the past. It also attempted to support animal health assistants in establishing veterinary businesses, but this initiative was blocked by veterinary policy makers in the KVA and KVB. Several of the OFDA-funded NGOs were providing effective support to private pharmacies.

One recent innovation in the region that may support private pharmacy development and effective supervision of CAHWs in dryland areas is the development of franchise schemes. Franchises could potentially support businesses to plan and survive drought, to lobby government for contracts to carry out vaccination, and to set minimum standards for franchisees. The newly established franchise model in Kenya “Sidai Africa Ltd” has expressed interest in supporting franchisees in dryland areas.

Overall, the supervision and refresher training of CAHWs had almost broken down where CAHWs are no longer supported by NGOs or private vets. In most areas, supervision consisted of very occasional visits by government veterinary staff when a vaccination campaign was ongoing; many of these campaigns were funded by donors such as OFDA and ECHO as part of drought or disease responses.¹⁷ This lack of support to CAHWs is detrimental to their long-term sustainability and effectiveness.

A study conducted by the Institute of Policy Analysis and Research and International Food Policy Research Institute showed that the number of refresher courses and the keeping of practice records positively and significantly influenced the likelihood of CAHWs remaining in active practice. These are the same variables that were found to influence the level of activity. The study indicated that, after attending refresher training three times, a CAHW is 17.2 times more likely to remain in active practice than one who has attended only once. Furthermore, a CAHW keeping records was 110 times more likely to remain in active practice than the one who keeps none (Mugunieri et al., 2004).

Communities frequently state that they would like to see proper certification of CAHWs (Riviere-Cinamond and Eregae, 2003), and several of the CAHWs interviewed during the evaluation stated they have never been issued any training certificates. All the countries visited had a mechanism for training CAHWs against standardized training curricula, but its use was voluntary. The curriculum in Kenya, although produced by the KVB and never endorsed, was nevertheless utilized up to 2011. None of the countries had managed to put in place adequate institutions to formalize the training of CAHWs. Ethiopia had a policy of training trainers of CAHWs and certifying them, but only one training had taken place and no register of trainers was maintained. A review of CAHW training in South Sudan suggested that the training curriculum remained too focused on rinderpest and its surveillance and needed to be revised and updated to reflect current conditions and policies (Mravili et al., 2009), which has not happened. In Kenya, there are effectively no supporting institutions as CAHWs remain unrecognized by recent legislation.

Formulating and updating effective guidance and models to demonstrate how and ensure CAHWs are effectively supervised and trained remain vital activities.

5.5 Gender aspects of the evaluation

Where possible, the evaluation attempted to disaggregate the views of the 287 men and 186 women community informants. Details of the men and women’s views on the effectiveness of AHSPs, on male and female

¹⁶ Strictly speaking, “generic” refers to drugs that are out-of-patent and not branded—sold simply under the chemical name. Some veterinary drugs referred to as “generic” often have a brand-name or even a registered trademark.

¹⁷ The European Union ECHO is planning Euro 270 million of funding to “Supporting the Horn of Africa’s Resilience” (SHARE). PPR vaccination and control is to be included as one activity. See http://ec.europa.eu/echo/policies/resilience/share_en.htm.

CAHWs, and on changes in disease impact are provided in each of the country annexes. Generally, men and women had similar views. Differences were noticeable on CAHW accessibility. Women tended to find female CAHWs both more accessible and more available in terms of providing advice. In Kenya, this was attributed to the fact that female CAHWs were less mobile. In contrast, men commonly expressed the view that female CAHWs were constrained by family obligations and customs that made them less available when stock were remote or needed attention at odd hours.

Of the 64 CAHWs met just 9 (13%) were female. In some areas, no female CAHWs were found. For example, at most field sites in Ethiopia, it was not possible to ask people their opinion of female CAHWs because there were none. This was partly attributed to the cultural values, e.g., of the Somali Region. However, the evaluation found no evidence in NGO reports of assessments being carried out to determine specific roles and responsibilities of men and women in livestock production and health, or gender-related constraints and needs, nor the capacity of women to carry out CAHW work. This was of concern in South Sudan, where male CAHWs were favored by men and women because of their ability to handle adult cattle. The fact that most young stock and small ruminants are managed by women appeared to have been overlooked when CAHWs were selected. In terms of apparent technical capacity and income, no difference was found between male and female CAHWs. Indeed, some of the female CAHWs had proven particularly adept at handling drug revenue and reinvesting it.

5.6 CAHWs and public good functions

5.6.1 CAHWs and government vaccination programs

CAHWs were often involved in government livestock vaccination programs and received payments for this work. Although this was an important aspect of CAHW income and incentives to practice, from a wider perspective of disease control and economics, government services still lack the resources and strategies to conduct effective, preventive vaccination for many diseases. Despite this situation, governments also retain control of vaccination and prevent the private sector taking over vaccination for diseases that can be categorized as private goods. This behavior hinders the viability of private pharmacies, which could probably deliver vaccines more economically and more effectively than government. Similarly, the private sector might also be contracted by government to conduct certain types of vaccination. These aspects of livestock vaccination in the region are longstanding constraints to both effective disease prevention and the growth of the private sector.

In drought response, livestock vaccination has long been institutionalized in the region. However, research in Ethiopia showed that vaccination during drought had no impact on livestock mortality due to range of technical issues, and vaccine handling and administration (Catley et al., 2009). Various agencies are now moving away from vaccination during drought, and are supporting the wider use of veterinary voucher schemes with the private sector. Further work is needed to assess the relevance of livestock vaccination during drought in other countries in the region.

5.6.2 CAHWs and disease surveillance

The theoretical basis for the involvement of CAHWs in disease surveillance assumes that as trained community-level workers, CAHWs are very well placed to provide disease reports to government. Incentives for reporting might include payment, or timely and effective government responses to disease outbreaks (for diseases not handled by the private sector). However, there is a longstanding assumption that governments will invest in national animal disease surveillance systems, with a view to strengthening livestock export trade, improving the control of zoonoses, and other objectives. After many years of capacity-building programs to strengthen national disease surveillance systems, these assumptions can be questioned. Not least, countries such as Ethiopia, Somalia, and Sudan already have well-established livestock export systems in place, but in the

absence of strong disease surveillance. Using Ethiopia as an example, official exports of live animals increased more than five-fold between 2005 and 2011 (Catley and Aklilu, 2013) but without any notable improvements in disease surveillance. As governments are mainly interested in livestock development and marketing as a means to obtain much-needed foreign currency, it follows that a key—but unanswered—question is the added value that might accrue from higher exports, relative to the cost of effective surveillance and relative to the current benefits that are captured by governments, but with limited surveillance. Part of the question requires an analysis of competitiveness and the extent to which countries in the region are likely to penetrate markets that are currently dominated by other countries, even if their surveillance systems improve dramatically.

The evidence shows that CAHWs can be very effective disease surveillance agents in pastoralist areas and can contribute to national surveillance systems (e.g., Baumann, 1990; Allport et al., 2005); the OIE considers CAHWs to be a type of veterinary para-professional as long as their roles and supervision are clearly described and enforced (OIE, 2003). However, the degree to which governments choose to use CAHWs for surveillance, and pay for this activity, depends on higher-level thinking and strategies for increasing livestock exports. At present, high-exporting countries such as Somalia, Ethiopia, and Sudan achieve good returns in the absence of good surveillance. “Low-exporting” countries such as Kenya, South Sudan, and Uganda are net importers of livestock and meat.

5.6.3 CAHWs and veterinary public health

5.6.3.1 Control of zoonoses

In many industrialized countries, the historical development of veterinary medicine and services was closely linked to the need to control zoonoses such as brucellosis and tuberculosis, and the public-good nature of zoonosis control is widely discussed in the veterinary literature (e.g., Umali et al., 1992). Some researchers argue that the impact of zoonoses in the developing world exceeds the impacts of other diseases, such as malaria (Thornton et al., 2002). More recent research estimates a heavy burden from zoonoses on one billion of the world's poor (Grace et al., 2012), due to both endemic zoonoses (e.g., brucellosis) and epidemics (e.g., Rift Valley fever); there is also considerable momentum around zoonoses under the “One Health” approach.¹⁸ However, in remote, pastoralist areas of the Horn, various institutional challenges are evident. In terms of resources, both government veterinary services and ministries of health are severely constrained, and the latter prioritize the prevention or control of diseases that cause major loss of human life, such as neonatal diarrhea and respiratory disease, malaria, and maternal health problems. Although zoonoses certainly cause human deaths, governments position zoonosis control as a low priority relative to other diseases.

The current and potential use of CAHWs to prevent or control zoonoses mirrors many of the issues outlined for disease surveillance above. From a technical perspective, CAHWs in pastoralist areas have capacity to contribute to zoonoses surveillance, public awareness, and specific preventative and disease control work. However, the extent to which this resource is used depends on government funding and priorities. As suggested above, national economic development plans and strategies support livestock production primarily to achieve forex. Regrettably, resources are limited, and so zoonosis control is often project based and dependent on external support.

5.6.3.2 Drug residues

The issue of drug residues has recently received significant international attention, including discussion at the 2013 G8 summit. The misuse of veterinary pharmaceuticals is commonly cited as a one reason for not training CAHWs, with the assumption that low levels of education and training increase the risk of misdiagnosis and drug misuse. Whilst such views are important, the trade-offs between food security and food safety in pastoralist areas of Africa are not always well understood. From a human food security perspective, these are among the poorest and most

¹⁸ For example, see <http://www.onehealthinitiative.com/mission.php>.

food-insecure areas of the world, with levels of child malnutrition that often exceed the WHO cut-off for emergencies, even in “normal,” non-drought periods. It follows that for many households, the priority is to find food, and food safety is a secondary concern—the risk of starvation outweighs the risk of ill-health due to meat or milk that is contaminated with drug residues.

The evaluation found evidence that CAHWs could help to prevent drug residue problems. For example, research in Ghana and Mozambique showed how CAHW systems are one of the few means to provide better information to livestock keepers on proper drug usage (Oakley, 1998). This finding agreed with other reports that noted how CAHWs were seen by livestock owners, particularly poor livestock owners, as a source of advice

(Holden, 1997; Hüttner, 2000; IDL and McCorkle, 2002; Oakley 2003). Research also showed that the ability of producers to pay for veterinary drugs was a key influence on whether a full course or partial course of treatment was given and consequently, underdosing remained common. This issue affected the behavior of all service providers, including private veterinary professionals. Poor farmers, for good economic reasons, were normally unwilling to heed advice on drug withdrawal periods or to condemn carcasses of treated animals. This evaluation found that CAHWs and other service providers rarely give advice on withdrawal periods for this reason. The evaluation noted that new techniques utilizing mobile phones and mass communication with farmers also provides opportunities for raising awareness and changing attitudes to this problem.

6 Recommendations

The recommendations from the evaluation take account of the role of OFDA as a humanitarian donor, supporting emergency response but also supporting disaster risk reduction and systems that help to mitigate disasters. It follows that OFDA can not only support direct interventions on the ground using CAHWs and the private sector, but can also consider how to strengthen the long-term institutional environment that is needed to sustain CAHW systems. Emerging resilience frameworks seem to support the notion of enhanced linkages between relief and development, as did earlier livelihoods frameworks (USAID, 2012).

In terms of resilience building, the evaluation noted significant innovation and progress by NGOs, government, and donors expecting to face future drought emergencies. Significant political will for building resilience has been demonstrated in the IGAD region. OFDA Kenya and Ethiopia have, despite their short timeframe mandate, facilitated longer-term development programs to take ownership of projects in the dryland areas. These longer-term programs are better equipped to help establish robust private sector service provision. OFDA advocacy and funding of such innovations such as the “Crisis Modifier” allow these development programs to reorganize budgets and draw upon emergency funds to respond to emergencies with quick livelihoods interventions, which could include animal health provision.

The third “institutionalization” phase of CAHW project development remains incomplete. Following the scaling-up of CAHW projects in the 1990s, efforts to ensure an enabling policy and institutional framework for CAHWs began in earnest in the early 2000s. Thirteen years is still a relatively short period of time for African policy, legislative, and institution-building processes.¹⁹ This is particularly so for countries like South Sudan that are new and still mired by conflict. Good institutional progress was made up to 2005, with several countries and organizations developing pro-CAHW policies and strategies, but progress appears to have slowed over the past eight years. A key driver of progress up to 2005 was AU/IBAR. IBAR has a mandate to coordinate and harmonize livestock development in Africa and was very supportive of CAHWs during the Pan African rinderpest campaign. It established a CAH unit, the “Community Animal Health and Participatory Epidemiology Unit.” This unit ceased to operate due to lack of funds in 2005. It was this unit that engaged OIE to ensure CAHWs could be classed as veterinary para-professionals, helped formulate IBAR policy and guidelines for CAHWs, and initiated the livestock emergency guidelines and standards process. Since 2005, IBAR has handed regional livestock development process onto regional economic communities, which is IGAD for the Horn of Africa.

The current challenges facing CAHW systems are mainly at the level of veterinary governance, and the capacities of government veterinary departments to train, regulate, and supervise CAHWs and other para-professionals, and ensure the quality and reliability of supply of veterinary drugs that reach them. These challenges relate to the protracted underfunding of state veterinary services and continued grey

areas in policy and strategy over the roles of the public and private sectors.

There appears to be a pattern of some NGOs having long-term engagement in CAHW projects and policy dialogue, and testing new approaches such as veterinary voucher schemes during drought. However, organizational memory of CAHW approaches in NGOs is variable and often limited to individuals. NGOs with limited or no experience of CAHW approaches also need to be guided towards good practice. At more general levels, processes such as decentralization, as recently happened in Kenya, afford opportunities for local, context-specific policy on veterinary service delivery, but raise challenges for public sector strategies in areas where strong national-level control is needed, e.g., disease surveillance and control.

In summary, the main conclusions of the evaluation are as follows:

1. Pastoralist livestock production continues to be the main economic activity for households in the Horn of Africa’s drylands; protecting livestock assets is one of the key approaches for protecting livelihoods during emergencies such as drought. Veterinary care is an important part of asset protection.
2. Overall, private CAHW systems represent the most viable and effective way to deliver basic veterinary care in pastoralist areas of the Horn of Africa, during both normal periods and humanitarian crises.
3. There has been substantial progress with developing CAHW systems in the region since the OFDA review of 1998, including the establishment of private veterinary pharmacies in pastoralist areas linked to CAHWs. There has also been a substantial body of evidence collected on the impact of CAHWs and the economics of service provision and related small-business approaches that are feasible and working.
4. Despite the progress, the story of CAHW programs since the late 1990s is one of “two steps forwards, one step back.” While some countries such as South Sudan and Ethiopia support CAHWs, there are various weaknesses in veterinary governance and coordination that limit this support to simply allowing CAHWs to work. Support to the privatization of clinical veterinary services remains a constraint, along with systems for the quality control of CAHWs, and the quality control of veterinary pharmaceuticals. While Kenya supports veterinary privatization, national legislation currently forbids the training of new CAHWs and is vague on the roles of existing CAHWs. In common with previous government strategies for improving veterinary services in pastoralist areas, current strategies defy logic if viewed against the realities of government budgets.

¹⁹ Efforts to establish community (human) health delivery systems (Health for All) were initiated in 1978 with high-level support from ministers, but these too have taken many years to be supported by government in sustainable ways.

5. In the short- to medium-term, there are clear opportunities to build on some of the successes with CAHW systems. Efforts should probably focus on CAHW tasks such as clinical care, where the economics are clear in terms of benefit-cost, and viable small-business models have been shown to be effective. Although CAHWs have great potential to contribute to government disease surveillance systems, zoonosis control, and other public goods, these activities are not prioritized by governments to the extent that meaningful funding is available.

6.1 General recommendations

The following general recommendations relate to the different players in the continued development of CAHWs and the systems they work within.

Aid projects and NGO implementation:

- NGOs need to keep abreast of best practice and advocate good practice with the partners, particularly sub-national government veterinary services who may not have the resources and staff to maintain best practices;
- Best practice guidelines were written in the mid-2000s and need to be updated to incorporate new concepts on privatization strategies, including the selection of entrepreneurial CAHWs, guidance on contracting of services to the private sector, Livestock Emergency Guidelines and Standards (LEGS), and voucher schemes;
- A particular study on the use of veterinary vouchers and cash transfers is required;
- Greater efforts need to be made to improve understanding of the potential of female CAHWs based on gender differences and inequalities in pastoralist communities. Projects can then design more appropriate responses to the different obstacles faced by potential participants or beneficiaries.
- Seek to learn lessons from mass communication initiatives and make greater use of mobile phone technology, which could be used to keep farmers abreast of animal health issues, particularly awareness raising on pharmacy and drug regulation and pricing. This could include drug withdrawal issues and the roles of CAHWs, disease surveillance, and vaccination campaigns;
- Lack of substantive information on the trade and quality of veterinary pharmaceuticals and vaccines should be addressed through a regional analysis of this sector.

National veterinary services:

- Most national veterinary services appear unable to monitor whether animal health is improving or not and attributing that change. For CAHWs projects to be improved, an effective monitoring system needs to be developed at district level;
- Drug quality remains a vital issue and is largely unknown in all the areas visited. Strengthening of drug inspectorates to ensure they have the resources and sufficient autonomy to publish their results is a high priority;
- Ethiopia and South Sudan need to establish statutory bodies that have the resources to define training, roles, and supervision for all cadres of veterinary professional, including CAHWs. These bodies need to have the resources to regulate the sector, and there needs to be oversight to ensure compliance;
- Kenya should review its current legislation in collaboration with administrators and legislators from pastoralist areas to see if a compromise can be found to enable CAHWs to operate effectively and sustainably under the supervision of private vets or animal health assistants in the most remote areas;
- Credible veterinary privatization strategies that include the possibility of franchise development need to be developed in each country.

Regional bodies:

- IGAD has the mandate to support improved animal health service delivery in pastoralist areas. IGAD needs clear policy and guidelines on CAHWs or at least to endorse or review the AU/IBAR policy on CAHWs. IGAD's Centre for Pastoral Areas and Livestock Development (ICPALD) needs to facilitate member state veterinary services to implement the above recommendations by engaging in studies, awareness-raising workshops, and the use of multimedia strategies to improve knowledge, e.g., through mobile phone technology and internet access;
- AU/IBAR as a continental body needs to keep abreast of CAHW issues and update its policy and guidance on CAHWs.

Emergency and development aid donors:

- CAHWs represent the best option for providing veterinary care in pastoralist areas during emergencies, as detailed in LEGS; the LEGS guidance should continue to be advocated and shared with relevant parties;
- OFDA is a humanitarian donor, but it can support more development-orientated activities around veterinary governance. One option is to ensure close liaison with USAID missions and pastoral areas on livestock development projects, with harmonized thinking and approaches. Ideally, USAID projects would help to support effective and legal private CAHW systems during normal periods, with drug quality control and building the capacity of statutory bodies, whereas OFDA would then use these systems to deliver emergency veterinary care. Emerging resilience frameworks provide a means to coordinate and harmonize OFDA and USAID approaches and projects at country levels.

6.2 Country-level recommendations

The evaluation's national-level workshops provided an opportunity for stakeholders to review initial findings and discuss opportunities. Building on country-level findings, the outputs of group work delivered in the workshops and cognizant of the fact that the evaluation does not have a mandate to speak for specific organizations or government departments, the following country-specific recommendations have been made.

6.2.1 Kenya

Following the CAHW workshop, discussions between policy makers, NGOs, and the FAO have continued in Kenya. There now appears to be an opportunity for compromise as new county administrations formulate their policies and budgets. Senators and Members of Parliament (MPs) from pastoralist counties appear ready to engage on animal health policy and are seeking further information. A number of organizations or groups have potential to facilitate further discussion and information sharing, including:

- The "Arid and Semi-Arid Lands (ASAL) Donor Group." This group brings together both humanitarian and development partners. The group is chaired by European Union and co-chaired by USAID, with FAO acting as secretariat. The group aims to align and coordinate resilience support in ASAL areas and to present a coordinated and harmonized developmental response to the Government of Kenya, especially on investment and policies for the ASAL. The group works closely with Kenya's National Drought Management Authority (NDMA);
- FAO as an international agency with a mandate to support animal health services in developing countries;
- The Intergovernmental Authority for Development (IGAD), through its Centre for Pastoral and Livestock Development (ICPALD). ICPALD has the mandate to support member states.

Suggested way forward	Possible implementing partner
Formulate and pilot models of animal health service delivery that compare the effectiveness of internship schemes suggested by the KVB with existing vet/AHA/CAHW delivery models. Establish monitoring systems to further inform policy makers at county and national levels. Comparison could include the Sidai Africa Ltd franchise model.	A consortium of NGOs, Department of Veterinary Services, KVB, and KLIFT, working with the ASAL Donor Group
Support the pastoralist parliamentary group to gather information and develop a position on CAHWs. This could include options for developing subsidiary legislation for pastoralist areas.	ICPALD and NGOs with policy process experience
Assess the practicality of training CAHWs as animal health technicians (as suggested by the KVB).	FAO, building on experiences with Farmer Field Schools
Investigate possible mechanisms for contracting vaccination and disease surveillance to the private sector.	Department of Veterinary Services/KLIFT/KVA
Prepare regional voucher scheme guidelines that apply to Kenya's policy and legislation.	NGO, with ASAL Donor Group

6.2.2 South Sudan

A number of the opportunities identified could yield quick wins if MARF can be strengthened to fulfil its mandate. As MARF is still a

relatively young organization, the evaluation team felt that support should come through a consortium of donors, NGOs, and FAO. IGAD's ICPALD should also have a role.

Suggested way forward	Possible implementing partner
Establish community animal health unit within MARF to link CAHWs with private pharmacies.	Consortium of MARF, IGAD, NGOs, and FAO
Continue to strengthen training institutions such as the Marial Lou Livestock Training Centre. Update the CAHW training curriculum according the recommendations of the statutory body.	As above
Create a statutory body to define roles and responsibilities of all veterinary professionals.	As above
Formulate veterinary privatization strategy and develop proposals on how to support the development of private pharmacies. This should include consideration of a franchise model and investigate possible mechanisms for contracting vaccination and disease surveillance to the private sector.	As above
Strengthen the feed and drug inspectorate to improve regulation of drug imports and sales. Negotiate consistent tax regime for imported pharmaceutical supplies.	As above
Prepare regional voucher scheme guidelines that apply to South Sudan's policy and legislation.	As above

6.2.3 Ethiopia

Participants of the CAHW workshop demonstrated a clear understanding of constraints and institutional opportunities for the development of CAHW-linked private veterinary services in Ethiopia. The

importance of novel donor coordination mechanisms, such as the “Rural Economic Development and Food Security Sector Working Group” (RED&FS), that bring together both humanitarian and development partners, was recognized.

Suggested way forward	Possible implementing partner
Formulate best practice guidelines for voucher schemes and upgrade the “national guideline for emergency interventions in pastoral areas.”	Ministry of Agriculture
Form an Animal Health Group within the Livestock Technical Committee of RED&FS to support the institutional strengthening of the veterinary department, the feed and veterinary drug authority, roll-out of the veterinary privatization road map, etc.	RED&FS
- Build upon existing policy and strengthen recent institutional developments: - re-establish the CAH Unit within the veterinary department; - strengthen feed and veterinary drug authority; - establish proposed statutory body (Ethiopian Veterinary Council); - finalize and discuss road map for the privatization of veterinary services.	RED&FS with Ministry of Agriculture

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Annex 1: Field methodology and design

1. Question Groups

The evaluation structured the OFDA objectives into three main groups of questions as follows:

Group 1: Effectiveness of CAHWs as veterinary service providers by gender

A set of clinical service delivery questions were developed to assess five key indicators:

Accessibility	The physical distance between livestock keepers and a trained veterinary worker such as a CAHW; includes gender accessibility from two perspectives—how does accessibility to CAHWs for livestock keepers vary by the gender of the CAHW and how does accessibility to CAHWs vary by the gender of livestock keepers?
Availability	The presence of veterinary workers and their ability to function; this depends heavily on adequate supplies of veterinary medicines and equipment of a suitable quality. Availability will be measured quantitatively in terms of volumes of medicines available and the times of day and seasons when CAHWs are available. Availability will also be measured by the gender of CAHWs, i.e., are there times of day, month, or year when availability differs between female and male CAHWs and if so, why.
Affordability	The cost of the CAHW service to livestock keepers, sometimes disaggregated by wealth group and gender. Affordability will be assessed qualitatively, e.g., using a participatory scoring system. It will also be assessed by comparing the prices of CAHW-supplied veterinary medicines/services against the local market value of livestock, to provide a basic benefit-cost estimate of preventing or treating fatal diseases. The gender aspect of affordability relates to the likelihood that in general, female livestock keepers tend to own smaller livestock species (e.g., sheep and goats) relative to men (who tend to keep both small and large ruminants). So, it might be assumed that private CAHWs might be more affordable to men relative to women.
Acceptance	Covers cultural and political factors. Are the CAHWs accepted and trusted according to local preferences? Acceptance will be measured qualitatively. The gender aspects of this indicator assume that female CAHWs might be more acceptable to female livestock keepers.
Quality	Includes livestock treatment outcomes and impacts. Impacts include livelihoods impacts derived from improved animal health. Quality relates to the effectiveness and relevance of CAHW training and supervision, and the quality, storage, and use of veterinary medicines in the system. Therefore, trends in veterinary medicine imports will be examined. Quality also includes the types and range of animal health problems covered by CAHWs.

Quality can be measured using quantitative (e.g., case fatality rates) and qualitative (e.g., test of CAHW diagnostic ability) indicators. CAHW reporting is also useful for assessing quality, e.g., by quantifying the types of treatments provided. From a gender perspective, it is assumed that when given the same training, medicines, and equipment, there should be no major differences in the quality of service provided by female vs. male CAHWs.

Group 2: The public good functions of CAHWs by gender

A set of questions on the public good function of CAHWs—for example, the use of CAHWs in official disease surveillance systems, zoonosis control, vaccination programs, or livestock extension. For projects that have trained both women and men as CAHWs, the role of CAHWs for non-clinical work will be examined by gender.

Group 3: Sustainability of CAHWs by gender

A set of sustainability questions, including:

CAHWs as small businesses—the performance of private CAHW networks linked to veterinary pharmacies; financial incentives and incomes of CAHWs; diversification options; competition from other providers and other challenges, both formal and informal; use of CAHWs in emergency programs (e.g., veterinary voucher schemes). Again, in projects that have supported both female and male CAHWs, business performance and other aspects of sustainability will be examined by gender. For example, are female CAHWs able to travel to urban pharmacies to replenish their medicines, or are there travel restrictions or protection issues to consider? How do financial incentives differ between female and male CAHWs?

Ongoing supervision and refresher training—the role of refresher training to update CAHW skills and knowledge, e.g., as new veterinary medicines become available. The role of different actors in providing refresher training, e.g., NGOs, government, private sector; issues around the long-term funding of refresher training.

Policy and institutional environment—the extent to which formal national or sub-national policy and legislation supports CAHWs; national capacities to regulate and license CAHWs; national capacities to ensure veterinary medicine quality; informal attitudes towards CAHWs, especially among the veterinary profession and academia; trends in regional or international policies and guidelines for CAHWs.

2. Evaluation design

2.1 Field-level assessments

In each NGO location, the field-level assessments comprised two main activities:

- participatory sessions with livestock keepers
- interviews with CAHWs

2.1.1 Participatory sessions

Information required	Participatory method	Sample	Notes
History of the CAHW program; start date, end date, timing of key program events; key external events that influenced implementation or impacts, e.g., conflict	Timeline (see note a. below)	1 informant group of livestock keepers per area visited	Information cross-checked against NGO reports on CAHW program
Relative value of CAHWs against other veterinary service providers	Matrix scoring of indicators of accessibility, availability, affordability, acceptance, and quality (see note b. below)	1 female and 1 male informant group of livestock keepers per CAHW location; further repetitions if time allows	Used a semi-standardized list (SSL) of service providers and indicators, and standardized scoring method to allow collation and averaging of results across sites. In projects with women and men CAHWs, used SSL during the matrix scoring to examine if the scores provided differ by the gender of the CAHW, e.g., does accessibility vary by the gender of the CAHW and if so, how? Does acceptance vary by gender of CAHWs and if so, why?
Livelihoods impacts	Before and after scoring of livestock disease impacts (see note c. below)	1 female and 1 male informant group of livestock keepers per CAHW location; further repetitions if time allows	Used a standardized scoring system, and cover both diseases “handled” and “not handled” by CAHWs. Used a generic definition of “impact” combining all of the main negative impacts of disease—mortality, milk, etc.

a. Timelines

An informant group was asked to describe key events in, or affecting their community during, the previous 20–30 years. The group is advised that they can select any events of their choosing.

b. Matrix scoring

The researcher produced the below list of indicators to represent accessibility, availability, affordability, acceptance, and quality. An informant group was asked to name all of the different types of veterinary service providers in their area. Each service provider was represented as a picture on a piece of card. This exercise was done separately with both male and female groups.

The service provider drawings were arranged in a row on the ground to form the x-axis of a matrix. Indicator drawings were added in turn to the matrix, to form the y-axis.

Fifty stones were used per indicator. Taking each indicator in turn, the informant group was asked to show the relative association of the service providers against the indicators; a high score is used to depict a strong association vs. a low score for a weak association.

After all the indicators have been scored, the matrix is used as the basis for discussion.

Agreed standard questions for matrix scoring:

Indicator	Service Providers					
	Government clinic or services	Shops	CAHWs		Traditional healers	Others
			F	M		
ACCESSIBILITY						
This service is close to us						
AVAILABILITY						
The service always has medicines						
The service is always available						
AFFORDABILITY						
<i>(Mention or show a locally available medicine as determined from discussion with participants.)</i> Ask “Of these service providers, which is the most affordable for this drug?”						
<i>Try to assess the wealth aspect of affordability (Buy a couple of different drugs in town (expensive one and cheap one), get into a discussion about who buys them and why. Note opinions (no scoring)).</i>						
ACCEPTABILITY						
We trust this service provider (Note the “other” category in this matrix might include quacks.)						
QUALITY						
Our animals usually recover with this service						
This service can treat all our animal health problems						
The quality of the medicines is good						

c. Before and after disease impact scoring

After ascertaining how the NGO decided which diseases the CAHWs would treat and why, plus the disease profile of the area, the following assessment was carried out separately with both male and female groups.

A group of informants was asked to identify livestock diseases with high impact at the start of the project, using the timeline as a prompt to identify the start date of the project.

This was done by species. Participants were asked to describe impact (reduced milk yield, mortality, poor fertility, and reduced sale value, etc.)

Typically, some of these diseases were included in CAHW training and were handled by CAHWs, whereas other diseases were not (e.g., because there was no medicine or vaccine available for the disease in question).

Local disease names were always used in the scoring method, and "impact" is defined generally and included the various locally defined impacts already described.

Ten stones were assigned to each of the named diseases to represent the impact of that disease at the start of the project. Taking each disease in turn, informants were asked to reduce, increase, or leave the pile of 10 stones to show the impact of the disease "now," now being some years after CAHW activities started. Therefore, informants could remove stones from the pile, or add stones (to cater for stones being added, keep an extra 10 stones to one side), or leave the pile unchanged.

Informant groups were asked to discuss the task amongst themselves and, as a group, decide how they wished to apportion the stones.

After scoring, informants are asked to explain the reasoning behind their scores. Open and probing questions are used to clarify information and follow up unusual or interesting perceptions.

2.1.2 Interviews with CAHWs

In each project area visited, up to 10 CAHWs were selected. In projects with female and male CAHWs, both genders were interviewed.

Information required	Method	Notes
Diagnostic knowledge	Direct questioning of clinical signs and transmission of 5 livestock diseases covered in the CAHW training	Local disease names were used
Use of veterinary medicines	Direct questioning on doses and administration of medicines by disease and livestock species and size; questions on storage of medicines, expiry dates, and withdrawal periods Direct observation of CAHW medicines and equipment	Local disease names were used
Medicine supply and technical supervision	Direct questioning on drug supply system and types of supervision and technical support	The evaluation team also visited urban-based veterinary pharmacies and interviewed the pharmacy owner/manager
Benefits of being a CAHW	Direct questioning on advantages and livelihoods benefits of CAHW work Proportion piling of income derived from CAHW activities vs. other activities and how this has changed over time²⁰	Income estimate cross-checked against NGO monitoring reports and volumes and prices of medicines supplied
Challenges of CAHW work	Direct questioning on the disadvantages and challenges of CAHW work	
Opportunities and needs	Direct questioning to gather CAHW views on future opportunities and needs	

²⁰ CAHWs (male separate from female) were asked to list all the ways in which they get their income. Each CAHW was then asked to divide stones between the sources of income according to the amount of income they receive from that activity. E.g., selling crops might give more income than CAHW work. They did this twice, first scoring a time just after they were trained as a CAHW and then scoring "now." The CAHWs then explained the changes.

Annex 2: List of key informants and workshop participants

KENYA

	Name	Position	Organization	Event
1	Paul Mutungi	Livestock Officer	FAO Kenya	Group Discussion
2	Rob Allport	Dep. Country Director	FAO Kenya	Group Discussion
3	Benson Ameda	Acting President	African Veterinary Technicians Association	One to one
4	Simon Kihu	Director	Vetworks East Africa	Telephone Interview
5	Stephen Kiniya	CEO	K-LIFT	One to one
6	Hon. Protus E. Akujah	MP Loima	Member of Parliament, Turkana County	Group Discussion
7	Hon. Lodepe Nakara	MP Turkana Central	Member of Parliament, Turkana County	Group Discussion
8	Hon. Daniel Epuyo Nanok	MP Turkana West	Member of Parliament, Turkana County	Group Discussion
9	Patrick Imawa	Member of County Assembly, Lokirima Ward	Elected County Official, Turkana County	Group Discussion
10	Hon. James Lomenen	MP Turkana South	Member of Parliament, Turkana County	Group Discussion
11	David Ekol Lotiang	Member of County Assembly, Kerio Ward	Elected County Official, Turkana County	Group Discussion
12	Kobongin Bethwel	Member of County Assembly, Songot Ward	Elected County Official, Turkana County	Group Discussion
13	Hon. Chris D. Nakuleu	MP Turkana North	Elected County Official, Turkana County	Group Discussion
14	Hon. Joseph Lekuton	MP Laisamis	Member of Parliament, Marsabit County	Group Discussion
15	Hon. Chachu Ganya	MP North Horr	Member of Parliament, Marsabit County	Group Discussion
16	Hon. Ekwee David Ethuro	Speaker of the Senate	Kenyan Senate	One to one
17	Prof. Charles Mulei	Dean, Faculty of Veterinary Medicine	University of Nairobi	Group Discussion
18	Joseph Omega	Board Chairman	Kenya Veterinary Board	Group Discussion
19	Kisa Juma Ngeiywa	President	Kenya Veterinary Association	Group Discussion
20	Jactone Jalang'o	Dep. Director Veterinary Services	Ministry of Agriculture	Group Discussion
21	Samuel Njoroge	Dep. Chief Public Health Officer	Ministry of Public Health and Sanitation	One to one
22	Patrick Bastiaensen	Programme Officer	World Organisation for Animal Health (OIE), Africa Sub-Regional Office	Group Discussion
23	Walter Masiga	Sub-Regional Representative	World Organisation for Animal Health (OIE), Africa Sub-Regional Office	Group Discussion
24	Julius Kajume	Consultant and ex-acting Director Veterinary Services, Kenya	Self-employed	One to one
25	Guido Govoni	Regional Livestock Specialist	International Committee for the Red Cross	Email
26	Julie Kinyua	Dep. Director of Vet. Services and focal person for AU/IBAR Livestock Policy Hub	Ministry of Agriculture	One to one
27	Paul Gamba	Policy Analyst	Egerton University	One to one
28	Peter Kioko Muasya	Marketing Manager	VetAgro East Africa Limited	One to one
29	Solomon Muchina Munyua	Coordinator	Centre for Pastoral and Livestock Development (ICPALD), Intergovernmental Authority for Development (IGAD)	One to one
30	Anthony Njengi	DRR Officer, Lodwasr	International Rescue Committee	One to one
31	Reuben Wekunda	District Livestock Production Officer	Turkana West	One to one
32	Josphat Nanok Koli	Governor	Turkana County	Group Discussion

33	Wilfred Wafula	Livestock Production Officer	Turkana County	Group Discussion
34	Shabet Kemboi	Veterinary Officer	Turkana County	Group Discussion
35	Peter Lokoel	Dep. Governor	Turkana County	Group Discussion
36	Christopher Ekuwom	County Minister, Pastoral Economy and Fisheries	Turkana County	Group Discussion
37	John Sang	District Veterinary Officer	Turkana West	One to one
38	Dr. Ririmpoi	Owner Manager	PAVES Veterinary Clinic	Telephone Interview
39	Erenius Nakadio	Livestock Officer	Lutheran World Federation, Kakuma, Turkana West	One to one
40	Haret Hambe	Project Manager	VSF-Belgium, Lodwar	One to one
41	Leina Mpoke	Programme Manager–ASALs	Concern Worldwide Kenya	Group Discussion
42	Bernard Ndambo	Project Officer	Concern Worldwide Kenya	Group Discussion
43	Seif Maloo	Country Director	VSF-Suisse Kenya and Somalia	One to one
44	Davis Ikiror	Country Director	VSF-Suisse South Sudan	One to one
45	Esther Wanjiko Njuguna	Technical Adviser, Animal Health	Care Kenya	One to one
46	Annie Lewa Kigezo	Projects Officer	African Union, Interafrican Bureau of Animal Resources (AU/IBAR)	One to one
47	Duncan Milia	Projects Officer	Neighbours Initiative Alliance	One to one
48	Kenny Matampash	CEO	Neighbours Initiative Alliance	One to one
49	Duncan Swima	County Director Livestock Production	Kajiado County	Group Discussion
50	J.Y. Achola	County Director Veterinary Services	Kajiado County	Group Discussion
51	David K. Nkedianye	Governor	Kajiado County	Group Discussion
52	Parsakei ole Orumai	Secretary of Water and Irrigation, Acting Secretary for Livestock and Agriculture	Kajiado County	Group Discussion
53	Gladys Marima	Secretary, Information, Communications and Citizen Participation	Kajiado County	Group Discussion
54	Nick Cox	Regional Advisor	USAID OFDA, Nairobi	One to one

Nairobi Workshop

1	Dr. Kisa Juma	President	KVA	Workshop
2	Priscilla Amiri	DRR program Asst.	ECHO	Workshop
3	Dr. Lekopien Argeo	Veterinary Officer	CARE–Kenya	Workshop
4	Tim Leyland	Consultant	VETWORK–UK	Workshop
5	Duncan Milia	Programme Officer	NIA-KASEADO	Workshop
6	Lesas Iranus	Chairman	KASPA	Workshop
7	Annie Kigezo	Project Officer	AU-IBAR	Workshop
8	Joseph Sukunatu	Prog. Coordinator	FH.KENYA	Workshop
9	Jeff Austin	Regional SPS advisor	USAID-EA	Workshop
10	Esther Njuguna	TA, Animal Health	CARE KANYA	Workshop
11	Gachengo Muriu	L&R Coordinator	WV KENYA	Workshop
12	Bernard Ndambo	Project Manager	Concern Worldwide	Workshop
13	Maurice Kiboye	Country Program	VSF-Germany	Workshop
14	Abdullahi Ibrahim	Program Director	PIDAD-KENYA	Workshop
15	Mohamed Shakri	Field Officer	PIDAD-KENYA	Workshop
16	Dr. Kioko	Manager	VETAGRO F.A.	Workshop
17	Dr. D.K. Mureithi	HOD Animal Health	MKU	Workshop

18	Raghad Lotira	Consultant	Tufts University	Workshop
19	Julius Kajume	Consultant	Private	Workshop
20	Sophie Frilander	Food Sec. Coordinator	Solidarities	Workshop
21	Viola Chemis	Program Manager	VSF-Belgium	Workshop
22	Lawrence Kiguro	Ass. Dir. Livelihoods	WV KENYA	Workshop
23	Dr. Isaac Lubutsi	Project Officer	VSF-Suisse	Workshop
24	Hassan Olow	Project Officer	Concern Worldwide	Workshop
25	Leina Mpoke	Program Manager	Concern Worldwide	Workshop
26	Benson Ameda	Acting President	AVTA	Workshop
27	Seif Maloo	Kenya Coordinator	VSF-SSuisse	Workshop
28	Dr. J.A. Omega	Chairman	KVB	Workshop
29	Susan Karimi	Program Manager	WorldVvision	Workshop
30	Isaac Thendiu	Livestock Specialist	USAID	Workshop
31	Stephen Kiniya	CEO	K-LIFT	Workshop
32	Dr. Ezra Scutoti	Veterinarian	Private Vet/VSFG	Workshop
33	Alex Muthenge	L.O. (secretary)	Kenya Veterinary Paraprofessional Association	Workshop
34	Hon. Epuyo Nanok	MP–Turkana	PSC	Workshop
35	Simon Kihu	EA program Coordinator	VETWORKS	Workshop
36	Richard A.Were	National Secretary KASPA	KALT/KASPA	Workshop
37	Joyce Emanikor	MP–Turkana	PSC	Workshop

SOUTH SUDAN

1	Jason Chau	Program Officer	USAID. OFDA, S. Sudan	Group Discussion
2	James Arike	Program Management Specialist	USAID. OFDA, S. Sudan	Group Discussion
3	Alison McFarland	Adviser	Food for Peace, USAID, S. Sudan	Group Discussion
4	Gerald Gmah	Country Director	VSF-Germany	Group Discussion
5	Michael Otto	Programme Officer	VSF-Germany	Group Discussion
6	Wilson Makuwaza	Country Director	VSF-Belgium	One to one
7	Mary Gordon Ayom Thon	Director General	State Ministry of Animal Resources and Fisheries (SMARF), Jonglei	Group Discussion
8	Apollo Adol	Director Veterinary Services	State Ministry of Animal Resources and Fisheries (SMARF), Jonglei	Group Discussion
9	George Otieno	Team Leader	VSF-Germany	One to one
10	Dereje Nigussie	Livestock Officer	Catholic Relief Services (CRS)	One to one
11	Gabriel Gaguei	Private Pharmacy Owner and Animal Health Auxiliary (AHA)	Bor Town	One to one
12	Peter Ajok	Private Pharmacy Owner and Animal Health Auxiliary (AHA)	Bor Town	One to one
13	Abraham Alia	Stockperson and Private Pharmacy Owner	State Ministry of Animal Resources and Fisheries (SMARF), Bor	One to one
14	Simon Chachu	Livestock Officer	VSF-Suisse	Group Discussion
15	Davis Ikiror	Country Director	VSF-Suisse	Group Discussion
16	Mr. Ambrose	Managing Director	Lojuria Pharmacy	One to one
17	Makuei Malual	Under Secretary	Ministry of Animal Resources and Fisheries (MARF)	One to one
18	Emmanuel Luis	Director of Human Resource Development	MARF	Group Discussion

19	Rizig Elisama	Director, Marial Lou Livestock Training Centre	MARF	Group Discussion
20	Jacob Korok	Director Veterinary Services	MARF	One to one
21	Sue Lautze	Team Leader	FAO South Sudan	Group Discussion
22	Abdal Monium Osman	Livestock Officer	FAO South Sudan	Group Discussion
23	Nimaya Mogga	Livestock Officer	FAO South Sudan	Group Discussion
24	Nyabenyi Tipo	Livestock Officer	FAO South Sudan	Group Discussion
25	Clement Kaze	Veterinary Officer	International Committee for the Red Cross	One to one
26	Aimee Ansari	Country Director	CARE International S. Sudan	Group Discussion
27	Isaac Vuciri	Emergency Response Coordinator	CARE International S. Sudan	Group Discussion
28	Liny Suharlim	Project Development Manager	ACTED	One to one
29	Agol Kwai	Director	MARF	One to one
30	John Kanisio	Secretary General	Food Security Council, GoSS DVS	One to one
31	Aluma Araba	Veterinary Director	MARF	One to one
32	Tom Otieno	Project Officer	UMCOR	Group Discussion
33	Koma Simon	Project Officer	UMCOR	Group Discussion
34	Stephen Ajok	Director General	State Ministry of Animal Resources and Fisheries (SMARF), N BEG	Group Discussion
35	Stephen Achieng	Dep. Director Veterinary Services	State Ministry of Animal Resources and Fisheries (SMARF), N BEG	Group Discussion
36	Juma Gallo	Project Officer	VSF-Suisse	One to one
37	Richard Ofwono	Livestock Officer	Concern Worldwide, Nyamlell	One to one
38	Yousaf Jomezai	Programme Officer	Concern Worldwide, Nyamlell	One to one
39	Richard Ofonu	Veterinary Inspector	Awiel West	
40	James Garang Deng	Veterinary Inspector	Awiel North	
41	Anaheed Mohamed Ahmed Lobo	Lobo Pharmacy Manager and SMARF Veterinary Officer	SMARF and Self-employed	One to one
42	Joseph Kuach	Agriculture Team Leader	Danish Refugee Council, Awiel North	Group Discussion
43	Lino Rol	Agriculture Team	Danish Refugee Council, Awiel North	Group Discussion
44	Massimo Castiello	Livestock Team Leader	FAO South Sudan	Group Discussion
45	Darren Evans	Livelihoods Adviser	Department for International Development (DFID), S. Sudan	One to one
46	Vincent de Boer	Head of Section, Rural Development, Food Security and Environment	Delegation of the European Union, S. Sudan	Group Discussion
47	Paulo Girlando	Programme Manager	European Union, S. Sudan	Group Discussion
48	Erimas Beyene	Programme Manager	CNFA, S. Sudan	One to one
49	Audrey Bottjen	Deputy Chief of Party–Programs	AECOM International South Sudan (AISS)	One to one

Juba Workshop

1	Yonas Hamda	Program Manager	ACTED	Workshop
2	Aluma Araba	Director	MARF	Workshop
3	Michael Otto	Liaison	VSF-G	Workshop
4	Willi Duehnen	Managing Director	VSF-G	Workshop
5	Charles Hoots	Maban Project Manager	VSF-G	Workshop
6	James Arike	Programme Management Specialist	USAID/OFDA	Workshop
7	Makuei Malual	Under-Secretary	MARF	Workshop
8	William Mogga	Consultant	MARF CE State	Workshop

9	Erimas Beyene	Director of Programs	CNFA	Workshop
10	Sarah Poni	Field Officer	ICRC	Workshop
11	Paulo Girlando	Programme Manager	EU	Workshop
12	John O. Kanisio	Sec. General	RSS Food Security Council	Workshop
13	Audrey Bottjen	DCOP	AECOM	Workshop
14	John Mach	Program Officer	Mercy Corps	Workshop
15	Davis Ikiyor	Program Coordinator	VSF-Suisse	Workshop
16	Stephen Kur Bona	Veterinary Officer	VSF-Belgium	Workshop
17	Emmanuel Lasuba	Veterinary Officer	VSF-Belgium	Workshop
18	Peter Andrea Lado	Director Vet Services	MARF CES	Workshop
19	George Otieno	Project Manager	VSF-Germany	Workshop
20	David Wani	Project Manager	VSF-Belgium	Workshop
21	Paul Kaka	Livestock Officer	CRS	Workshop
22	David Martin	Deputy Director, Animal Health	SMARF CES	Workshop
23	Augustino Atillo	Acting DG Extension	MARF	Workshop
24	Ambrose Lemi	General Manager	Lojurya Agro Farming	Workshop
25	David Adwok	Director	MARF	Workshop
26	Taban Tereka	Dep. Director	MARF	Workshop
27	Julius Lonyong	Livestock Officer	FAO	Workshop
28	Nyabenyi T. Tipa	Livestock Officer	FAO	Workshop
29	Philip Justin	Livestock Officer	MARF RSS	Workshop
30	Abdal Osman	Livestock Officer	FAO	Workshop
31	Rachel Kariori	Office of Conflict Mitigation	USAID	Workshop
32	Galuak Gabriol	Livestock Officer	SCI	Workshop
33	Jacob M. Karok	Director Veterinary Services	MARF	Workshop
34	Mauro Pavom	Africa Program Manager	VSF/VWB-Canada	Workshop
35	Wily Duenen	Regional Director	VSF-Germany	Workshop

ETHIOPIA

1	Benyam Asfaw	Program Management Specialist	USAID, OFDA, Ethiopia	Group Discussion
2	Gezahegn Eshete	Project Manager, Community Disaster Risk Management Project	Save the Children	Group Discussion
3	Abdulahi Abdi	Sr. Program Coordinator for Building Resilience Project	Save the Children	Group Discussion
4	Louise Scura	Sector Leader Sustainable Development	World Bank Ethiopia, S. Sudan and Sudan	Group Discussion
5	Laketch Imru	Team Leader, PCDP	World Bank Ethiopia	Group Discussion
6	Tate Munro	Chief of Party	Mercy Corps	One to one
	Dominic Graham	Country Director	Mercy Corps	Email Discussion
7	Wondwosen Asfaw	President	Ethiopian Veterinary Association	Group Discussion
8	Bewket Siraw	Director	Plant and Animal Health Regulatory Department, Ministry of Agriculture	Group Discussion
9	Johanes Jarso	Pastoralist Program Manager	CARE Yabello	Group Discussion
10	Girma Zeleke	Manager	Ethiopian Veterinary Association	One to one
11	Dirima Dida	Manager	Yabello Veterinary Pharmacy	One to one
12	Petros Wako	Coordinator	Zonal Pastoralist Development Office, Yabello	One to one

13	John Woodford	Technical Adviser	Livestock Value Chain through Public Private Dialogue in Ethiopia (LVC/PPD) Project	One to one
14	Kebadu Shiferaw	Country Director	VSF-Swiss	Group Discussion
15	Fisseha Abenet	Country Program Manager	VSF-Swiss	Group Discussion
16	Abdirashid Salah	Project Manager	VSF-Suisse	Group Discussion
17	Yosephe Seyum	Area Manager	Mercy Corps, Dire Dewa	Group Discussion
18	Abdamin Mohammed	Veterinarian	Mercy Corps, Dire Dewa	Group Discussion
19	Mamo Abata Kifle	Veterinarian	Midega Tolla Government Veterinary Clinic	One to one
20	Mohammed Abdi	Head	Shinele Woreda Agricultural Office	One to one
21	Yesuf Mohammed	Drug Store Manager	Shinele Woreda Agricultural Office	One to one
22	Dr. Kebera Kifle	Managing Director	HABO Vet Drug Pharmacy, Harar	One to one
23	Epherme Getachew	Owner	Jijiga Farm Store, Jijiga	One to one
24	Tilahun	Animal Health Assistant, Babile Government Veterinary Clinic	Babile Government Veterinary Clinic	One to one

Addis Ababa Workshop

1	Solomon Nega	Training Officer	FAO Ethiopia	Workshop
2	Wolwehanwa Kaves	RTA	Cordaid	Workshop
3	Sileshi Zewde	Projects Manager	CARE	Workshop
4	Terekegn Tola	Projects Officer	Swiss Development Cooperation	Workshop
5	Berhanu Admassu	Researcher	Tufts University	Workshop
6	Andy Catley	Researcher	Tufts University	Workshop
7	Adrian Cullis	Resilience Adviser, Horn of Africa	FAO Regional Office	Workshop
8	Dubale Admasu	Livestock and Pastoralist Programs Coordinator	USAID Ethiopia	Workshop
9	Getinet Kebede	Food Security TA	Action Contre la Faim	Workshop
10	Dawit Abebe	Researcher	Tufts University	Workshop
11	Tim Leyland	Consultant	Vetwork UK	Workshop
12	Benyam Asfaw	Program Management Specialist	USAID, OFDA, Ethiopia	Workshop
13	Kate Farnsworth	Senior Humanitarian Advisor	USAID, OFDA, Ethiopia	Workshop
14	Teriessa Jallela	Senior Field Officer	Save the Children	Workshop
15	Genene Regassa	Country Program Manager	VSF-Germany	Workshop
16	Abdirashid Salah	Project Manager	VSF-Suisse	Workshop
17	Kebadu Shiferaw	Country Director	VSF-Suisse	Workshop
18	Abdulah Abdi	Program Coordinator	Save the Children	Workshop
19	Gijs Van't Klooster	Livestock Team Leader	FAO Ethiopia	Workshop
20	Yahannes Regassa	Program Officer	ECHO Ethiopia	Workshop
21	Fisseha Abenet	Country Program Manager	VSF-Suisse	Workshop
22	Gezu Bekele	Head	PRE Consultancy	Workshop
23	Gima Zeleke	General Manager	Ethiopian Veterinary Association	Workshop

Annex 3: Detailed report—Kenya

1. Background

The evaluation team carried out one-to-one and group discussions with over 60 individuals and 25 organizations varying from legislators (Senators, Members of Parliament, and County Governors), senior policy makers (government departments, universities, the Kenya Veterinary Board, and veterinary, plus para-professional, associations and international agencies), NGOs (four OFDA-funded and seven others), and community groups.

The evaluation found a significant shift in policy toward CAHWs had taken place over the past decade in Kenya. Following the 1998 OFDA-commissioned evaluation and review of lessons learned (Catley et al., 1998), significant research had been carried out in Kenya to determine the credibility and impact of Community-based Animal Health Workers (CAHWs). This research was reviewed and summarized by FAO Kenya (Ngeiywa and Masake, 2009; Karani et al., 2009) and presented to stakeholders in the form of workshops and policy papers in 2009. The research shows that up to 2009, NGOs and District Veterinary Authorities were working openly with CAHWs, and the impact of CAHWs on animal health and livestock owners' livelihoods was positive. The research cited included provisos in terms of the need for adequate CAHW training, especially refresher training and supervision. The use of a standardized curriculum was recommended, along with clear definition of supervision and service provision.

In the early 2000s, the Kenyan Veterinary Board (KVB) recognized that CAHWs did play an important role in animal health service provision in Kenya's remote and extensive dryland areas and needed to be recognized and supervised. NGOs first began training CAHWs in these areas in the 1980s, largely in response to structural adjustment programs that had reduced the capacity and effectiveness of government veterinary services. After significant discussion, through a series of national workshops, the KVB produced, in 2003, a standardized training curriculum and guidelines for CAHWs. This was to be used by Kenya's Department of Veterinary Services and NGOs in agreed districts on the basis of MoUs signed between the Department and implementing NGOs. This curriculum and accompanying efforts to change national veterinary policy sparked a number of reactions. Firstly, the Kenya Veterinary Association rejected the idea of CAHWs being recognized as animal health service providers. Secondly, the Kenya Association of Livestock Technicians (KALT) realized that they were unrecognized by existing legislation governing the veterinary profession and decided to form their own Livestock Technicians Council (separate from the KVB). This became known as the Livestock Technicians Act and was passed by parliament in 2009. From 2004, the KVB and the KVA commonly argued that CAHWs would lead to a reduction in the quality of Kenyan veterinary services through increased drug residues in animal products, drug resistance, and reduced Kenyan livestock exports.

In 2011, the Veterinary Surgeons and Veterinary Para-Professionals (VSVPA) Act, sponsored by the KVA and KVB, was approved by parliament. This Act does not recognize CAHWs and only allows people with a minimum of two years' training to provide veterinary services in Kenya. The VSVPA Act essentially trumped the Livestock Technicians Act. All animal health components were removed from the Livestock Technicians Act before it was signed into law by the President of Kenya.

Since 2011, the KVB has stated it will not allow any more CAHWs to be trained in Kenya but would allow those trained prior to the 2011 Act to continue to work. Unfortunately, the gazetting of Acts' regulations was delayed until March 2013. In the intervening two years, Kenya's animal health service providers appear to have remained unclear about what the existing CAHWs may or may not do. The confusion resulted in some organizations changing the name of CAHWs to "trained farmers," "community mobilizers," "agents," and "community disease reporters." The Department of Veterinary Services and NGOs have minimized their

contact with existing CAHWs as per KVB policy statements. The Department of Veterinary Service stated that CAHWs would be limited to disease reporting and drew up lists of CAHWs they recognized. The CAHWs on the lists appeared to be literate ones, to allow written disease reporting to the department. The CAHWs or community disease reporters on this list were the ones that NGOs could officially work with. Since 2011, only government veterinarians appeared to be eligible to supervise and refresher train the existing CAHWs.

The KVB embarked on a process of awareness raising and discussion in the latter half of 2013.

2. Findings

2.1 Effectiveness of CAHWs as veterinary service providers

To help assess the effectiveness of CAHWs, two field trips were completed, to Turkana County in North West Kenya and Kajiado County in Maasailand. These trips included focused discussions with male and female livestock owners, CAHWs, local authorities, pharmacies, and NGOs. The work of two OFDA-funded NGOs was reviewed, the International Rescue Committee (IRC) in Turkana County and Concern Worldwide through its local partner Neighbours Initiative Alliance (NIA) in Kajiado County. Three to four communities were met in each location and a number of participatory appraisal exercises completed. These included key informant interviews, gender-disaggregated focus group discussions, participatory timelines, identification of animal health service providers and matrix ranking of their effectiveness, proportional piling to determine variation of disease impact over time, and proportional piling of CAHW income sources. The results of these trips, along with evidence from previous research, are presented below.

In all locations, the main animal health service providers (AHSPs) were identified as the Government Veterinary Department staff, private pharmacies or agro-vet stores selling livestock medicines, traditional medicines, and CAHWs. The CAHWs were in most places synonymous with NGOs. In Turkana County, NGOs were funding the Department of Veterinary Services to carry out surveillance, vaccination, and emergency animal health campaigns. This involved funding CAHW refresher training, transport, and per diems plus purchases of vaccines and dewormers. In this county, the distinction between who the CAHWs worked for was not always clear to the livestock owners. The only other AHSPs identified were "drug peddlers" or itinerant traders. In most areas, these people had ceased to function once CAHWs were trained. They were only identified in Turkana as people who were occasionally available when the livestock moved to Uganda. No traditional healers were identified. Knowledge about traditional medicines is, generally, widely held within the community and still utilized, particularly when modern medicines are not available in terms of access or affordability.

A timeline of livestock issues identified by Turkana livestock owners is shown in Figure A3.1. The timeline gives an indication of how drought prone, insecure, and disease afflicted the area is.

A timelines of livestock issues identified by Maasai livestock owners is shown in Figure A3.2. The timeline gives an indication of how drought and disease prone the area is and how mobile the population has been in the past. This mobility has become much more restricted with urban development and fencing across the county.

Refer to Figure A3.3 for a summary of Kenyan responses to indicators of effectiveness, and to Figure A3.4 for disaggregated scores for male and female CAHWs.

2.1.1 Accessibility

Men and women were asked separately to rank how close their AHSPs were. Both CAHWs (male and female) and traditional medicines received high scores. Women rated female CAHWs to be closer than male, as they tended to have more predictable routines and so could be

easily found when needed. In transhumant communities, the male CAHWs moved away with the livestock and were less available to women. Conversely, men tended to say female CAHWs were less available as they did not move with the livestock or were constrained by their domestic responsibilities.

It was noted in interviews with CAHWs that several were currently looking for alternative ways to support their livelihoods. One, for example, had recently purchased a motorcycle to begin a taxi service. Whilst many

expressed the wish to continue to work as CAHWs in the longer term, most lacked the access to the veterinary drugs required to do this.

In the communities visited, knowledge on the use of traditional medicines is widely known. It is therefore considered "close" or widely available.

Pharmacies generally scored low because they are town based. Government veterinary services scored the least as they were rarely seen outside of vaccination campaigns.

Figure A3.1
Timeline, Nakururum/Loteteleit, Turkana West District



Figure A3.2
Timeline, Iloodo-Ariak Location, Kajiado County



Figure A3.3
Matrix scoring of veterinary service providers in Kenya

Indicator	Service provider – median scores (range)				
	Government	Shops	CAHWs	Traditional healers	Other
<i>This service is close to us</i>	 4.5 (2–10)	 8 (1–29)	 16 (10–30)	 17.5 (6–30)	0 (0–12)
<i>The service provider always has medicine</i>	 6.5 (2–12)	 18 (6–28)	 8 (0–23)	 15.5 (5–29)	0 (0–9)
<i>The service is always available</i>	 6.5 (0–16)	 5.5 (1–27)	 16.5 (2–25)	 18 (9–28)	0 (0–4)
<i>The service is affordable</i>	 9.5 (0–15)	 7 (2–14)	 11 (0–15)	 24 (20–33)	0 (0–0)
<i>We trust this service provider</i>	 11.5 (4–24)	 4 (1–20)	 15 (3–24)	 14.5 (8–22)	0 (0–0)
<i>Our animals usually recover with this service</i>	 18 (7–30)	 4.5 (1–20)	 14 (2–28)	 11.5 (4–20)	0 (0–0)
<i>This service can treat all our animal health problems</i>	 21.5 (13–32)	 3.5 (1–14)	 12 (0–21)	 11 (4–18)	0 (0–2)
<i>The quality of medicine is good</i>	 22 (16–25)	 4.5 (1–19)	 14.5 (0–20)	 7 (4–15)	0 (0–0)

Notes:

Median scores derived from matrix scoring with 10 informants groups.

Wide range of scores for some service indicators indicates high variability between locations.

2.1.2 Availability

Availability was assessed in terms of the AHSPs having medicines in stock and the AHSP being physically present for consultation. Pharmacies scored well. Even though they did not score well in terms of accessibility, they were recognized to have medicines in stock, and their locations are known. Traditional medicines also scored well in terms of being available

to collect. Neither CAHWs nor the government veterinary services scored well for stocking medicines. Communities commented that CAHWs no longer have medicines, due to lack of capital and restrictions from the government. Female CAHWs had fewer medicines than male. When they did have medicines, the communities utilized their services.

Figure A3.4
Comparison of the effectiveness of CAHWs by gender in Kenya

Indicator	Type of informant group	Median scores Female CAHWs	Male CAHWs
<i>This service is close to us</i>	Female	● ● ● ● ● ● ● ● ● ● (10)	● ● ● ● ● ● ● ● ● ● (10)
	Male	● ● (2)	● ● ● ● ● ● ● ● ● (9)
<i>The service provider always has medicine</i>	Female	● (1)	● (1)
	Male	● ● ● (3)	● ● ● ● ● (5)
<i>The service is always available</i>	Female	● ● ● ● ● ● ● ● ● ● (9)	● ● ● ● ● ● ● ● ● ● (10)
	Male	● ● ● (3)	● ● ● ● ● ● ● ● ● (8)
<i>The service is affordable</i>	Female	● ● ● (3)	● ● ● ● ● ● (6)
	Male	● ● ● ● ● (5)	● ● ● ● ● ● ● (7)
<i>We trust this service provider</i>	Female	● ● ● ● ● ● ● (7)	● ● ● ● ● ● ● (7)
	Male	● ● ● ● (4)	● ● ● ● ● ● ● (7)
<i>Our animals usually recover with this service</i>	Female	● ● ● ● ● ● ● ● ● (7.5)	● ● ● ● ● ● ● ● (8)
	Male	● ● ● ● ● (5)	● ● ● ● ● ● ● ● (8)
<i>This service can treat all our animal health problems</i>	Female	● ● ● ● ● (5)	● ● ● ● ● ● ● ● (8)
	Male	● ● ● ● ● (5)	● ● ● ● ● ● ● ● (8)
<i>The quality of medicine is good</i>	Female	● ● ● ● ● ● ● ● ● (8)	● ● ● ● ● ● ● ● ● (8)
	Male	● ● ● ● ● (4.5)	● ● ● ● ● ● ● ● (8)

Both CAHWs and traditional medicines scored well in terms of being available. Although CAHWs don't have medicines, like they used to, they are still asked for advice on dosage rates and which drugs to use. They are also asked to inject animals on behalf of the owners. The latter is normally done as a community service. Women noted that female CAHWs were more available to them than male CAHWs.

Government veterinary services scored low because, due to transport and staff shortages, they are only seen occasionally in rural areas, and this is usually confined to vaccination campaigns. Pharmacies did not always score well in terms of availability because they did not give advice with their sales and were considered relatively expensive. This was variable; in Kajiado County, the pharmacies appeared to have a higher level of expertise and were considered more available by the men consulted. These men complained that CAHWs rarely had drugs.

2.1.3 Affordability

Pharmacies scored least well in terms of affordability in all areas. CAHWs and government veterinary services scored better but often with the comment, "if they had medicines." This probably reflects the subsidized prices of drugs supplied in the past. CAHWs did score higher than government, partly because they were negotiable in terms of pricing and would provide drugs on credit. The latter may account for the CAHWs finding it difficult to retain their initial stock of drugs. Traditional medicines were considered most affordable as they are free to collect and administer.

2.1.4 Acceptance

Both CAHWs and traditional medicines scored well for acceptance or trust. It was commonly noted that CAHWs remain part of the community and need to behave well to retain community respect. Women trusted female CAHWs more than male CAHWs because they tended to respond in a timely way and communicate politely. Traditional medicines reflect the knowledge of the community, and that, having been gained over millennia, is respected.

Government veterinary services scored relatively well. They had reduced acceptability, because they were rarely seen. However, people recalled they provided good advice and quality medicines and vaccines when seen. Similarly, CAHWs had lost some respect because they had no medicines.

Pharmacies had mixed acceptance. In some areas, it was perceived that, as their primary motivation was profit, they would sell expired

medicines to the unsuspecting. People complained that they would not give adequate advice with the drugs they sold. This was particularly the case in Turkana. However, in Kajiado County, the men (not the women) were much more accepting of pharmacies. The men scored the CAHWs very low because they had no medicines.

2.1.5 Quality

The quality of the AHSP's work was assessed in terms of sick animals recovering, the AHSP being able to meet a wide range of animal health-related needs, and the quality of medicines supplied.

Government veterinary services consistently scored well in terms of being able to treat all animal health problems. Despite the complaints that they were rarely seen, the quality of their vaccines and medicines, the investigation and sampling of new diseases, the training of CAHWs, and fact that they did vaccinations were all recognized. CAHW work was often closely aligned with government. They received training and knowledge from the government vets. They used the same quality medicines as the government. CAHWs also scored well because, even though they no longer had medicines, they provided advice to livestock owners. Male CAHWs were generally recognized as being stronger and therefore more adept at handling of cattle. Women advised that the quality of service they received from female CAHWs was higher, as it was accessible and polite.

Communities recognized that traditional medicines are only useful for certain diseases such as internal and external parasites, retained placenta, and wounds. They therefore scored well with the proviso that communities understood which diseases traditional medicines could not assist with. Pharmacies did not score well because of distrust around the quality of the medicines and advice that they provide. However—as noted earlier—the men in Kajiado County appreciated the quality of the medicines sold in the local pharmacies. Stock analysis by the evaluators showed that private pharmacy managers and owners in Kajiado had better technical knowledge and stocked better-known brands. In several cases, the shops in Kajiado County were owned by a pharmacist or a veterinarian. This was not the case in Turkana.

2.1.6 Impact of CAHWs on disease

As can be seen from Figures A3.5 and A3.6 below, the general disease situation appears to have improved. Communities stated that negative impacts of disease were lower five years ago when CAHWs were more active.

2.2 How CAHWs impact the public good

2.2.1 Disease surveillance

Effective disease surveillance starts with the livestock owner. As members of the community, CAHWs have a vested interest in reporting outbreaks of known and unknown diseases to the Department of Veterinary Services. When government veterinary services are under-resourced, CAHWs can significantly improve the sensitivity of surveillance systems. It was a CAHW that brought news of the devastating PPR outbreak to the attention of the Turkana County Veterinary Authorities in 2006 (Meyers et al., 2009). The effectiveness of CAHWs in disease surveillance has long

been recognized (Catley et al., 2004) and proven to be more effective than systems that do not utilize communities and CAHW networks (Allport et al., 2005). This role of CAHWs appears to have been recognized in Kenya with CAHWs being renamed as “Community Disease Reporters” by some County Directors of Veterinary Services in dryland counties. The commonest CAHW reporting mechanism was via the local chief’s office or directly to the county veterinary staff via mobile phone. Phone charges were normally met by the CAHW. However, NGOs in Turkana had supplied CAHWs, via county veterinary authorities, with phones and air time for disease reporting. Veterinary staff in the counties did acknowledge their reliance upon CAHWs for disease reporting.

Figure A3.5
Changing livestock disease impacts, Turkana, Kenya

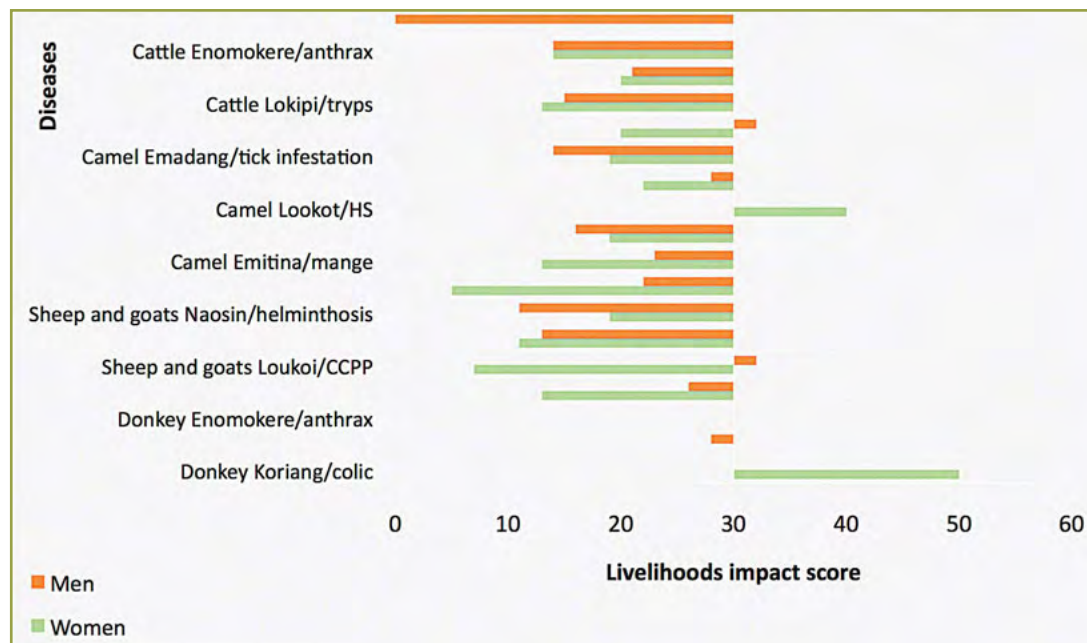
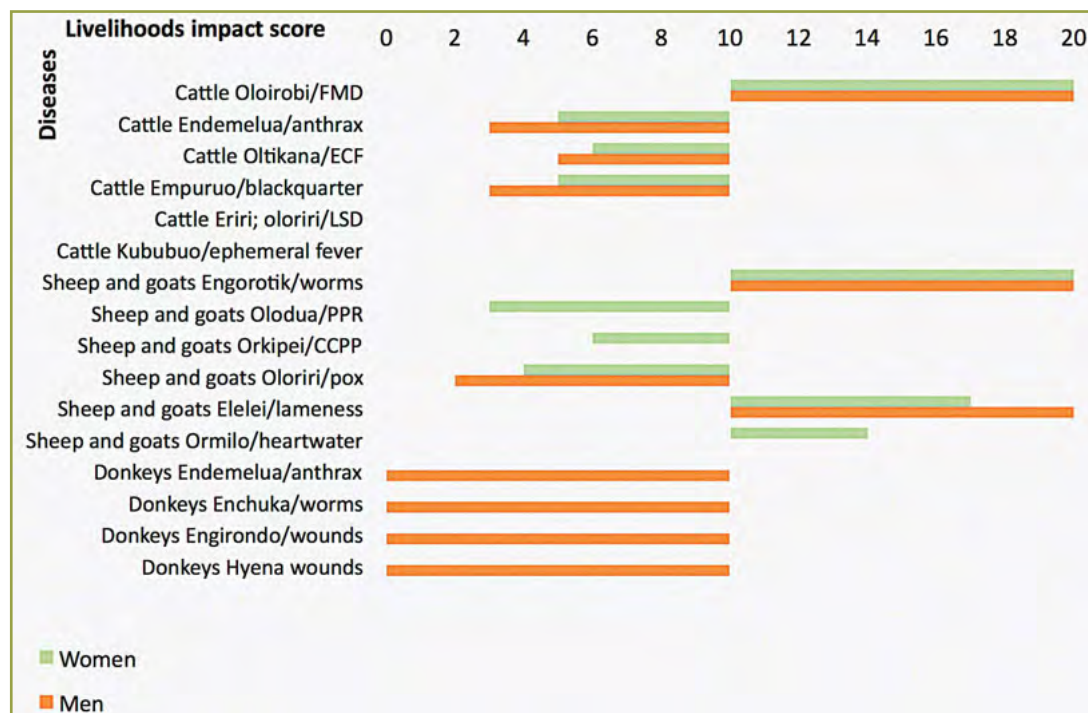


Figure A3.6
Changing livestock disease impacts, Kajiado, Kenya



Notes:

The baseline reference line of 30 represents the livelihood impact of the disease before CAHWs, in three locations. In each location, a starting point of 10 counters was used for each disease, i.e., a total of 30 counters for the three locations. A score of <30 indicates a positive/reduced impact of the disease; a score >30 represents a negative/increased impact of the disease. If no bar is shown for a particular disease, the score = 30, i.e., no change in livelihoods impact. The scoring was repeated with 6 informant groups of men and women.

2.2.2 Zoonosis control

There was no evidence that CAHWs are currently utilized for zoonosis control in Kenya. CAHWs appear to have been confined to providing extension messages related to animal disease control and production. For example, a CAHW training curriculum, as reported by Ngeiywa and Masake (2009), states that CAHWs are trained to provide extension messages on lick block production, hay and silage conservation, and veterinary public health.

One project in NE Kenya, the Wajir South Development Association, had trained CAHWs to carry out simple human health treatments in the mid-1990s, but there was no evidence that these CAHWs were still operating.

2.2.3 Vaccination programs

The role of CAHWs in government-managed livestock vaccination campaigns is no longer clear in Kenya. Up until 2011, the County Veterinary Authorities did utilize CAHWs for vaccinations and deworming during campaigns. Since the enactment of the VSVP Act, authorities appear to be reluctant to admit that CAHWs are still being utilized for vaccination. Government veterinary staff at Nairobi level and county level advised that CAHWs merely restrain animals so that they may be vaccinated by government staff, and that CAHWs can only carry out deworming. However, CAHWs advised the evaluators that they continue to carry out vaccinations, in addition to deworming, during campaigns. In Kajiado, the NGO NIA has, with OFDA support, funded emergency vaccination campaigns via the county authorities. NIA budgets for the payment of CAHWs who vaccinate, and CAHWs confirmed that they had vaccinated and been paid. The evaluators were shown reports to donors that described CAHWs being utilized for PPR vaccination with support and knowledge of county veterinary authorities. This unwillingness by government veterinary doctors to admit utilizing CAHWs because they do not have the resources to do the job properly themselves indicates some of the confused thinking around CAHWs in Kenya. There appeared to be a strong belief by some senior policy makers that, despite years of cutbacks, government veterinary services would again receive adequate funding in the future.

Livestock owners in Kajiado County reported that vaccination campaigns have become increasingly infrequent as the Department of Veterinary Services' resources and budgets continue to diminish. Some CAHWs reported not being involved in vaccination for two years or more. The livestock owner timeline and disease impact scores for Kajiado shows how foot and mouth disease has regressed from rare to common due to lack of vaccination.

In Turkana, vaccination campaigns have occurred more regularly with funding facilitation from NGOs.

2.3 Sustainability of CAHWs

The selection, training, and regular refresher training of CAHWs have been shown to be important factors influencing sustainability. Guidelines on such practices are available (Catley et al., 2004; LEGS, 2009). A comprehensive, standardized CAHW training curriculum and guideline was drafted by the KVB in 2003. Although the KVB curriculum was never officially endorsed, it was utilized by NGOs in Kenya, including the OFDA-funded NGOs, up to 2011.

2.3.1 CAHWs as small businesses

Assuming adequate training and community recognition, CAHWs must have recognition from government veterinary services and investment from the private sector to be sustainable. There are three mechanisms for them to be sustained:

- CAHWs can be employed and supervised by the State.
- The State can also contract private veterinary practices that utilize CAHWs to carry out disease control and surveillance work on its behalf.
- Private veterinary practices can supervise and pay incentives to CAHWs, either in the form of a salary or, more likely, in the form of a share in any profit on drug sales made by the CAHW.

The evaluators found that Kenya had developed a range of mechanisms to sustain the livelihoods of CAHWs. County veterinary authorities have paid CAHWs to assist with disease vaccination campaigns and emergency drug treatments, such as deworming in drought conditions. The CAHWs are not government employees and never have been. They have been paid a daily allowance ranging from 500–1,500 Kenya shillings (US\$6–20) when working for campaigns. However, this is not institutionalized, as it is normally provided by the facilitating NGO or donors rather than government core funds budgets.

There was no evidence that the private sector had been contracted to provide surveillance or vaccination services.

The private sector in Kenya has, with the support of NGOs, developed two sustainable models for providing animal health services through CAHWs. The first involves a private vet taking responsibility for the actions of AHAs and CAHWs in terms of their ongoing training, supervision, drug supply, technical back-up for referral cases, and disease outbreak reporting. Two examples of such practices were seen during the evaluation, and both appear to be prospering and expanding. One of the practices, "Pastoral Veterinary Services" (PAVES), has recently been reviewed (Box A3.1).

Box A3.1

Pastoral Veterinary Services (PAVES) (source: Ngeiywa and Masake, 2009)

PAVES, established in 2001, uses a chain of AHTs and CAHWs to provide quality veterinary drugs, products, and services to livestock owners of Pokot County and beyond. The private veterinarian based at Kapenguria (Dr. Benson Ririmpoi) set up a drugstore at Makutano, using his own equity as start-up capital. Subsequently, some pharmaceutical companies advanced him goods. Later on, the Community-Based Animal Health and Participatory Epidemiology (CAPE) Unit of African Union/Interafrican Bureau of Animal Resources (AU-IBAR) gave him an interest-free loan to boost the business. Dr. Ririmpoi, a private practitioner, connected to CAHWs, the majority of whom used to be itinerant drug traders. Selected CAHWs were offered refresher courses on management of veterinary drugs, their uses, and routes of administration, and they were equipped with business skills. These CAHWs were linked to AHTs, who procure drugs from the PAVES drugstore. The AHTs sell drugs to CAHWs, supervise, and provide professional support. Initially, only two AHTs were



continued on next page

linked to the PAVES drugstore. This rose to six in 2009. In order to improve profitability and sustainability, the AHTs and CAHWs have diversified their businesses and are now stocking agrochemical products and other goods required by pastoralists like “*shukas*” (cloth wraps) and sandals.

The PAVES model is pegged on the loyalty of the CAHWs and AHTs. This is determined mainly by product prices and close supervision as well as a “requirement for legitimacy.” Only about 45% of the CAHWs are considered active and associate and purchase goods from PAVES. Other veterinary drugs and products outlets exist and are sometimes cheaper than PAVES.

The PAVES business model has done relatively well to the extent that financial institutions are now inviting PAVES to borrow funds without fear. Pharmaceutical companies have funded extension and promotional campaigns and offered free drug samples to livestock keepers. NGOs have sometimes assisted in community mobilization and dialogue meetings and also transport during field supervision. NGOs also contract PAVES for training and to provide business support to AHTs.

The DVS has also played a key role in regulating the work of CAHWs and providing professional supervision. The Department has contributed to training and receives monthly progress reports through the private veterinarian. The Department also offers Dr. Ririmpoi contracts for supply of products—for example, during vaccination campaigns. PAVES has seen significant impact in animal health service delivery using CAHWs. For example, “quacks” selling drugs to livestock keepers have been pushed out of business, and a professionally supervised system has been put in place instead.

The second model of practice was being developed by an OFDA-funded NGO. It involves local “agro-vet” stores or pharmacies working with livestock owners through a network of agents, a form of CAHW. These private pharmacies are generally run by animal health assistants (AHAs) rather than vets. Animal health assistants are not necessarily preferred, but few vets appear willing to work in remote, arid counties for the income generated by a relatively small store. The private pharmacies supported by the NGO were already in business and therefore run by entrepreneurs. They receive business training and introductions to primary drug suppliers. The NGO has tried to promote linkages between these stores and county veterinary authorities by funding the placement of solar-powered cold chain facilities within each pharmacy. The government uses these cold chain facilities during vaccination campaigns. To date, this model appears to be working well but has yet to be tested by a major drought.

NGOs and the pharmaceutical wholesalers both recognized the negative impact that the 2010/11 drought in NE Kenya and Somalia had on small private pharmacy businesses. Bekele and Akumu (2009) describe the efforts of VSF-Switzerland to develop “agro-vet” stores linked to pharmacy wholesalers in Nairobi and to CAHWs locally in NE Kenya. All appeared to be going well, with a positive impact on livelihoods recorded up to the 2011 drought. The evaluators found that most of these stores ceased to purchase drugs from wholesalers following the drought. Many livestock were moved from the drought areas, and those that stayed belonged to people who could either not afford to purchase drugs or were provided free drugs by NGOs. Government veterinary services, the humanitarian community, and the private sector do need to collaborate more effectively in such emergencies to ensure the longer term viability of small, private enterprises. Voucher schemes could be one mechanism for doing this, but they need to be set up in advance of the drought, perhaps be broader than just animal health provision, and take account of livestock movement. Movement and migration, including cross-border utilization of resources, is key to the survival of pastoralists.

One potentially useful animal health delivery model that is currently being developed in Kenya is the franchise model. The franchise Sidai Africa Ltd²¹ is attempting to establish 150 franchisees across Kenya, with financial support from the Bill and Melinda Gates Foundation and a broad base of commercial and development partners. Sidai offers livestock professionals a comprehensive package of support that includes access to branding, technical and commercial support, access to finance, and a package of quality drugs at prices negotiated with wholesalers. The franchise has yet to establish any outlets in the more remote and drought-prone areas of Kenya. However, this could change in coming years. Sidai is a partner of the USAID-funded “Resilience and Economic Growth in the Arid Lands-Improving Resilience” (REGAL-IR) project. This five-year project aims to diversify livelihood opportunities, improve market

access, reduce disaster risk, and improve nutritional outcomes across Kenya’s northern arid lands, many of the areas where Sidai is not currently operating.

The evaluators found several examples of NGOs facilitating groups of CAHWs to establish their own drug stores, with collective management of a revolving fund. Whilst commonly requested by CAHWs, these initiatives have generally not been successful. The reasons for the poor performance of collectively managed drug supplies have been described (Catley et al., 2004; Karani et al., 2009) and include:

- Too little personal capital being invested, i.e., most of the risk is carried by the NGO;
- Management by committee or by individuals without the necessary entrepreneurial drive;
- Inadequate supervision by veterinary doctors.

The evaluators examined a drug store managed by a group of CAHWs and supervised by the county veterinary staff in Turkana. The store had been given drugs by an NGO (not funded by OFDA) that were not popular with the livestock owners. Having failed to sell, the drugs exceeded their expiry date and had to be disposed of by the government vet. Whilst the government staff made efforts to support this store, they had no vehicle, and visits were dependent upon NGO facilitation.

The evaluation found numerous examples of CAHWs travelling to urban centers to purchase drugs for sale to the local communities. Such entrepreneurial CAHWs tended to be male. However, without veterinary supervision, this is not a model that would be encouraged or allowed in Kenya. According to World Organisation for Animal Health (OIE) guidelines on quality veterinary services, veterinary para-professionals should work under the supervision of veterinary surgeons, according to parameters set by the national statutory veterinary body. This means CAHWs work under the direct supervision of government veterinary services or a private vet. Currently there is no definition of what constitutes adequate supervision in Kenya.

2.3.2 CAHW and emergencies

CAHWs have been incorporated into humanitarian responses in Kenya. Aklilu and Wakesa (2002) evaluated and drew lessons from livestock emergency responses to the 1999–2000 drought that affected NE Kenya. They concluded that the success of the animal health component was due to involvement of local communities, the Kenyan government veterinary department, and the community-based animal health workers in both planning and implementation.

In Turkana, CAHWs have and continue to provide an important service reporting drought conditions in rural areas and mobilizing community members during emergency responses. These include slaughter offtake of livestock and carrying out vaccination and treatments

²¹ <http://www.sidai.com/index.php>.

on behalf of the government and NGOs. Government livestock production officers and senior administration officers of the county stated that they appreciated this role. CAHWs valued the role as it allowed them to support their community and earn a daily allowance.

2.3.3 Supervision and training

Over the past decade, the training and supervision of CAHWs has gradually shifted from NGO vet staff to government vets. The Department of Veterinary Services has requested that NGOs sign a memorandum of understanding if they work on animal health issues.

Since the VSP Act was passed in 2011, county veterinary authorities have drawn up lists of CAHWs that they recognize and will use for disease reporting and vaccination campaigns. Government staff provide refresher training and supervision of these CAHWs. Most NGOs consulted appear to have accepted this and facilitate the government staff according to their projects and resources. However, the situation is generally unsatisfactory, as many government staff have not been trained as trainers, and there is no mechanism for recognizing trainers. Supervision appears to be minimal and mainly confined to occasional contact during a vaccination campaign. There is no guidance on what constitutes minimum levels of supervision or budgetary support for CAHW-related work.

Whilst OFDA-funded NGOs appeared to have used quality trainers in the past, the evaluators received reports of other organizations requesting government staff to carry out short trainings to meet their budget limitations. This is not possible in an environment where government staff are short of funds, and there is no official training curriculum.

2.3.4 Policy and institutional issues

CAHW initiatives appear to have suffered from the confused policy environment in Kenya over the past decade. There has been significant discussion about how to manage CAHWs but few policy decisions.

The Food and Agriculture Organization (FAO) Kenya commissioned studies and workshops in 2009 to move the debate forward (Ngeiywa and Masake, 2009; Karani et al., 2009). Despite clear recommendations on how CAHWs could be supported and ministerial support, senior policy makers from the veterinary fraternity would not engage in the debate. In 2011, Kenya enacted the new VSP Act. The act was controversial, and wording within it was challenged by KALT and others in the High Court. The offending wording was eventually revised, and the act is now being implemented.

The VSP Act allowed the KVB to announce that no new CAHWs should be trained in Kenya, and only existing CAHWs could continue working. The regulations to accompany the act were not gazetted until March 2013. The KVB organized a series of workshops to explain the new act and KVB's roles from mid-2013, but little clarification was provided for the remaining CAHWs, as they are not mentioned in the regulations. The 2011 policy appears to have been detrimental in counties with functional CAHWs. The CAHWs no longer handle veterinary drugs. Officially, they only report diseases on a voluntary basis. Their incomes have reduced, and many are now seeking alternative income. Communities interviewed still valued the CAHWs but complained about them no longer handling drugs. Concurrently, government veterinary services in dryland counties have continued to be scaled back. In all areas visited by the evaluation, government veterinary services were understaffed and lacked transport. This situation is unlikely to improve in the short term. The government of Kenya announced a 29% cut in the 2013/14 budget for agriculture and emphasized that the remaining budget would focus on expanding irrigation and agribusiness.

This situation was described and discussed at length during the one-day workshop convened by the evaluation. During the workshop, the KVB presented plans for an internship scheme that they hoped would improve the number of newly graduated livestock technicians and veterinary doctors working in dryland areas. Unfortunately, there remains no strategy document describing how this scheme will be rolled out or funded.

The veterinary policy makers in Nairobi hoped that devolution of responsibility and budgets to county administrations under Kenya's new constitution would lead to a renewed investment in animal health activities in those counties with significant pastoralist populations. County budget figures published in August 2013²² do not appear to support this optimism, with only marginal increases in livestock and agriculture budgets. Legislators and governors from dryland communities expressed frustration with the current legislation, particularly the VSP Act 2011. The legislators confirmed that if CAHWs can be properly supervised and supported, they would like to see them operating in their counties. These groups have the mandate and means to amend legislation. However, this will require good organization and a clear understanding of what needs to be amended. Under Kenya's new constitution, counties have responsibility for animal disease control activities and can, in collaboration with the national veterinary services, prepare legislation accordingly. Only national government can regulate the veterinary profession.

With CAHWs undermined by the current policy and legislation, some organizations have embarked on new ways to improve animal health. FAO, for example, is investing in mass communication and farmer training through radio broadcasts and pastoralist Farmer Field Schools. The impact of these schemes is still being assessed.

The evaluation found that livestock owners valued private pharmacies managed by technically qualified people able to provide credible advice. These same livestock owners also respect the CAHWs who could, in theory, be linked to the pharmacies to carry out basic clinical work. Pharmacies managed by veterinary professionals are currently having to compete with pharmacies run by lay people and those stocking the cheapest of drugs being imported from China and India. These generic drugs have pushed some of the older brands off the shelves; their quality is not known. There is no adequate institution in Kenya for checking the quality of veterinary medicines on sale, despite studies to show there is potentially a serious problem with fake and substandard drugs (Dare, 2008; Van Gool, 2008; Grasswitz et al., 2004). This situation could change in coming years, as the KVB, under the VSP Act, can form a veterinary drug inspectorate.

3. CAHW workshop—Kenya

The evaluation convened a workshop on Wednesday, 26 June 2013 with OFDA-funded NGOs and other key stakeholders. The workshop had three objectives:

- To present and discuss the evaluation team's initial findings;
- To provide an opportunity for USAID-funded NGOs and key organizations such as the Kenya Veterinary Board and the Department of Veterinary Services to share information;
- To gather views from stakeholders on the way forward.

The workshop was attended by 37 participants (listed in Annex 2 of the main report). OFDA-funded NGOs provided short summary reports of their recent activities, the initial findings of the evaluation team were presented, and the KVB generously offered to present its ideas on establishing an internship scheme to support veterinary service delivery in dryland areas. This was followed by general discussion and a group exercise to look at the challenges, opportunities, areas for clarification, and ways forward for delivering veterinary services in dryland areas. The results of these group discussion are presented in the table below. The main points of the discussion were:

- The KVB believes Kenya has sufficient veterinary professionals; the problem is one of their distribution. Kenya is training approximately 1,000 veterinary professionals per annum. The KVB will require newly qualified graduates (vets and AHAs) to undertake an internship before they are licensed. The KVB will have to approve internship applications and will target dryland areas. The interns should be paid an allowance by government, but this has yet to be agreed to by the government. Supervision of the interns in remote areas will need to be worked out;

²² Government of Kenya, Commission on Revenue Allocation, County Budgets: 2013–2014, 12 August 2013.

- Kenya needs a proper plan for phasing out CAHWs and privatizing veterinary services in dryland areas. This has been discussed in the past, and no decisions were made. It was agreed in national workshops in 2002 that CAHWs would be phased out in five years, but no plan was developed. The internship idea also appears to have no strategic plan;
 - The VSVP act allows the KVB to establish a veterinary medicines directorate to help control the quality of agro-vets and private pharmacies;
 - CAHWs have been extremely useful in keeping basic veterinary services accessible in remote areas when government veterinary services were and continue to be cut back;
 - Dryland areas continue to suffer from policy contradictions. Kenya's Vision 2030 talks of supporting livelihoods and food production in arid areas, but the VSVP Act appears to undermine this;
 - Livestock owners need services now; they can't wait for plans to be drawn up and debated. Turkana livestock owners are already going to Uganda to get services, because the services are not in Kenya. Give MPs the information and let them act to change the legislation.
- Participants were divided into three groups and asked to list the challenges and opportunities facing vet service delivery in dryland areas. The results are presented below.

NGO Group	KVB/Department of Veterinary Services/Livestock Technicians Group	MPs, IBAR, and Private Sector Group
Challenges for Vet Services in dryland areas	Challenges for Vet Services in dryland areas	Challenges for Vet Services in dryland areas
• The vastness of the area and sparse populations (human and livestock) • Low literacy levels • Limited cash economy • Nomadic nature of the livestock • Poor infrastructure • Insecurity and cattle raids • Climate change shocks (drought, flood, emerging diseases) • Inadequate operational resources (fuel, allowances, cold chain, transport) • Community depends on NGO support • Weak institutions to support AH services (agro vets—quality assurance) • Community perceive that quality drugs are unavailable • Access by women to vet/animal health services • Gap in the flow of info from the KVB to the DVS and other actors • Negative perception by policy makers of pastoralist communities • The VSVP Act of 2011 limits access to animal health services in the remote areas of the drylands that are high in livestock numbers • The VSVP Act of 2011 limits flow of info. from bottom upwards (CAHWs—DVS)	• Infrastructure: road and communication network, physical offices, cold chain, housing (where will interns live?) • Human capacity: lack of skilled personal, inadequate numbers, welfare issues • Financial capacity weak • Culture and altitude, e.g., restrictions on disease surveillance/sample taking (Maasai don't allow jugular blood sampling) • Insecurity; cattle raids from neighboring countries • Poor information flow from the village level to the DVS • Ignorance/illiteracy for those delivering services • Poor marketing information and access, e.g., quacks, distortion of information • CAHWs are illegal as per the VSVP act, yet they exist • Level of training and exposure of CAHWs limits them on what they can handle • The entry point for animal health is still high • Lack of incentive to CAHWs to report diseases (currently done on voluntary basis and often with no response from govt.)	• Lack of infrastructure: physical, non-physical • Vastness—high cost of service delivery • Cultural practices (negative), e.g., overstocking • Significant human capacity/ environment challenges • Literacy levels—low • Inadequate human resources • Inadequate funding • Inadequate/inappropriate policies—they don't take into account the uniqueness of drylands, e.g., disaster preparedness policy • Lack of coordination of the service-providers in drylands • Livestock diseases already significant problem • Inadequate or nonexistent drug supply system • Resource conflicts over pastures, water, other natural resources • Inadequate diversification of livelihoods • Market access poor
Opportunities	Opportunities	Opportunities
• Wide acceptance of CAHWs by livestock communities • Upgrading finalizing CAHWs training • Certificate training for CAHWs (Using a KVB curriculum) • Refresher training for CAHWs for service delivery	• Devolved government, i.e., new constitution—counties will give priority to livestock • Increasing awareness on animal health issues • New policy and legislation • CAHWs are community mobilizers and disease reporters	• Existence of animal health delivery systems, which can be improved upon, e.g., with amendments of the VSVP Act • Existence of AHSPs, NGOs, Govt. • Acceptability of CAHWs by the community • Communication networks • Devolution of new constitution

continued on next page

NGO Group	KVB/Department of Veterinary Services/Livestock Technicians Group	MPs, IBAR, and Private Sector Group
Challenges for Vet Services in dryland areas	Challenges for Vet Services in dryland areas	Challenges for Vet Services in dryland areas
Opportunities	Opportunities	Opportunities
• Devolution may lead to availability of more resources for animal health • ICT improves communication of health issues and payment of service (mobiles, phone money transfer systems, e.g., M-Pesa) • CAHWs provide an opportunity— linking indigenous knowledge with modern vet knowledge • Improved cash economy through stronger livestock value chains and hence motivation for CAHWs • Good CAHW networks provide an opportunity for private vet service in dryland areas • Roll-out of the internship program mentioned in the VSVP Act • Interns could provide an interface b/w the vet service and CAHWs	• CAHWs are filling a service gap • Other Government of Kenya partners can support the upgrading of CAHWs • Veterinary policy—there is goodwill, and vet policy talks of upgrading of CAHWs	• Implementation of draft vet policy—with availability of resources, interns provide services • Privatization policy—vets partnering with CAHWs and AHAs • Learn from neighboring countries
Areas for the clarification		Way Forward
• How NGOs will continue to work with CAHWs • Clear analysis of animal health service delivery in drylands other than viewing interns as a solution to animal health in drylands • VSVP Act should have context specific clauses • Roll-out plan for the Act in relation to CAHWs • Act not clear on who to control agro-vets in the delivery of quality drugs		• Amended VSVP Act of 2011 to be inclusive of every animal health service provider • Implementation of animal health strategic plans • Adequate resource allocation, i.e., sensitization of county leadership • Sharing of OFDA CAHW evaluation findings to relevant stakeholders

The three discussion groups all agreed that providing veterinary services in pastoralist areas is particularly challenging. Notable points made by the groups included:

- Admission that CAHWs are filling a service gap;
- CAHW training limits their activities, but there could be scope for further training;
- There is goodwill on upgrading CAHWs and perhaps linking them to an internship scheme;
- The VSVP Act in its current form is an obstacle for improving community-based services in dryland areas;
- It is still not clear who is allowed to manage the many “agro-vet” stores that supply veterinary drugs to many rural areas in Kenya;
- Devolution could provide increased interest to support strengthening of animal health services in pastoralist counties.

Following the CAHW workshop, discussions between policy makers, NGOs, and the FAO have continued in Kenya. There now appears to be an opportunity for compromise as new county administrations formulate their policies and budgets. Senators and Members of Parliament (MP)

from pastoralist counties appear ready to engage on animal health policy and are seeking further information. A number of organizations or groups have potential to facilitate further discussion and information sharing, including:

- The “Arid and Semi-Arid Lands (ASAL) Donor Group:” This group brings together both humanitarian and development partners. The group is chaired by the European Union and co-chaired by USAID, with FAO acting as secretariat. The group aims to align and coordinate resilience support in ASAL areas and to present a coordinated and harmonized developmental response to the Government of Kenya, especially on investment and policies for the ASAL. The group works closely with Kenya’s National Drought Management Authority (NDMA);
- FAO as an international agency with a mandate to support animal health services in developing countries;
- The Intergovernmental Authority for Development (IGAD), through its Centre for Pastoral and Livestock Development (ICPALD). ICPALD has the mandate to support member states.

Suggested way forward	Possible implementing partner
1. Formulate and pilot models of animal health service delivery that compare the effectiveness of internship schemes suggested by the KVB with existing Vet/AHA/ CAHW delivery models. Establish monitoring systems to further inform policy makers at county and national levels. Comparison could include the Sidai Africa franchise model.	A consortium of NGOs, Department of Veterinary Services, KVB, and KLIFT, working with the ASAL Donor Group
2. Support the pastoralist parliamentary group to gather information and develop a position on CAHWs. This could include options for developing subsidiary legislation for pastoralist areas.	ICPALD and NGOs with policy process experience
3. Assess the practicality of training CAHWs as animal health technicians (as suggested by the KVB).	FAO, building on experiences with farmer field schools
4. Investigate possible mechanisms for contracting vaccination and disease surveillance to the private sector.	Department of Veterinary Services/KLIFT/KVA
5. Prepare regional voucher scheme guidelines that apply to Kenya's policy and legislation.	NGO, with ASAL Donor Group

Annex 4: Detailed report—South Sudan

1. Background

The evaluation team carried out one-to-one and group discussions with over 50 individuals and 22 organizations, varying from senior government officers at national and state level, international agencies, NGOs, donors, pharmacies, and community groups.

South Sudan has experienced dramatic political and policy upheaval over the past decade. The evaluation team found this had significantly impacted Community-Based Animal Health Workers (CAHWs). A timeline of key events for South Sudan is shown in Figure A4.1.

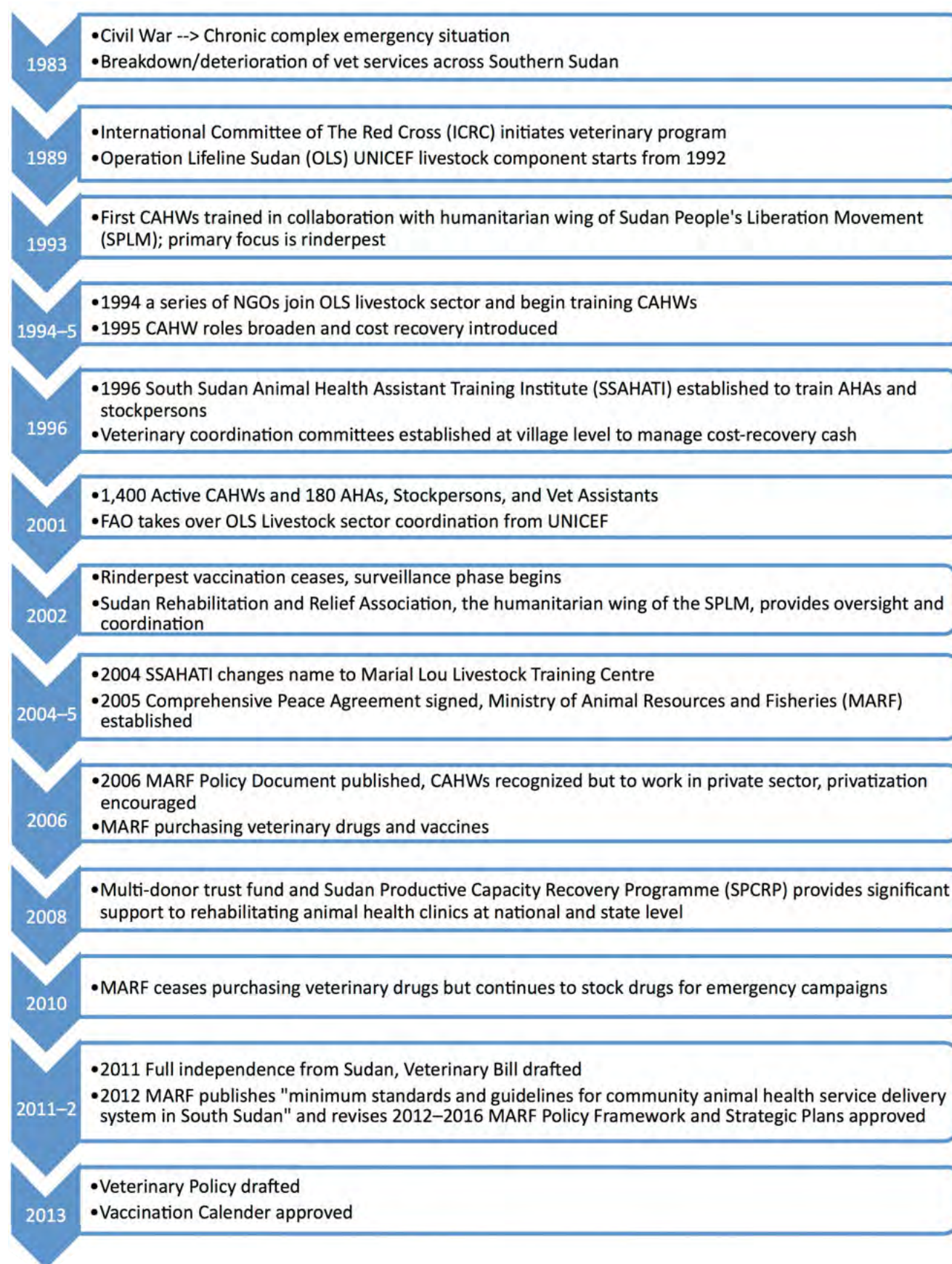
Following the outbreak of the second war in southern Sudan in 1983, national veterinary services were confined to government-controlled "garrison towns." The rural areas, largely controlled by the Sudan People's Liberation Movement (SPLM), had no veterinary services. Animal health deteriorated accordingly. The SPLM tried to address this in 1986 with an importation of some veterinary drugs from Ethiopia. However, substantive support to the veterinary sector did not materialize until the Danish-funded International Committee for the Red Cross (ICRC) veterinary program began in 1989. This large program attempted to distribute veterinary drugs and vaccines through the few remaining ex-government para-veterinary staff still residing in rural areas. ICRC was forced to withdraw from South Sudan in 1991, and UNICEF's Operation Lifeline Sudan (OLS) started a veterinary program the same year. It was this OLS program that introduced the concept of CAHWs in 1993, with dramatic results. The number of animals vaccinated against rinderpest increase by ten-fold in the first year (Jones et al., 2010). Because of massive demand for animal health services across southern Sudan, NGOs were invited to set up projects and train CAHWs from 1994. The NGOs were provided coordination and technical support by UNICEF OLS. Whilst the immediate priority was the control of rinderpest, CAHW activities quickly broadened to include the control of other major disease problems of cattle. Because of the war, sheep and goat numbers were significantly reduced in the mid-1990s, and emphasis was placed on the remaining cattle. Subsidized

cost recovery was introduced from 1995 as a means of providing an incentive to CAHWs and instilling the notion of payment for services in livestock owners. By 2001, 1,400 CAHWs and 180 stockpersons and animal health auxiliaries (AHAs) had been trained and were active. This figure increased to approximately 4,000 CAHWs and 400 veterinary para-professionals by 2005. From 2002, the CAHWs and veterinary para-professionals were also used for rinderpest surveillance and disease outbreak investigation as part of Sudan's efforts to prove its freedom from rinderpest. This surveillance role provided extra income to animal health service providers.

A key juncture in the delivery of veterinary services in southern Sudan came with the signing of the "Comprehensive Peace Agreement" (CPA) in 2005. From this point, the South Sudan Government formed the Ministry of Animal Resources and Fisheries (MARF) in Juba. The new ministry received funding support for animal health services through the FAO-supported Sudan Productive Capacity Recovery Program (SPCRP) and a World Bank-managed Multi Donor Trust Fund (MDTF). Since its inception, MARF has had a policy to support the continued use of CAHWs but in the private sector.

From 2005, CAHWs in South Sudan primarily relied upon MARF vaccination campaigns and NGO/MARF drug distributions for income. CAHWs were paid a proportion of the cost recovery charged for vaccinations and treatments. Since MARF took control of veterinary services from OLS in 2005, the donor community significantly scaled back its support to NGOs for CAHWs. Private animal health service providers did not exist in South Sudan in 2005 and only began to develop once MARF ceased supplying subsidized veterinary drugs in 2009. With waning NGO support, reduced drug supply, and smaller, less frequent vaccination campaigns, thousands of CAHWs found alternative livelihoods outside the sector, primarily in the army. The current number of active CAHWs is not known but is thought to be around 30% of the 2005 figure, or approximately 1,000.

Figure A4.1
Timeline of policy events in South Sudan livestock sector



2. Findings

2.1 Effectiveness of CAHWs as veterinary service providers

Two field trips were completed to:

1. Jonglei State and the state capital Bor: This area has experienced significant livestock raiding-related conflict and in late 2013 was decimated by inter-ethnic clashes. In July 2013, the team visited cattle camps around Bor Town and private pharmacies and CAHWs within the town. This area is currently experiencing an outbreak of East Coast Fever.
2. Northern Bahr el Ghazal (NBEG) State and the state capital Awiel: NBEG is currently remote from markets. Conflict between South Sudan and Sudan has closed down much of the traditional trade between NBEG, Darfur, and Khartoum; in particular, the supply of veterinary medicines from Khartoum. The team travelled by road to Awiel West and Awiel North from Nyamlell to meet communities and CAHWs. Private pharmacies were visited in Nyamlell and Awiel.

Three to four communities were interviewed in each location and a number of participatory appraisal exercises completed. These included key informant interviews, gender-disaggregated focus group discussions, participatory timelines, identification of animal health service providers and matrix ranking of their effectiveness, proportional piling to determine variation of disease impact over time, and proportional piling of CAHW income sources. The results of these trips along with evidence from previous research are presented below.

In all locations, the main service providers were identified as government veterinary services, pharmacies selling medicines, traditional medicines, and CAHWs. The CAHWs were in most places synonymous with NGOs. No traditional healers were identified, as knowledge about traditional medicines is, generally, widely held within the community and only utilized when modern medicines are not available.

A timeline of livestock issues identified by Bor County livestock owners is shown in Figure A4.2. The timeline gives an indication of how

insecure and disease-prone the area is. A timeline of livestock issues identified by livestock owners in Awiel West is shown in Figure A4.3. The timeline gives an indication of the robust growth in livestock numbers since CAHWs were introduced and the war ended.

Refer to Figure A4.4 (Matrix scoring of veterinary service providers in South Sudan) for a summary of South Sudan responses to indicators of effectiveness and to Figure A4.5 for disaggregated scores for male and female CAHWs.

2.1.1 Accessibility

Men and women were asked separately to rank how close their animal health services providers (AHSPs) were. CAHWs consistently scored the highest in terms of their proximity to the livestock owners. They are selected by and live within the community. Both men and women scored male CAHWs higher than female CAHWs, giving as the reason the ability of male CAHWs to move with the cattle and the many domestic responsibilities of female CAHWs. Traditional medicines, although found locally, are not used much when modern medicines are available. They therefore scored low. Government veterinary services and pharmacies received low scores because they were primarily urban based and so less accessible. The government only responded when CAHWs reported disease outbreaks, and even then their resources, in terms of transport, medicines, and vaccines were extremely limited.

2.1.2 Availability

Availability was assessed in terms of the AHSPs having medicines in stock and being obtainable. Private pharmacies and agro-vet shops scored highly for always having medicines in stock. Government veterinary services and CAHWs had similar low scores for medicine availability. The CAHWs were seen as getting their medicines from the government and, as neither had medicines, both scored low. CAHWs interviewed stated that their access to medicines was better when they were supplied by NGOs, but this has stopped in most areas.

Figure A4.2
Timeline, Bor County, Jonglei State, South Sudan

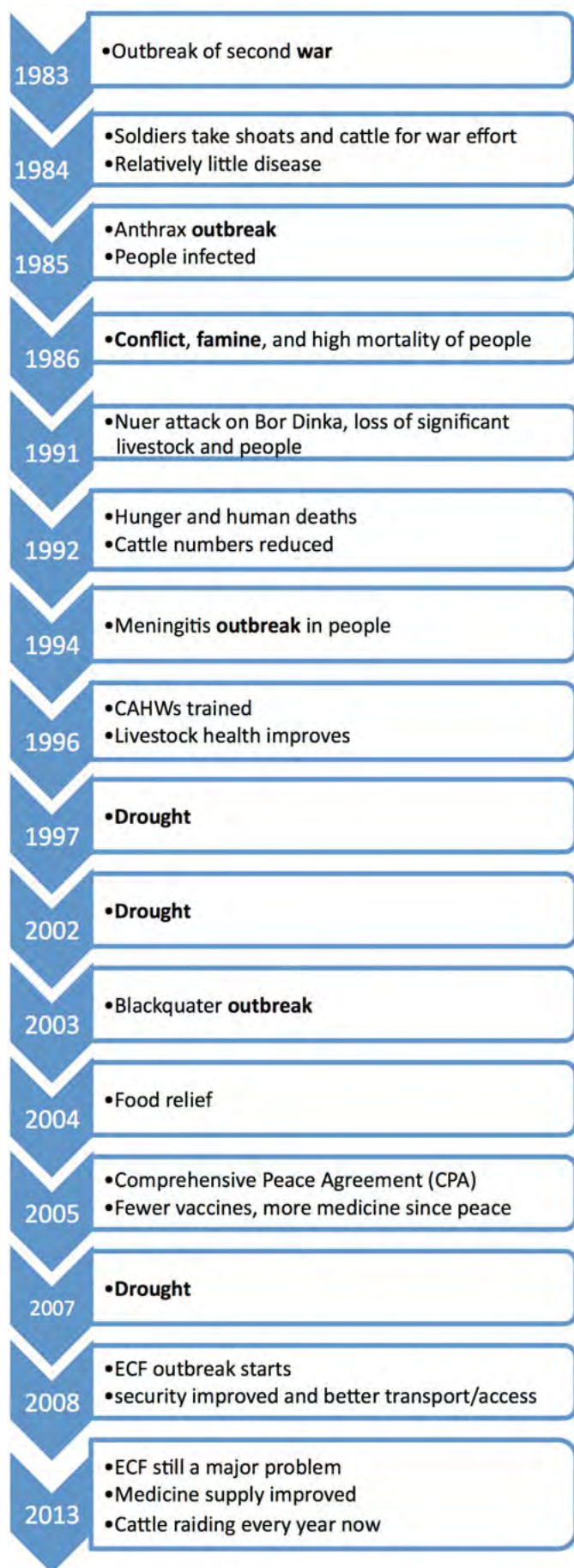


Figure A4.3
Timeline, Awiel West County, Northern Bahr el Ghazal State,
South Sudan

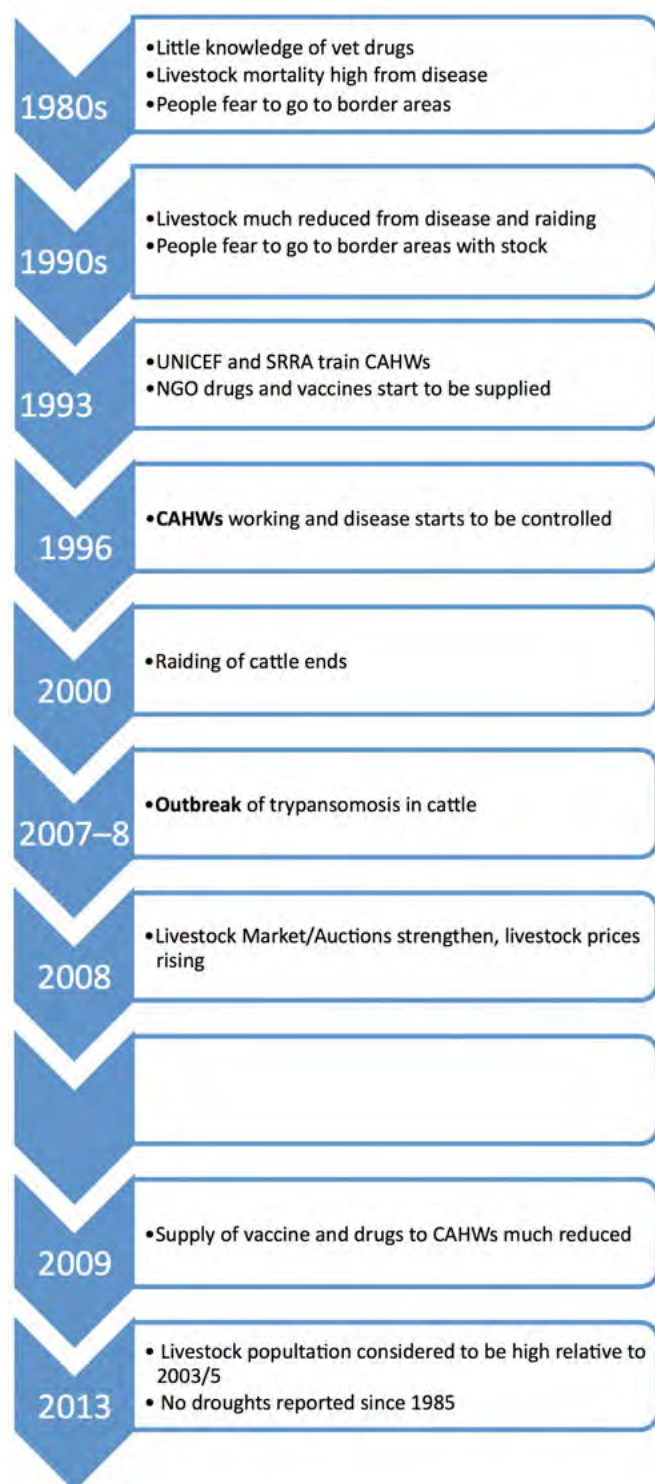


Figure A4.4
Matrix scoring of animal service providers in South Sudan

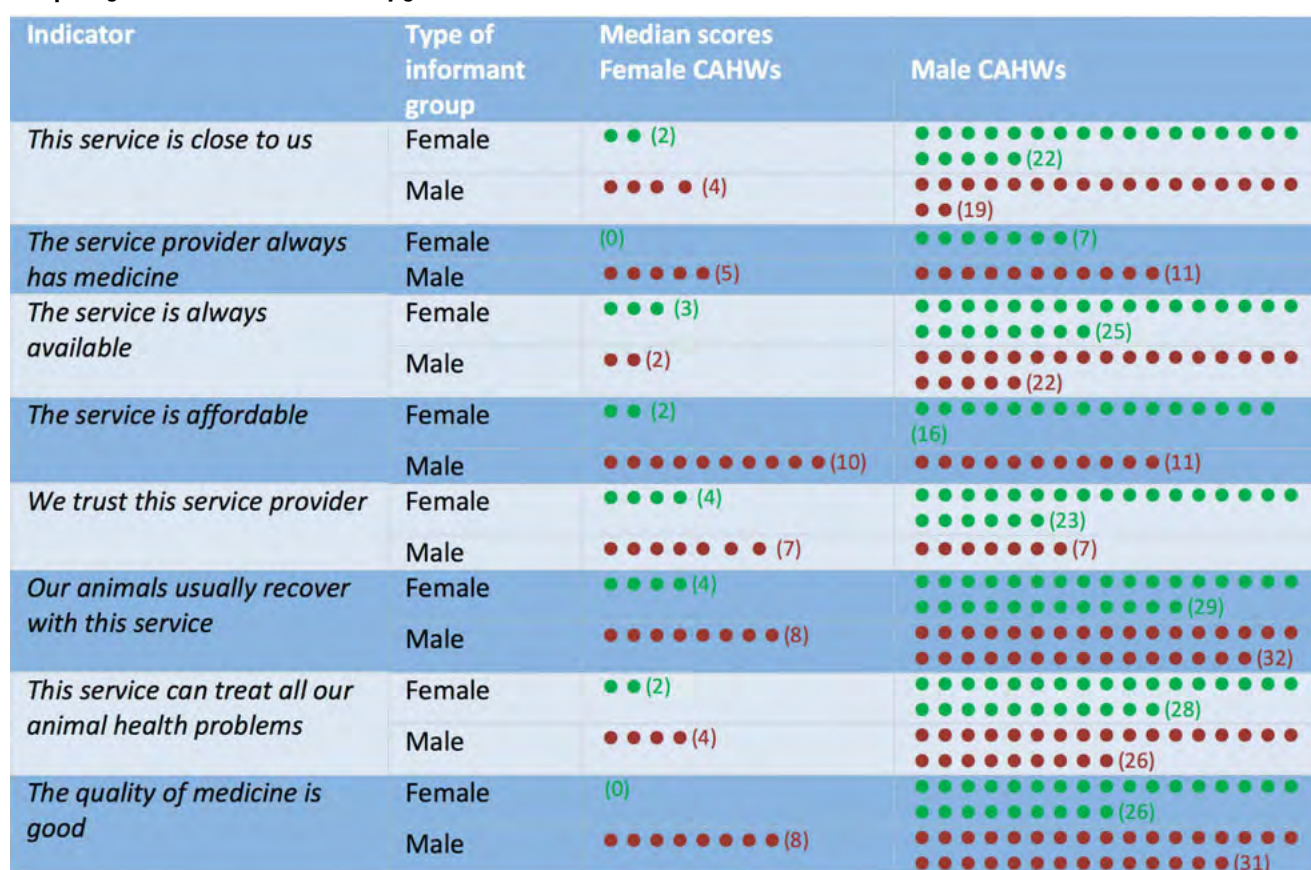
Indicator	Service provider				
	Government	Shops	CAHWs	Traditional healers	Other
<i>This service is close to us</i>	 8 (3–15)	 9 (3–21)	 22 (9–27)	 8.5 (2–21)	0 (0–0)
<i>The service provider always has medicine</i>	 6 (2–14)	 24.5 (6–35)	 12 (3–28)	 6.5 (0–18)	0 (0–0)
<i>The service is always available</i>	 6.5 (0–17)	 8 (0–28)	 27.5 (9–39)	 4 (0–41)	0 (0–0)
<i>The service is affordable</i>	 9.5 (0–16)	 4.5 (0–12)	 22.5 (8–45)	 8 (0–35)	0 (0–0)
<i>We trust this service provider</i>	 9 (3–25)	 5.5 (0–13)	 28 (6–44)	 3 (0–17)	0 (0–0)
<i>Our animals usually recover with this service</i>	 5.5 (0–13)	 5.5 (0–20)	 32 (22–45)	 1 (0–22)	0 (0–0)
<i>This service can treat all our animal health problems</i>	 10 (2–34)	 3 (0–16)	 33 (14–33)	 2.5 (0–6)	0 (0–2)
<i>The quality of medicine is good</i>	 6.5 (0–14)	 5 (3–17)	 33 (24–41)	 2.5 (0–9)	0 (0–0)

Many NGOs now pass any emergency response medicines directly to the government. The only NGOs supplying medicines directly to CAHWs were those working in refugee and conflict areas with no access to the private sector.

CAHWs were overwhelmingly seen as the most available AHSPs. Male CAHWs were seen as more available by both men and women. This was in contrast to Kenya and perhaps reflected the dominance of cattle production in South Sudan. Even though CAHWs do not have medicines at

the moment, they still provide advice to their communities. Government veterinary services were reported to be rarely seen and frequently advise livestock owners to purchase medicines from pharmacies. The pharmacies received a lower score for availability, as they are urban based and were said to give insufficient advice with their medicines. Northern Bahr el Ghazal livestock owners reported that shops owned by animal health assistants (AHAs) were better at providing advice.

Figure A4.5
Comparing the effectiveness of CAHWs by gender in South Sudan



n=10 informants groups

2.1.3 Affordability

CAHWs were considered the most affordable AHSPs. Many communities noted that CAHWs were more understanding of people's situations and were negotiable on price, even providing medicines on credit. Where male and female CAHWs were operating, there was no difference in terms of price of drugs. Government veterinary services were also considered affordable. The government charges for vaccination are heavily subsidized. Traditional medicines were recognized as free but are little used. Pharmacies suffered from the problem of being considered relatively expensive. Examples were given of shops selling drugs at 50% more than CAHWs.

Meetings with pharmacy owners revealed that obtaining regular stocks of drugs is a significant challenge (see section 4.4.4).

2.1.4 Acceptance

CAHWs were the most trusted AHSPs. Despite the CAHWs having few drugs and only being involved occasionally in vaccination campaigns, communities have not forgotten the long years of service they provided during the war. CAHWs continue to be trusted for the advice they provide. Government veterinary services also had goodwill from previous vaccination campaigns. However, there were repeated reports of government veterinary services no longer providing services and favoring certain individuals or groups with what little vaccine and medicines they had available.

Trust in pharmacies was variable, and there were accusations of them selling expired drugs. The community generally perceived them as expensive and distrusted the fact that they were trying to make a profit. Some communities stated that the quality of the drugs in pharmacies was good, whilst others questioned it.

Traditional medicines have largely been superseded by modern medicines in South Sudan and received low scores on acceptability.

2.1.5 Quality

The quality of the AHSPs' work was assessed in terms of sick animals recovering, the AHSPs being able to meet a wide range of animal health related needs, and the quality of medicines supplied. CAHWs consistently scored highly for all three parameters. Their diagnostic ability and knowledge of treatments was frequently mentioned. Some recognition was given to the government veterinary services, because they use CAHWs for vaccination and have supplied them with drugs in the past. The quality of these drugs and vaccines was recognized as good. As mentioned above, the quality of drugs supplied by pharmacies was variable.

Figure A4.4 shows that livestock owners consistently scored CAHWs highly for the quality of the service they provide. Figure A4.5 shows how women and men felt that male CAHWs provided more effective services than female CAHWs. There were very few female CAHWs in the areas visited. Men generally felt female CAHWs were not strong enough to handle and treat cattle and were too constrained by local custom. For example, their husbands would not allow them to visit stock at odd hours or to follow the cattle during the dry season. Women's role in supporting young stock and small ruminants was largely unrecognized in the interviews carried out.

2.1.6 Impact of CAHWs on disease

As can be seen from the below figures, the general disease situation appears to be having improved. Rinderpest had been eradicated. It was found that those diseases that have clear symptoms and relatively simple and effective treatments had reduced. This includes contagious bovine pleuropneumonia (CBPP), blackquarter, anthrax, mange, and contagious caprine pleuropneumonia (CCPP). However, some diseases appear to be resurging due to reduced supply of vaccines and treatments, notably trypanosomosis, hemorrhagic septicemia, and peste des petits ruminants (PPR).

Communities stated that negative impacts of disease were lower five years ago when CAHWs were more active.

Figure A4.6
Changing livestock disease impacts, Bor County, Jonglei State

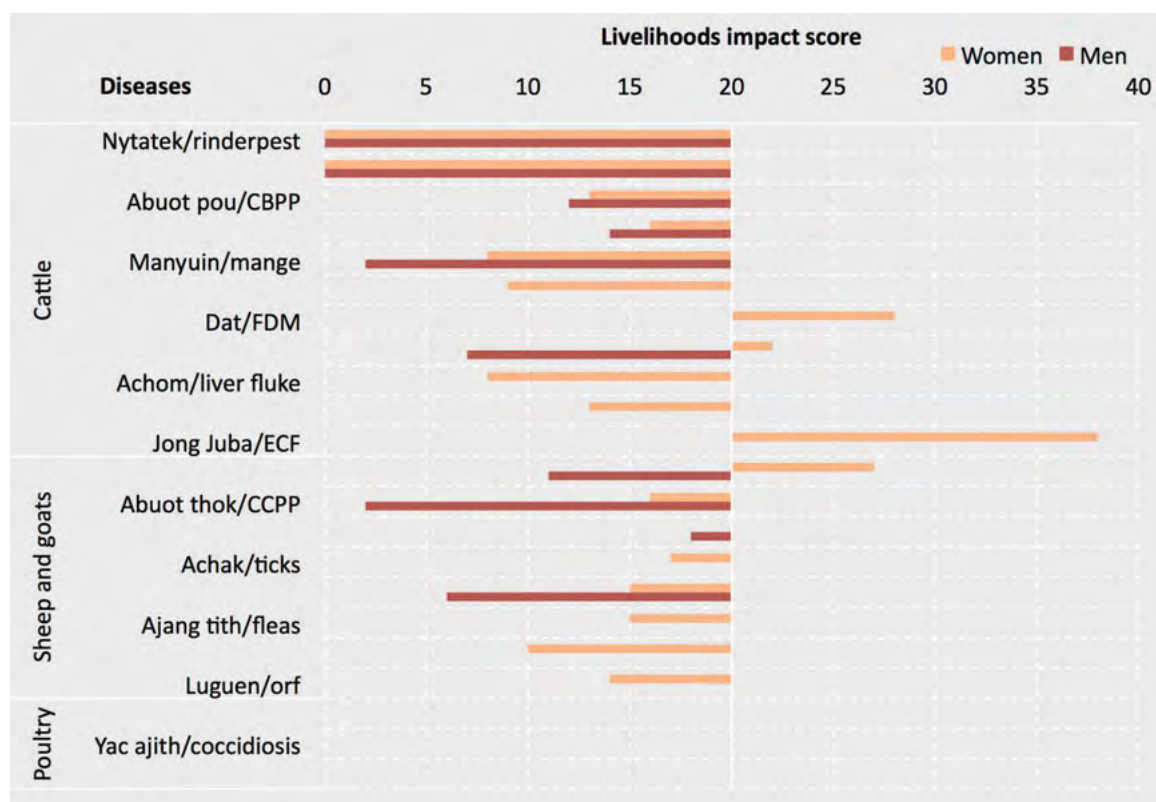
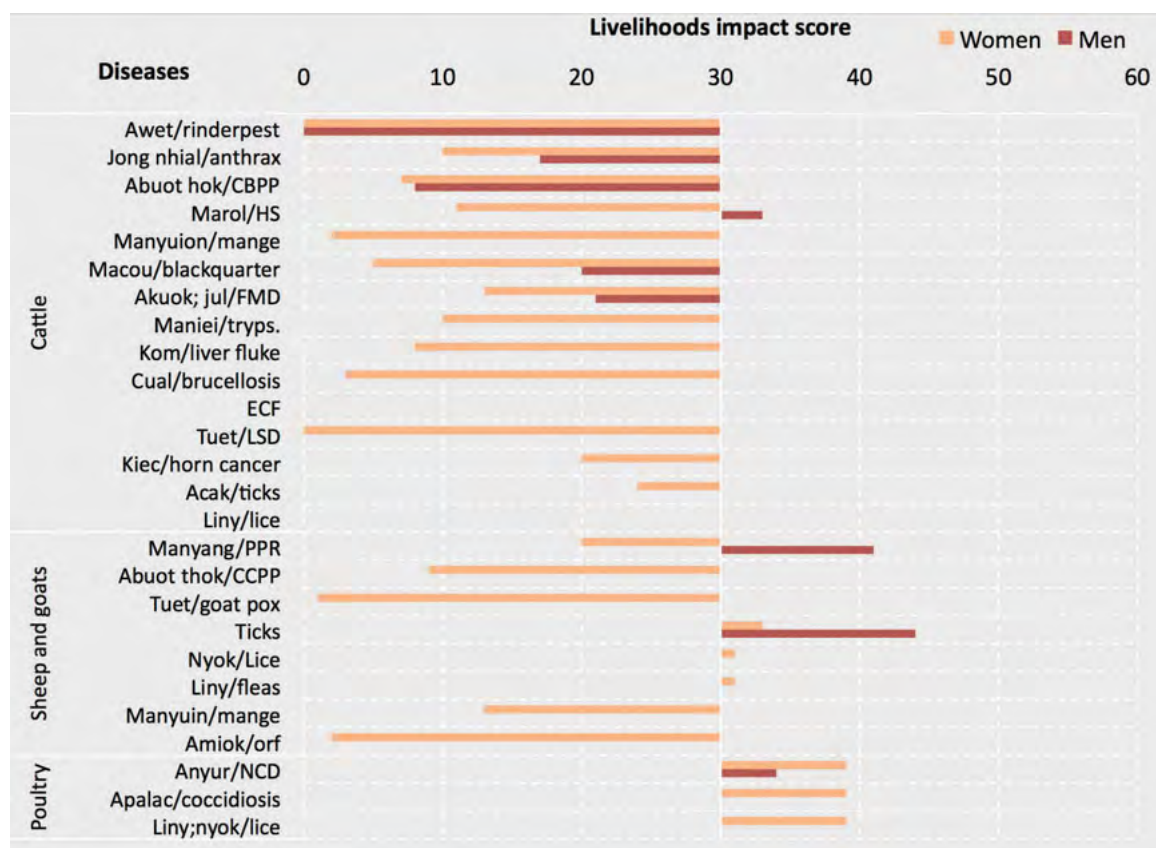


Figure A4.7
Changing livestock disease impacts, Northern Bahr el Ghazal State



Notes for Figure A4.6 and A4.7:

The baseline reference line of 30 represents the livelihood impact of the disease before CAHWs, in three locations. In each location, a starting point of 10 counters was used for each disease, i.e., a total of 30 counters for the three locations. A score of <30 indicates a positive/reduced impact of the disease; a score >30 represents a negative/increased impact of the disease. If no bar is shown for a particular disease, the score = 30, i.e., no change in livelihoods impact. The scoring was repeated with six informant groups of men and women.

2.2 How CAHWs impact the public good

2.2.1 Disease surveillance

CAHWs have actively been involved in disease surveillance in South Sudan. In 2001, *Vétérinaires Sans Frontières* (VSF) Belgium developed a surveillance strategy for demonstrating the eradication of rinderpest on behalf of the Global Rinderpest Eradication Programme (GREP). A two-day training module was designed to train CAHWs on disease surveillance. They subsequently provided information to livestock keepers on the rinderpest eradication strategy, reminding them of the seriousness of rinderpest and the importance of their participation to successfully eradicate the disease. Using their local knowledge and community contacts, they became key members of participatory disease surveillance (PDS) and sero-surveillance teams. In the event of any confirmed rinderpest outbreak, they would be the source of local information for the epidemiological investigation and planning of control; they would then be part of the vaccination team carrying out vaccination and ear notching. The county veterinary supervisors were paid a monthly fee for their surveillance reports. CAHWs involved in sero-surveillance activities were paid a daily rate for their work. Following the establishment of MARF in 2006, many CAHWs expected they would be employed as government workers to continue this type of work. This did not happen, and there was a reduction in surveillance reports at this time (Jones et al., 2010). Currently, the incentive for reporting disease outbreaks is a possible vaccine or treatment response from government veterinary services. This incentive is waning as the government's capacity to respond appears to be getting weaker.

2.2.2 Zoonosis control

UNICEF was the first organization to train CAHWs in South Sudan. It did this in response to community demands that their children first needed the milk from dying cattle to survive and then needed human health vaccines. During Operation Lifeline Sudan, the human and animal vaccine cold chain was commonly shared; however, joint vaccinations rarely occurred. In the mid-1990s, CAHWs carried Guinea Worm Filter cloths and drinking straws to remote communities, with instructions on how they should be used. Since that time, CAHWs do not appear to have been involved in control of zoonoses or the extension of public health messages.

2.2.3 Vaccination programs

Operation Lifeline Sudan first trained CAHWs to carry out vaccination in 1993. This was initially for the control of rinderpest outbreaks. Vaccination against other diseases (CBPP, Hemorrhagic Septicemia, anthrax, blackquarter) were quickly introduced and successfully carried out under the supervision of NGO veterinary doctors, stockpersons, and animal health assistants (Jones et al., 2010). Although rinderpest vaccination ceased in 2002, NGOs and donors continued to support CAHW teams to vaccinate livestock and introduced small ruminant vaccination against PPR and CPPP.

Since the introduction of cost recovery for vaccination and treatments in 1995, CAHWs have received a proportion of the livestock owners' fees. MARF continues to subsidize vaccination, and cost of vaccination varies between states. For example, a cattle owner in Jonglei can get a cow vaccinated for US\$0.1,²³ whereas in Northern Bahr el Ghazal charges are US\$0.3–0.6 per cow. In Unity State, MARF allowed ICRC to supply vaccine, and CAHWs were asked to charge US\$0.13 per head, but the livestock owners themselves said this was too little and agreed to US\$0.33 per head (SSE1). The current recommendation of MARF is that CAHWs receive 50% of the vaccination fee as an incentive.

From 2005, responsibility for vaccination was taken over by the newly established MARF, and donor funding to NGOs was reduced. MARF policy is to control the supply and distribution of all livestock vaccines. This includes vaccines for disease that protect the assets of individuals rather than the community or the nation; enterotoxaemia vaccine, for example. Such vaccines might be marketed by the private sector, but

MARF stated they still need to protect quality by controlling imports. Accordingly, a vaccination calendar has been introduced to ensure optimal vaccination timing and streamlining of vaccine and equipment procurement. Unfortunately, vaccination campaigns against this calendar have been disrupted by government austerity measures linked to an ongoing oil revenue dispute with Sudan. The evaluators found that vaccinations are becoming increasingly infrequent, and the amounts of vaccine supplied is grossly insufficient for the livestock population at risk. For example, in Northern Bahr el Ghazal, some counties receive allocation of 3,000 to 4,000 doses for livestock populations of hundreds of thousands. CAHWs' incomes have reduced accordingly.

2.3 Sustainability of CAHWs

2.3.1 CAHWs as small businesses

Both national and state MARF policies confirm that CAHWs should work within the private sector. MARF policy documents state that the role of the government is to protect the public good through detection and control (through vaccination) of epizootic diseases of national importance. MARF's policy is to encourage the development of the private veterinary sector in South Sudan and appears open to the idea of contracting private veterinary professionals to carry out vaccination on behalf of government. The latter has not happened to date. Any contracting has been confined to the daily use of CAHWs, who are paid a 50% share of vaccine cost-recovery payments.

These policies are in line with a long-term strategy to encourage private veterinary service delivery in South Sudan. Soon after the first CAHWs were trained in 1993, cost recovery for drugs was introduced by OLS. This was a controversial decision, because Sudan was in the grip of civil war and all other relief support was free at that time. The cost recovery was justified to emergency donors and local authorities on the basis that it would incentivize CAHWs and establish a precedent for payment for future services. Furthermore, livestock-owning households were more able to pay than households that had lost their livestock. Because of the conflict, drugs supplied by NGOs were heavily subsidized. OLS strategy from 1996 was to gradually increase the price of drugs until all purchase and handling costs had been accounted for. This strategy proved very hard as there was resistance to incremental increases in prices. Mravili et al. (2009) noted that a mark-up of 165% of purchase price was still not covering NGO costs. The other major difficulty in the 1990s was currency exchange. There was no mechanism to convert Sudanese dinar or pounds into Kenya or Uganda shillings. It was therefore decided that any cost-recovery money remaining after the CAHWs and animal health assistants had been paid an incentive would be reinvested into local community projects through Veterinary Coordination Committees (VCCs). This mechanism was to be temporary until conditions improved and the private sector began to sell veterinary drugs (Jones et al., 1998). Unfortunately, the war continued, and by the time the peace agreement was signed in 2005, there was still no private sector activity. The new administration, through MARF in Juba, made the decision in 2005 to take over the supply of veterinary drugs to state veterinary services. These drugs were also subsidized and therefore detrimental to the establishment of any private pharmacies. This practice ceased in 2009, and since then a fledgling private sector has started selling veterinary drugs and equipment.

The 2013 evaluation found that there were still no private vets operating in South Sudan. Private pharmacies were only present in Juba and state capitals. Most of the pharmacies were owned by veterinary professionals (stockpersons and animal health assistants, with a few CAHWs). These owners included government veterinary staff. In the northern states of South Sudan, such as Upper Nile or Bahr el Ghazal, resupply of veterinary drugs had been from Khartoum using established trading partners and routes. This supply route had largely stopped due to security and political tensions along the South Sudan/Sudan border. Private pharmacies were now forced to resupply from Nairobi or Kampala. Establishing these new trade routes has not been easy, and much of the

²³ Using an exchange rate of SSE3 = US\$1.

development has been pioneered by individuals with family links in Kenya and Uganda. Key constraints identified by pharmacy owners interviewed included:

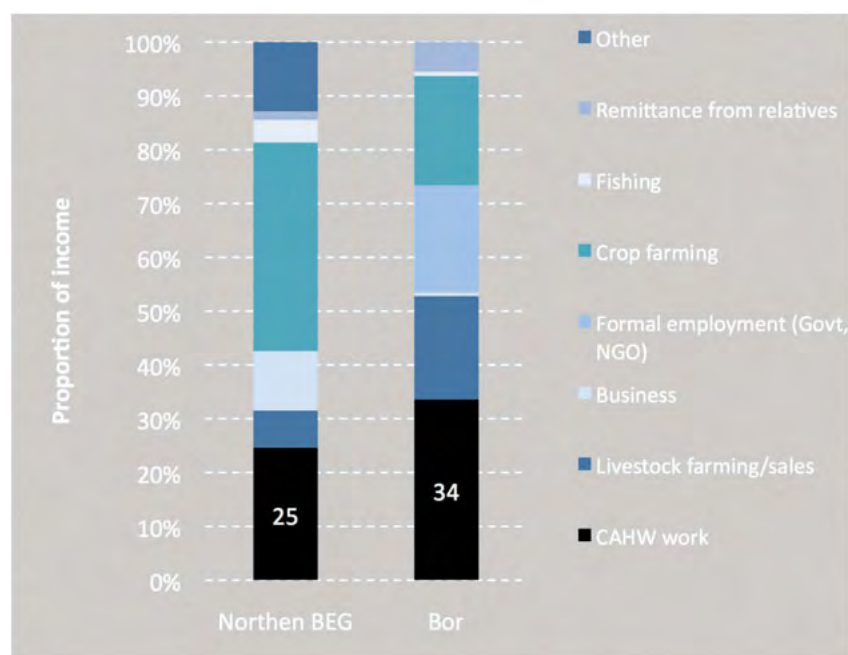
- Insecurity due to inter-clan fighting and theft
 - Burglaries and supply vehicles being robbed at gunpoint;
- Seasonality of trade
 - Urban shops being far from dry season grazing areas
 - Lack of own transport for internal movements during market days;
- Logistical arrangements for resupply
 - Poor road infrastructure delaying shipments
 - High cost of transport
 - High and multiple taxation of transit goods
 - Foreign currency transaction losses (most of the currency exchange mechanisms are cash-based and founded on trust rather than bank transfers);
- Subsidized services and drugs
 - Some NGOs still supply subsidized drugs to CAHWs who sell them and then repay NGO (private pharmacies can't afford to give such loans)
 - Government veterinary clinics still offer some drugs and services at lower price
 - In Bor County, the UN peacekeeping mission was providing free drugs and treatments to livestock owners;

- Private pharmacies not involved in extension/community dialogues;
- Lack of supportive legislation and regulations
 - Weak regulation of drug imports and quality
 - Lack of clarity on licensing of pharmacies;
- Livestock keepers rarely want to pay for clinical services;
- Limited availability of start-up and operating capital;
- Bad loans (livestock keepers taking drugs on credit);
- Livestock keepers complaining of high prices of drugs (which are inevitable due to high transaction costs and risks and compared with subsidized drugs);
- Lack of any association to raise concerns and lobby.

Nearly all the pharmacy owners interviewed were positive about CAHWs and had preferential prices for CAHWs to purchase drugs. OFDA-funded NGOs had attempted to support the establishment of private pharmacies with links to CAHWs. This included fact-finding missions to neighboring countries. However, there was a limit to how much they could do with short-term emergency funds.

CAHWs in Bor County were doing relatively well in terms of being linked to pharmacies. The county has experienced an outbreak of East Coast Fever over the past few years, and demand for drugs is high. Bor CAHWs were better off as a result. Figure A4.8 shows income levels for CAHWs in Bor and NBEG.

See Figure A4.8
Sources of income for CAHWs, South Sudan



CAHWs in NBEG had more variable income, with some individuals getting over 80% of their income from CAHW work, whilst others had no income from animal health work.

Generally, most CAHWs were rather demoralized. The good days of subsidized NGO drugs and generous cost-recovery sharing schemes had gone, and they are in the middle of a transition to private sector delivery, with little or no support or supervision coming from county veterinary authorities. Indeed, with the shortage of vaccines, some county veterinary staff were bypassing the CAHWs so that there were fewer people to share cost-recovery funds with.

2.3.2 CAHW and emergencies

Utilizing emergency funding, Operation Lifeline Sudan trained substantial numbers of CAHWs to carry out emergency vaccination and treatment campaigns to strengthen the livelihoods of livestock owners. Since 2005, the numbers of CAHWs to do this work has reduced

substantially. No animal health voucher schemes have yet been tried in South Sudan.

Over the past five years, some CAHWs have been involved in checking the health of small ruminants purchased and distributed during restocking projects. The CAHWs subsequently provide health care to the animals. NGOs provide payment on a daily or monthly basis for such work. In NBEG, one NGO paid CAHWs between S\$350–450 to support restocking projects.

In Unity State, one OFDA-funded NGO is paying CAHWs US\$10 per day (S\$32) to carry out various tasks. This included body condition scoring and health checks on animals that are slaughtered in refugee camps. This slaughter destocking was carried out to reduce livestock grazing pressure following an influx of animals with refugees and to help feed the refugees. CAHWs paid by the NGO also provide free health care and disease reporting service for remaining refugee livestock.

2.3.3 Supervision and training

South Sudan continues to have a huge shortage of veterinary professionals. Many state veterinary authorities like those in Jonglei and NBEG have no qualified vets and are reliant upon stockpersons and animal health auxiliaries to implement SMARF strategic plans; many of these are highly experienced and committed. Most of the younger animal health assistants employed by SMARF used to be CAHWs. Literate CAHWs gained this training at the Marial Lou Livestock Training Centre (MLLTC) in Tonj County. This center was established by VSF-Belgium in 1996 and provided training of four and five months for animal health auxiliaries and stockpersons respectively. The center was handed over to MARF management in 2005, and MARF are currently seeking funds to refurbish and upgrade the center so that it might start offering accredited

certificates (one year) and diplomas (two years) in livestock management/health and production, with special emphases on extension services. To date, funding for this upgrade had not been secured. There are also two universities training veterinary graduates in South Sudan. It will take many years for adequate veterinary professionals to be trained.

Since MARF took over the supervision of CAHWs, the number of trainings and refresher trainings of CAHWs has reduced. Supervision of CAHWs is now almost nonexistent and confined to occasional vaccination campaigns. Lack of supervision was identified as a disincentive for many CAHWs continuing to work in 2009 (Mravili et al., 2009), and the situation appears to have gotten worse since then. Table A4.1 shows the variability of CAHW training in NBEG (Bekele, 2011). NGOs continued to lead the training process to 2011.

Table A4.1
Chronology of CAHW training Northern Bahr el Ghazal, South Sudan

Year	Organization	Training period	Main course contents	Provision of veterinary stock
1995	ACF	12 days	All common livestock diseases	Yes
1996	VSF-G	12 days	All common livestock diseases	Yes
2001	?	7 days	Internal and external parasites	No
2002	VSF- G VSF-S	30 days	All common livestock diseases	Yes
		7 days	Internal and external parasites	Yes
2006	FAO IRC	12 days	All common livestock diseases	No
		9 months	All common livestock diseases	No
2008	FAO	7 days	Internal and external parasites	No
2010	FAO VSF-S	7 days	Internal and external parasites	No
		7 days	Internal and external parasites	No
2011	Concern	7 days	Internal and external parasites	No

This evaluation found the technical skills of active CAHWs to still be relatively good. Mravili et al. (2009) also found that of 46 CAHWs they interviewed, over 65% were considered to have good or very good technical knowledge and skills. The one area of common weakness found was in the area of withdrawal periods. This was explained by the fact that livestock owners rarely want to respect withdrawal periods, and there is no mechanism for checking drug contamination.

2.3.4 Policy and institutional issues

Current MARF and SMARF policies aim to help build a private sector to meet the veterinary needs of livestock owners. CAHWs are seen as a core contributor to primary animal health care. These pro-CAHW positions are not currently supported by any strong institutions. There is no

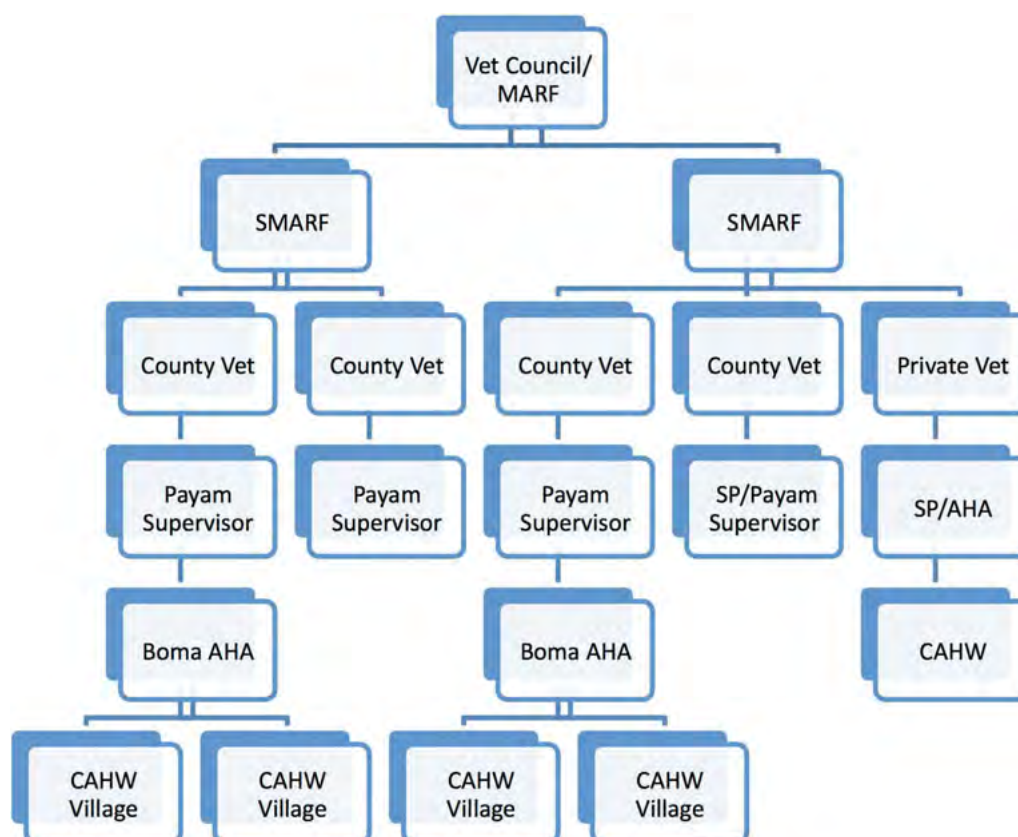
autonomous statutory body at national level able to define the roles of the differing cadres of veterinary professional. The levels of supervision required for CAHWs are not defined. MARF staff are ill equipped and lack funds to support CAHWs.

Some progress is being made:

- In 2012 MARF published minimum standards and guidelines for CAHWs. Whilst the document is quite general and does not include a standardized training curriculum for CAHWs, it does include a clear vision of how MARF will operate and what a private sector might look like in the future. Figure A4.9 shows the proposed structure of national veterinary services (MARF, 2012).

Figure A4.9

Structure of National Veterinary Services incorporating the private sector (source: MARF, 2012)²⁴



- MARF does envision contracting the future private sector to carry out work on behalf of government and aims to ensure private veterinary pharmacies are linked to CAHWS. MARF has noted the sustainability of private pastoralist veterinary practices in neighboring countries;
- New veterinary legislation that defines the roles of veterinary professionals has been going through the parliamentary process since 2011;
- The South Sudan Feed and Drug Authority has been established, although it still lacks resources to adequately regulate drug imports or the establishment of veterinary pharmacies.

As a country that celebrated its second independence day in 2013 and one still afflicted by conflict, progress will inevitably be slow.

3. CAHW workshop South Sudan

The evaluation convened a workshop on Wednesday, 11 July 2013 with OFDA-funded NGOs and other key stakeholders. The workshop had three objectives:

- To present and discuss evaluation team's initial findings;
- To provide an opportunity for USAID-funded NGOs and key organizations such as MARF to share information;
- To gather views from stakeholders on the way forward.

The workshop was attended by 34 participants (listed in annex 2 of the main report). The workshop was opened by Under Secretary of the Ministry of Animal Resources and Fisheries (MARF). In his opening remarks, the Under Secretary confirmed the government's recognition of the work that CAHWs had done during the war. He confirmed that MARF sees CAHWs as a component of private sector veterinary service delivery. In the past, CAHWs had received income from cost recovery charged on vaccines and drugs, and they were regularly trained and supplied with kits. Working out how to support CAHWs through the private sector was now a key challenge for MARF and SMARF.

Following the presentation of initial findings and conclusions, participants were offered the opportunity to correct errors and make additional comments. The participants were invited to think about the threats and opportunities for the effective utilization and sustainable development of community-based animal health worker delivery systems. The results of their analysis are presented below.

Threats	Way forward (what)	Who? When?
1. Direct sourcing of veterinary drugs and vaccines from outside South Sudan undermines the private sector	Create enabling environment for AH service providers so local pharmacies can compete	Who: Ministry of Finance, MARF (take lead), Ministry of Commerce, Central Bank When: short and medium term
2. Supply of free and subsidized drugs to livestock owners by government/NGO undermines the private business	Establish regulation and harmonize prices	Who: MARF/NGOs When: short term
3. Cost of living leads to drop-out of CAHWs	Link CAHWs with private sector	MARF/NGOs/Private sector When: medium term

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²⁴ In the figure, "payam" and "boma" are levels of community organization. A "payam" is similar to a parish; a "boma" is a place where livestock gather overnight.

Threats	Way forward (what)	Who? When?
4. Donor policy (reduced funding, exclusively emergency funding, procurement rules that disallow local purchase of drugs)	Engagement with donors and clear policy	Who: Donors, MARF, NGOs When: medium term
5. Projects' overdependence on donor funds	Streamline government budgets and ensure effective support for privatization	Who: Government (MARF) When: medium term
6. Multiple, irregular, and high taxes	Review taxes to create an enabling environment	Who: Government (GoSS), MARF When: short and medium term
7. Insecurity	Maintain/provide security through police presence (peace building)	Who: Government (RSS) When: medium term
8. Inaccessibility of veterinary services to cattle camps	Improve accessibility of veterinary services to cattle camps	Who: Govt. of South Sudan (GoSS) When: long term
9. Limited funding from government	Lobby for adequate funding for veterinary services	Who: MARF When: short and medium term
10. Lack of proper supervision and coordination of CAHWs	Establish a CAH Coordination Unit	Who: MARF /SMARF When: asap
11. Proper usage of complicated and new drugs with different dosages (antibiotic 5, 10, and 20%), Albendazole 2.5% vs. 10% leading to drug resistance	Refresher trainings/awareness	Who: NGOs, MARF, FAO When: short term
12. Sector/sub-sector policies taking long to be effected Inadequately detailed policy for CAHW services in the country	Advocacy and lobbying for completion Enactment of law	Who: MARF and all stakeholders When: asap
13. Rural-urban migration because of better opportunities in urban areas	Support opportunities to improve rural livelihoods	Who: GoSS and development partners When: asap
14. Poor livestock marketing networks	Extension work to increase education	Who: GoSS and stakeholders When: asap
15. Four regional cold chain hubs—insufficient (distributions of vaccine may not be delivered on time)	Upgrade vaccine supply and keeping of samples	Who: MARF/FAO When: medium term
Opportunities	Way forward (what)	Who? When?
1. Government and development partners commit to support the private sector		Who: MARF, NGOs, and development partners When: short, medium term
2. NGOs/development partners align their interventions/strategies with government policies (South Sudan development plans)		Who: NGO/MARF and development partners When: Short, medium term
3. Government diversifies sources of funding to improve service provision rather than depending entirely on oil revenue		Who: GoSS, MARF When: medium, long term
4. Establishment of CAHWs department/unit in MARF/SMARF to work directly with CAHWs program in South Sudan	Government should establish emergency/ coordinating team to support CAHWs	Who: MARF/SMARF When: short term
5. Identify innovative ways of linking CAHWs to the private sector, e.g., contract vaccinations (PPP); voucher schemes; credit facilities	Improve certification and accreditation of CAHWs; carry out assessment of how privatization mechanisms function; contract private service delivery and develop drug supply linkages	Who: NGOs/development partners; Veterinary Council and MARF/SMARF; private sector When: asap

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Opportunities	Way forward (what)	Who? When?
6. CAHWs can support disease reporting system from grassroots to MARF		Who: CAHWs, NGOs, and MARF/SMARF staff When: short term
7. Possibility of using ICT (for disease surveillance and reporting by CAHWs) and green energy (for cold chain operation)		Who: GoSS; MARF When: short, medium term
8. Existence of banking institutions, e.g., Agricultural Bank	Increase awareness and accessibility to loans from the Agricultural Bank	Who: MARF, stakeholders When: asap
9. Upgrading of MLLTC to national institute—further upgrading of AHAs and SPs	Lobby for funds for upgrading MLLTC into National Institute; MLLTC to update and standardize CAHW training guideline	Who: MARF and NGOs When: asap
10. Vast knowledge of diseases by CAHWs and livestock owners	Extension service to build on this	Who: MARF When: medium term
11. Livestock keepers' increased awareness to pay for services; their demand for extension services and good disease knowledge	Extensions services to build on these opportunities	Who: MARF and stakeholders When: asap

Participants' analysis of threats and opportunities shows good awareness of the key issues preventing improvement in animal health services in South Sudan. As MARF is still a relatively young organization,

the evaluation team felt that support should come through a consortium of donors, NGOs, and FAO. IGAD's ICPALD should also have a role.

Suggested way forward	Possible implementing partner
Establish community animal health unit within MARF to link CAHWs with private pharmacies.	Consortium of MARF, IGAD, NGOs, and FAO
Continue to strengthen training institutions such as the Marial Lou Livestock Training Centre. Update the CAHW training curriculum according to the recommendations of the statutory body.	As above
Create a statutory body to define roles and responsibilities of all veterinary professionals.	As above
Formulate veterinary privatization strategy and develop proposals on how to support the development of private pharmacies. This should include consideration of a franchise model. Investigate possible mechanisms for contracting vaccination and disease surveillance to the private sector.	As above
Strengthen the feed and drug inspectorate to improve regulation of drug imports and sales; negotiate consistent tax regime for imported pharmaceutical supplies.	As above
Prepare regional voucher scheme guidelines that apply to South Sudan's policy and legislation.	As above

Annex 5: Detailed report—Ethiopia

1. Background

The evaluation team carried out one-to-one and group discussions with over 24 individuals and 16 organizations varying from senior government officers at national and *woreda* (district) level, international agencies, NGOs, donors, pharmacies.

Ethiopia, like Kenya, has vast dryland areas. Two-thirds of the national land area has pastoralist farming systems. There are some 12–15 million agro-pastoralists, living in seven regions (MoA, 2000). Providing animal health services in these harsh and often remote environments remains a challenge.

Until 2005, 90% of veterinarians and para-veterinary professionals with more than one year of training²⁵ were employed by the government. This has changed as the number of veterinarians trained per annum increased to around 550 in 2011. There are currently 11 faculties training veterinary doctors.

The federal government's animal health service is responsible for policy making and regulatory functions and has a relatively lean staff structure. Animal health service delivery was relinquished to the regions through a process of decentralization. This happened in two phases, in 1992 to the regions and 2001 to the *woredas*. Regional government services are primarily provided through veterinary clinics and animal health posts. The health posts in dryland areas appear have had significant funding and staff problems over the past five years. The more remote posts frequently lack staff, and drug stocks regularly run out. Veterinary drugs sold by government remain subsidized to the tune of 45% (Pers. comm., MoA).

The Ethiopian government has a long history of working with community groups on animal health issues, starting with the Marxist "Derg" regime in 1974. In 1975, farmers were being trained in simple animal procedures through the Agarfa Peasant Training Centre. "Vet Scouts" and "Farmers Animal Health Representatives" were trained from 1974 through the government's Third and Fourth Livestock Development Projects. These early initiatives were very top down and part of the Derg's collectivized agriculture policy.

Community-based approaches to animal health service provision began to scale up following the fall of the Derg in 1991. In 1994, FAO was training CAHWs in North Wollo and Wag Hamra. The Pan African Rinderpest Campaign (PARC) within the Ministry of Agriculture was training CAHWs with the Afar Regional Government. The latter project was highly influential within the region.²⁶ In 1997, the Ministry of Agriculture produced a "policy on veterinary service delivery in remote areas" that acknowledged a lack of veterinary professionals in Ethiopia and the need for CAHWs to extend services to remote areas.

NGO involvement in the training of CAHWs in Ethiopia did not scale up until the mid-1990s. Some, such as Farm Africa's Dairy Goat project, trained women CAHWs from 1989, but the majority began training from 1995. By 2007, there were 14 NGOs training CAHWs.

In 2002, the Animal Disease Prevention and Control Proclamation (267/2002) officially recognized CAHWs as a cadre of veterinary service provider. Concurrently, a privatization and community-based animal health unit was established within the Department of Veterinary Services. This unit was involved in the production of Ethiopia's minimum standards and guidelines for the training of CAHWs. By 2006, it was estimated that

1,700 CAHWs were trained in Ethiopia, with around 55% trained by government. This figure subsequently increased dramatically. An assessment carried out in Somali Region in 2010 estimated that 2,500 CAHWs had been trained across that region, and of these 1,600 were active.

The privatization of rural veterinary services in Ethiopia has continually been undermined by the provision of subsidized services and drugs by government staff, health posts, and clinics. The official privatization scheme of PARC primarily benefitted urban vets. Most private vets are primarily involved in drug sales rather than provision of clinical services. In 2001, there were 127 private veterinary pharmaceutical importers, 180 private drugs shops selling veterinary products, and 75 clinics or animal health posts, 54 of which only sold drugs (Admassu, 2007).

A 2012 analysis of the state of privatization of veterinary services in Ethiopia estimated that government veterinary departments continue to satisfy some 30% of the demand for veterinary drugs and clinical services through clinics and animal health posts. The private sector satisfies some 45% of demand through drug shops (75% of centers) and clinics (25% of centers). The informal sector accounts for an estimated 25% of demand, and this comprises government staff working after hours and illegal operators (market stalls and unlicensed stores (MoA/EU, 2013).

Despite the presence of government health clinics, some agencies have managed to support the privatization of veterinary pharmacies at regional level. An assessment of veterinary services in 2010 noted that government veterinary health posts were frequently unable to store or sell their drug stocks due to weak links with the community and CAHWs (Asmare, 2010). Save the Children UK (SC UK) worked with the Somalia Regional Bureau of Agriculture to develop private veterinary pharmacies and linked CAHWs to these pharmacies. FAO has facilitated the establishment of similar pharmacies, managed by government staff transitioning to the private sector, in Borena, Somali, and Afar Regions. Some of these pharmacies continue to function without external support (Asmare, 2010).

Despite competition from government, the number of veterinary drug shops/pharmacies has doubled over the past five years, and the number of private veterinary clinics has more than tripled. Much of this expansion is unregulated in terms of government licensing and inspection. There is serious concern that this could increase incidence of malpractice, particularly the misuse of drugs, including use of out-of-date products, use of unsuitable products, underdosing, and overcharging (MoA/EU 2013).

2. Findings

To assess the effectiveness of CAHWS, two field trips were completed:

Shinile Area:

Five *woredas* were visited in Somali Region and the East Hararghe Zones of Oromia Region. They included Shinile, Dembel, and Mulu, where Hararghe Catholic Secretariat (HCS) and SC UK trained CAHWs between 2003 and 2006, and Medhegatala and Dhendhema, where Mercy Corps and SC UK trained CAHWs in 2010 and 2013 respectively. The communities and CAHWs of seven *kebeles*²⁷ (neighborhoods or small administrative divisions) were interviewed by the evaluation team.²⁸

²⁵ Primarily Animal Health Assistants and Animal Health Technicians, but also some meat inspectors and laboratory technicians.

²⁶ In 1995, in neighboring districts of the Afar Region, a CAHW project vaccinated 70,000 cattle using 22 CAHWs, 2 Ethiopian Veterinary Service Staff, 1 vehicle, and no cold chain. The efficiency of vaccination was 84%. No outbreaks of rinderpest were reported subsequent to this campaign, and the area was declared provisionally free from disease. The conventional government vaccination teams vaccinated, concurrently, 140,000 cattle using 14 vehicles, 56 staff, and a full cold chain. The efficiency of their vaccination was 72%.

²⁷ Lasdere, Kalabeydh, Warabeyssa, Edshale, Aamedow, Aredaqua, Mudhibali.

²⁸ The evaluation team had also planned to visit *kebeles* around Jijiga, Somali Region. However, due to movement restrictions related to a high profile political event, the Nations, Nationalities and Peoples Day, this plan had to be abandoned and the team structure changed to exclude the proposed expatriate consultant.

Yabello Area:

Three *woredas* in Borena Zone, Oromia Region were visited. Three communities and CAHWs of three *kebeles*²⁹ around Yabello town were interviewed. Care International has supported CAHWs in these areas but currently has no CAHW projects.

Ten communities were interviewed in total and a number of participatory appraisal exercises completed. These included key informant interviews, gender-disaggregated focus group discussions, participatory timelines, identification of animal health service providers and matrix ranking of their effectiveness, proportional piling to determine variation of disease impact over time, and proportional piling of CAHW income sources. The results of these visits along with evidence from previous research are presented below.

In all locations, the main service providers were identified as government veterinary services, pharmacies selling medicines, itinerant

traders selling medicines, traditional healers, and CAHWs established through NGO projects. The role of traditional healers appears to be strong in the regions visited. These healers provide advice on herbal treatments and bone setting services to livestock owners for a small fee. In Kenya and South Sudan, much of the knowledge on herbal remedies appeared to be with the livestock owners themselves. In the seven *kebeles* visited around Shinile and East Hararghe, only one female CAHW was identified. The evaluation team did not interview women separately from men in these *kebeles*. Men and women were interviewed separately in the Yabello area.

A timelines of livestock issues identified by livestock owners in the Somali Region, Shinile Area and around Yabello are shown in Figures A5.1 and A5.2. Both timelines give an indication of how drought prone and conflict afflicted the areas are.

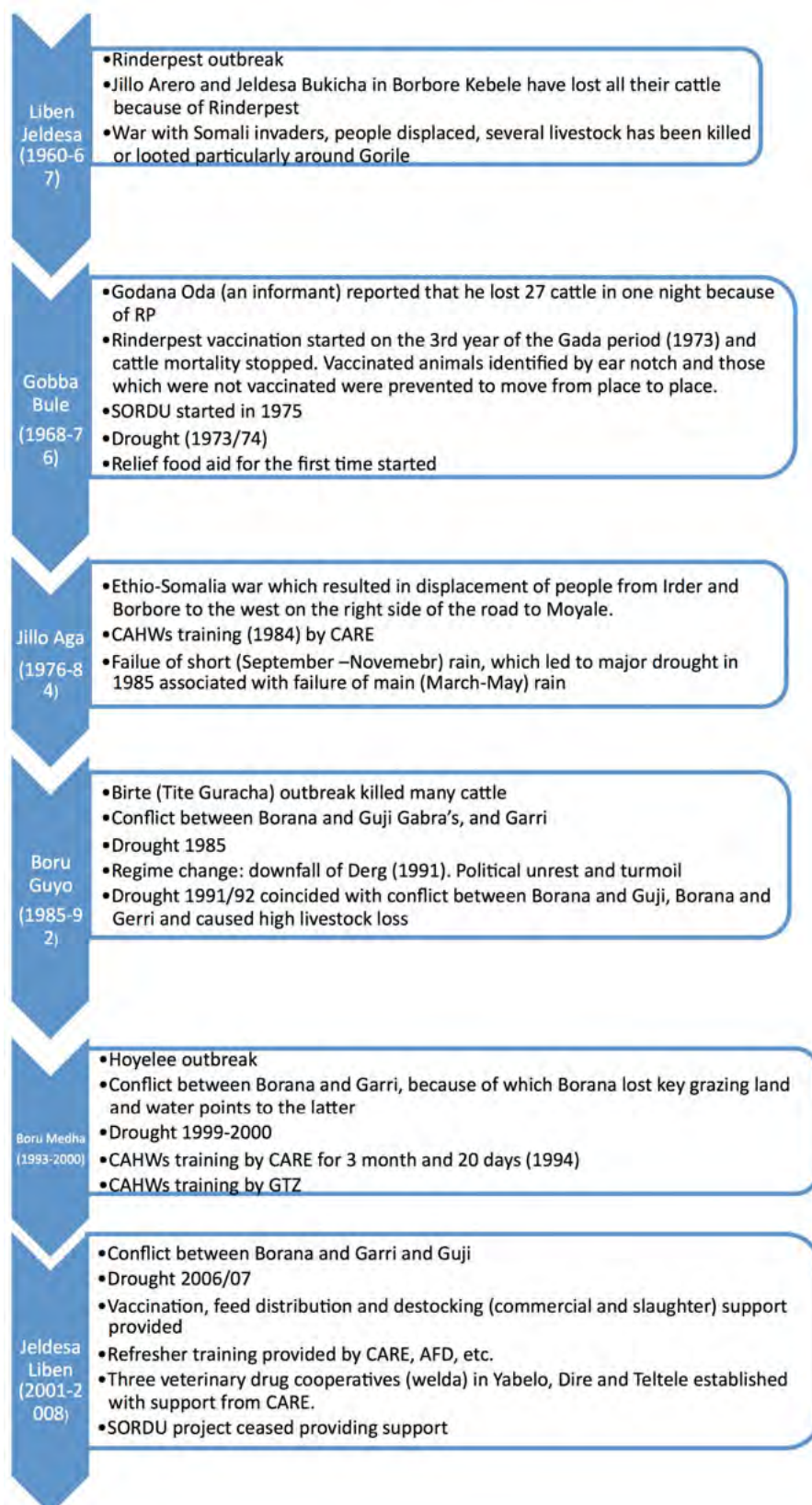
Figure A5.1
Timeline, Shinile area, Ethiopia



²⁹ Harawayou, Dikale, Medhecho.

Figure A5.2
Timeline, Yabello area, Ethiopia

Timeline uses Gada Periods³⁰



Refer to Figure A5.3 (Matrix scoring of veterinary service providers in Ethiopia) for a summary of responses to indicators of effectiveness.

³⁰ The eight (8) years cycle of the Gada Administration system has been used as a milestone to facilitate recall of events. Where possible, years of specific events have been identified.

Figure A5.3
Matrix scoring of animal health service providers in Ethiopia

Indicator	Service provider			
	Government	CAHWs	Traditional healers	Other
<i>This service is close to us</i>	 8 (0–14)	 16 (11–26)	 16 (13–28)	 9 (0–18)
<i>The service provider always has medicine</i>	 8 (0–30)	 11 (4–33)	 13 (3–32)	 18 (0–26)
<i>The service is always available</i>	 7 (0–18)	 17 (10–33)	 12 (3–26)	 13 (0–22)
<i>The service is affordable</i>	 14 (0–20)	 9 (0–26)	 20 (6–29)	 8 (0–15)
<i>We trust this service provider</i>	 15 (0–24)	 18 (12–46)	 8 (2–22)	 6 (0–14)
<i>Our animals usually recover with this service</i>	 15 (0–33)	 17 (11–48)	 6 (1–17)	 12 (0–17)
<i>This service can treat all our animal health problems</i>	 16 (0–27)	 15 (8–49)	 3 (1–11)	 18 (0–26)
<i>The quality of medicine is good</i>	 15 (0–35)	 15 (13–37)	 6 (0–13)	 12 (0–17)

Notes:

Median scores derived from matrix scoring with 16 informant groups.

Wide range of scores for some service indicators indicates high variability between locations.

2.1.1 Accessibility

Men and women were asked separately to rank how close their animal health services providers (AHSPs) were. In all areas, CAHWs and traditional healers had high scores in terms of being close to the community and accessible. The government veterinary services and private pharmacies had lower scores as they were town based. Itinerant traders scored lowest as they tend only to be seen on market days. There was no real difference between men's and women's views on accessibility of the providers in Yabello.

2.1.2 Availability

Availability was assessed in terms of the AHSPs having medicines in stock and being obtainable. Private pharmacies consistently scored best in terms of the availability of veterinary drugs. In the three kebeles where there was no access to private pharmacies, the government clinic scored higher than CAHWs, and where no government clinic or private pharmacy was present, CAHWs scored higher than traditional healers. Government clinics rarely have stocks of medicines year-round, whereas the private pharmacies do. The CAHWs are reliant upon either the government clinic or the private pharmacy for their drug supply.

Where private pharmacies were accessible, government clinics generally scored lower than CAHWs in terms of the availability of their

services. CAHWs gained because they still provide advice, even though the livestock owner may have bought their veterinary drugs from the pharmacy. Where there were no private pharmacies, government clinics and CAHWs scored the same.

2.1.3 Affordability

As would be expected, traditional healers consistently scored highest for affordability. This was followed by government clinics, with their subsidized prices. The Shinile area had more and longer-established private pharmacies than the Yabello area. In Yabello, pharmacies were considered more expensive than CAHWs; this was partly because the CAHWs in this area rarely had any drugs to sell. However, in the Shinile area, CAHWs were not considered as cheap as pharmacies, as they would mark up the cost of their medicines they sold to livestock owners. The mark-up rate for CAHWs was 25% or more, depending on how far the CAHW had to travel before a sale was made. Interestingly, the livestock owners did not resent this higher cost from the CAHWs as they understood the reasons.

2.1.4 Acceptance

CAHWs were generally the most trusted AHSPs. Despite the CAHWs having few drugs and being seen as relatively expensive in places, they

remain part of the community. As one woman put it, “They feel the same pain as we do and would not cheat us.” CAHWs continue to be trusted for the advice they provide. Government veterinary services also scored well on trust in most areas. The traditional healers were more trusted in the Yabello area. Private pharmacies were generally not trusted. Livestock owners remain suspicious of the quality of their medicines, though they have no proof that they are substandard. Itinerant market traders were the least-trusted service provider.

2.1.5 Quality

The quality of the AHSPs’ work was assessed in terms of sick animals recovering, the AHSPs being able to meet a wide range of animal health-related needs, and the quality of medicines supplied.

The pharmacies tended to score well in terms of being able to meet a wide range of animal health-related needs. Even though the private pharmacies do not stock vaccines, they were consistently stocked and open. Government services do vaccinate but infrequently. Government vet staff were generally not seen outside of these vaccination campaigns.

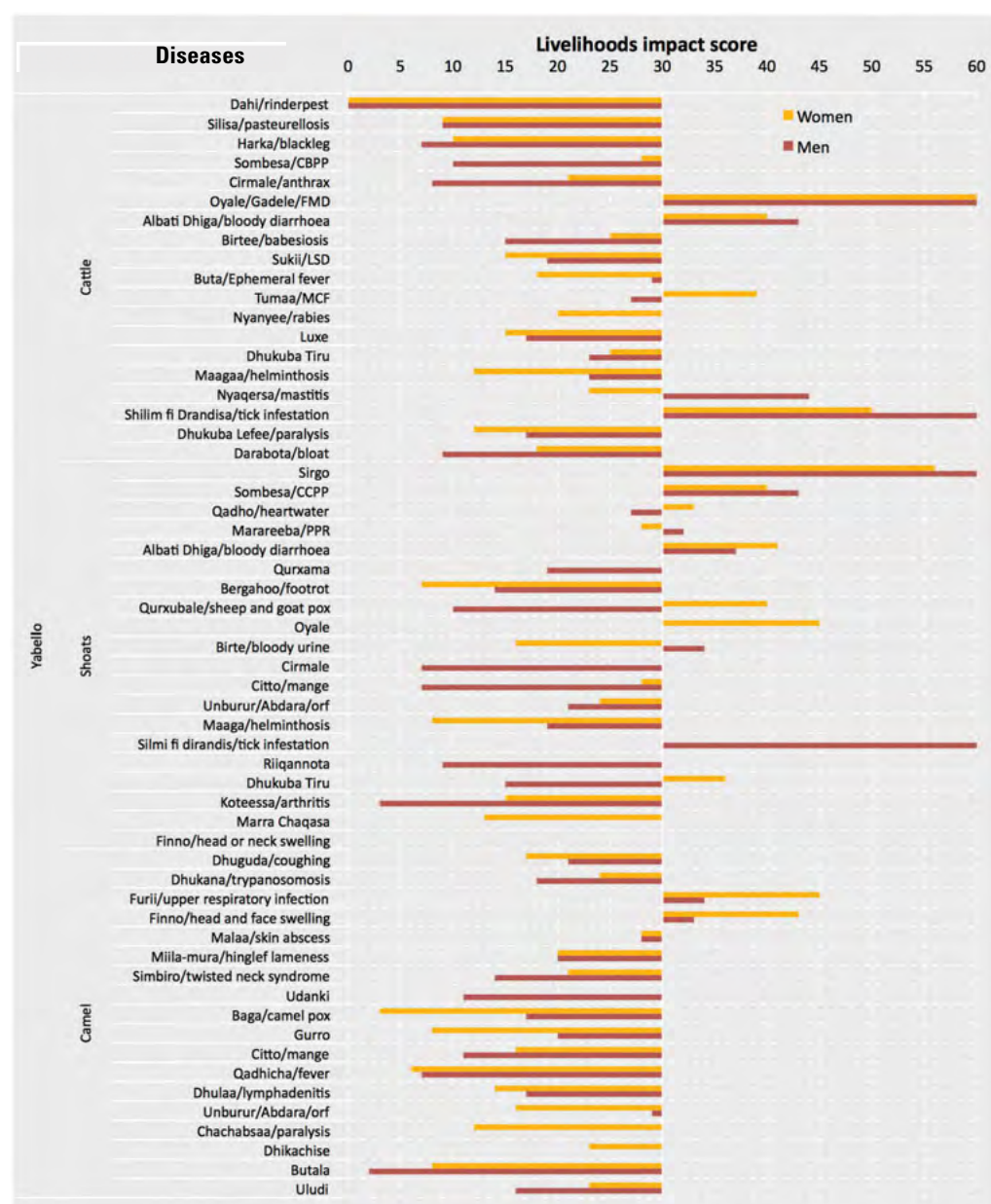
Traditional healers did not score well in this area as the livestock owners recognize that they are limited to a fairly narrow range of effective treatments.

There was little difference between private pharmacies, government clinics, and CAHWs in terms of their recovery rates. Generally, CAHWs and government clinics scored slightly higher. Itinerant traders scored lowest. Government clinics and CAHWs scored better in terms of the quality of their medicines than private pharmacies. CAHWs scored higher than government clinics, even though they purchased drugs from the government clinics. There were suspicions in some areas that the government clinics might water down some medicines.

2.1.6 Impact of CAHWs on disease

As can be seen from Figures A5.4 and A5.5, the general disease situation appears to have improved. It was found that those diseases that have clear symptoms and relatively simple and effective treatments that CAHWs can handle had reduced.

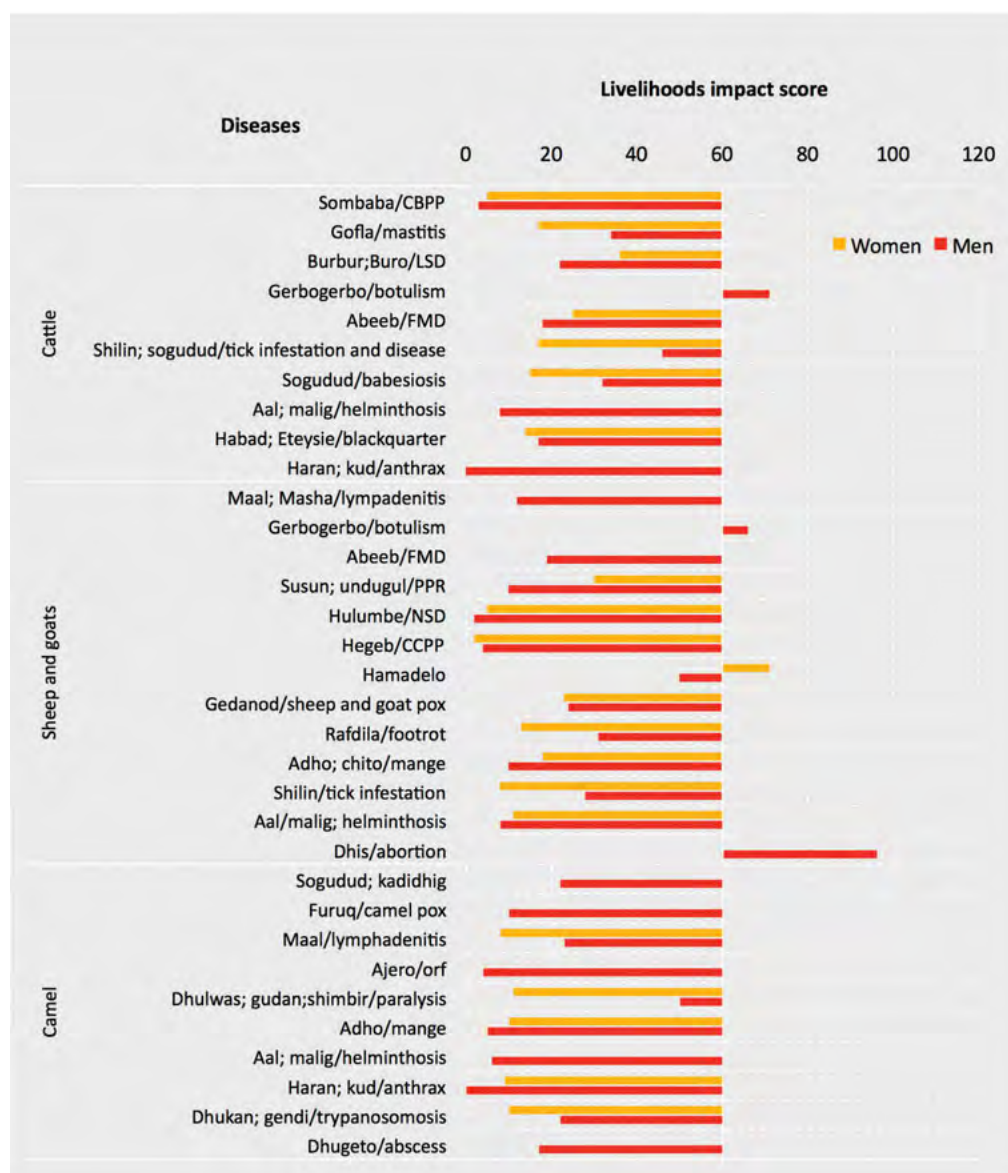
Figure A5.4
Changing livestock disease impacts, Yabello, Ethiopia



Notes for Figure A5.4 and Figure A5.5:

The baseline reference line of 30 represents the livelihood impact of the disease before CAHWs, in three locations. In each location, a starting point of 10 counters was used for each disease, i.e., a total of 30 counters for the three locations. A score of <30 indicates a positive/reduced impact of the disease; a score >30 represents a negative/increased impact of the disease. If no bar is shown for a particular disease, the score = 30, i.e., no change in livelihoods impact.

Figure A5.5
Changing livestock disease impacts, Shinile, Ethiopia



2.2 How CAHWs impact the public good

2.2.1 Disease surveillance

CAHWs have a vested interest in reporting disease outbreaks and do so wherever possible. Because there was no formal disease surveillance mechanism that incorporated CAHWs, they do still occasionally report to the NGO who facilitated their training and equipping. At other times, they report to the *woreda* veterinary clinic or a health post. The zonal veterinary authorities have lists of CAHWs who have been trained in each district. Disease reporting mechanisms have been assessed in the past and found to be haphazard, untimely, and unreliable (Asmare, 2010). In Borena Zone, just 12% of *woredas* submitted disease reports to the zonal veterinary authorities in 2009/10 (EVA, 2010).

2.2.2 Zoonosis control

CAHWs have not been involved in zoonosis control in Ethiopia, other than via clinical care for the zoonotic diseases in Figures A5.4 and A5.5.

2.2.3 Vaccination programs

In all field sites visited, the CAHWs (including female CAHWs) had participated in vaccination and emergency treatment campaigns run by

government and NGOs. The CAHWs were paid a daily rate for this work. This was 58 birr but has recently increased to 100 birr.

In Oromia Region, CAHWs are not allowed to conduct vaccination unless accompanied by government health professionals. In Medhegatola District, the community strongly insisted that the CAHWs should be allowed to vaccinate herds located far away from settlements, as the government professionals are not able to reach them. Vaccination carried out was primarily in response to disease outbreaks. Compared to the size of livestock populations in Somali and Oromia Regions, the vaccination coverage is low. However, campaigns against peste des petits ruminants (PPR) are becoming more regular. FAO, the main supporter of PPR vaccination for the past three years, pays 80% up front for the vaccination services and 20% upon completion. Several CAHWs in the Yabello area complained that they were doing the vaccination work but not being paid for their time. The zonal veterinary authority explained that this was due to the CAHWs being paid from the final 20% tranche payments, not the 80% upfront payments. This provided some indication of the weak position CAHWs find themselves in. They are largely reliant upon the goodwill of government officers for vaccination work. There appears to be no formal mechanism for their involvement, and they might no longer be involved at all if the agencies funding these campaigns did not encourage

or insist they be utilized. As more veterinarians are trained in Ethiopia, the arguments that services should be supplied only by the more highly trained personnel are beginning to reappear.

2.3 Sustainability of CAHWs

2.3.1 CAHWs as small businesses

The evaluation found significant numbers of CAHWs had been trained in Borena Zone and Somali Region over the last 20 years. Of the 400 CAHWs trained in Borena, around 70% were still active. In Somalia Region, around 66% of the 2,500 CAHW trained were still active in some way. The activity level between individual CAHWs was very variable. The main activity was sporadic support to government vaccination campaigns. Some CAHWs were adept at restocking themselves with veterinary drugs. Minor surgical procedures such as castration, dehorning, surgical drainage of abscesses, and dystocia management were also noted. Typically, one CAHW would service 250 households over a radius of 20–30 km.

Regional veterinary authorities and OFDA-funded projects have attempted three routes to ensuring the sustainability of CAHWs:

- CAHWs are linked to either a government veterinary clinic or a health post utilizing revolving drug funds;
- CAHWs are linked to a private veterinary pharmacy following training;
- Groups of CAHWs are formed into cooperatives.

In the pastoralist areas of Oromia and Somali Regions, the most sustainable model appears to be the private veterinary pharmacy.

None of the cooperatives established by CARE in Borena were functioning. A cooperative at Yabello had had 38 members, and their drug shop was supplied with drugs by a private veterinary pharmacy in Yabello. CARE donated original capital of 87,840 birr to the cooperative in 2006. This cooperative disintegrated in 2009. Similarly, a veterinary drug cooperative with 45 CAHW members trained from different *kebeles* of the former Dire *Woreda* collapsed. The breakdown of the Dire CAHWs' cooperative was associated with administrative and banking problems caused by the division of Dire *Woreda* into smaller *woredas*. In Somali Region, SC US in Dollo Ado and Hargale, plus a local NGO called Community Development Service Association in Jijiga, established four cooperatives. None of these are currently functioning (Asmare, 2010; EVA, 2010).

The government veterinary clinics and health posts do continue to function. Somali Region has over 30 veterinary clinics and 300 animal health posts. Borena Zone has 13 veterinary clinics and 73 animal health posts (EVA, 2010). In many cases, the drug revolving funds of these clinics continue to be topped up annually at *woreda* level. However, the clinics and posts continue to face significant management challenges. An assessment carried out in 2010 (Asmare, 2010) advised that key problems included:

- Paying over the prevailing market price for drugs with a short shelf life;
- Drugs and vaccines expired in store;
- Substandard instruments in the stores;
- Readjustment of retail prices by *woreda* authorities;
- Drugs distributed for free when the expiry date is approaching;
- Lack of transportation;
- Concentration around towns;
- Lack of programmed intervention;
- Poor storage and drug handling.

The evaluation team found similar problems continuing with drug revolving funds established under the district veterinary units by the USAID/OFDA-funded RAIN project. All these funds had ceased to revolve, bar the one at Babile, Oromia Region, although, despite an initial input of 80,000 birr, this fund was also soon to be dissolved.

Private veterinary pharmacies were more established in the Somali Region than in Borena Zone. At the last count, there were 37 private pharmacies in Somali Region. Most of these were established with NGO or FAO support. SC UK had been particularly active in training pharmacy owners and helping them to get established in the late 1990s. FAO had more recently established veterinary pharmacies using a kickstart grant of 20,000 birr. These pharmacies were commonly managed by government AHAs who were transitioning to the private sector. FAO had established similar pharmacies in Borena. Some of the NGO-supported pharmacies are supposed to supply CAHWs at a 10% discount. However, this discount varies depending on the drug turnover of the CAHW; the EVA assessment (Asmare, 2010) reported that the discount system was working. A relatively large pharmacy owned by a veterinarian, the "Yabello Vet Pharmacy" does supply veterinary drugs to CAHWs at a discounted rate. It also supplies other smaller pharmacies in outlying areas. CAHWs were also able to get loans from the Yabello Vet Pharmacy as long as they had a purchasing record and could produce three witnesses to guarantee the loan.

Most of the private veterinary pharmacies remain unlicensed by the Regional Trade and Industry Bureau. They are primarily owned by AHAs and a few by CAHWs. Generally, the brands of drugs being sold have shifted, over the past five years, away from branded manufacturers such as Norbrook, Bimeda, and Sanofi to generic drugs manufactured in China, Korea, and India. These generic products are cheaper and have pushed the more traditional branded products aside. Key challenges faced by the veterinary pharmacies include seasonal trade, with most drug sales happening in the rainy season, cheap drugs imported illegally from Somalia being sold by itinerant traders and others, un-licensed vendors, the bureaucratic cost of getting licensed, government health clinics and health posts selling subsidized drugs or near-to-expiry-date drugs cheaply, and finally cheap or free drugs distributed during emergency responses.

Table A5.1 shows the range of owners and source of funds for establishing private pharmacies in Somali Region. More recently, established pharmacies only have owners with animal health training. This includes a significant number of CAHWs.

Table A5.1
Private veterinary pharmacies, Somali Region, Ethiopia

Year established	Status	Source of start-up funds	Name of pharmacy	Qualification of owner	Employment history of owner	Staff
1995	Distributor	Boosted by SC, SC UK	Jijiga agro-pharmacy	AHA	Private	2 high school graduates
2000	Active	SC UK	Randis	Non- Professional (NP)	Private	
2000	Active	SC UK/VPP	Babile vet pharmacy	NP	Private	
2000	Closed	SC UK	Al Mahdi	NP		
2000	Closed	Own source	Zuhra	NP		

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Year established	Status	Source of start-up funds	Name of pharmacy	Qualification of owner	Employment history of owner	Staff
2000	Closed	SC UK	Ararso vet pharmacy	NP		
2000	Closed	SC UK	Godey vet pharmacy	NP		
2000	Closed	SC UK	Yesema vet pharmacy	NP		
2000	Default	SC UK	Dhegahbur	NP		
2002	Active	Own	Wayel pharmacy #2	CAHW	Private	2 relatives
2004	Active	Own	Mustahil vet shop	AHT	Private	
2004	Active	Own/SCAHP	Qelafo Cet pharmacy	AHT	Private	
2004	Active	Own/SCAHP	Barey vet drug shop	AHT	Government animal health staff	1 relative
2004	Closed	OXFAM GB, in-kind credit	Harshin vet drug shop	NP		
2005	Active	Own/SCAHP	Fafen vet drug shop	Accountant	Government accountant	2 graduated from training as CAHWs
2006	Active	FAO via SC UK	Dembel vet pharmacy	CAHW	Private	2 relatives
2006	Active	Own	Dire Dewa agro-vet	CAHW	Private	2 AHAs
2006	Active	HCS	Erer vet pharmacy	AHT	Government animal health staff	
2006	Active	IRC/FAO	Shillabo vet drug shop	AHT	Government animal health staff	
2007	Active	Own/Mercy Corps (MC)	Ararso vet drug shop	CAHW	Private	1 relative
2007	Distributor	FAO	Iftin vet pharmacy	AHA	Private	2 relatives
2007	Active	FAO	Hudet vet drug shop	AHT	COOPI animal health staff	2 relatives
2007	Active	FAO	Moyale vet pharmacy	AHT	Government animal health staff	
2007	Active	SC US/FAO	Dollo vet drug shop	AHT	Government animal health staff	
2007	Active	FAO		AHT	Government animal health staff	
2007	Active	FAO		AHT	Government animal health staff	
2007	Active	FAO	Chereti vet pharmacy	AHT	Government animal health staff	
2007	Active	Own	Barey vet drug shop #2	AHT	Government animal health staff	
2007	Active	FAO	Hargelle vet pharmacy	AHT	Government animal health staff	

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Year established	Status	Source of start-up funds	Name of pharmacy	Qualification of owner	Employment history of owner	Staff
2008	Active	Own/MC	Wayel pharmacy	CAHW	Private	2 relatives
2008	Active	Own/MC	Brothers vet pharmacy	CAHW	Private	2 relatives
2008	Active	Own/MC	Hoble vet pharmacy	CAHW	Private	2 relatives
2008	Active	Own	Lankeyr vet pharmacy	CAHW	Private	1 relative
2008	Closed	FAO, in-kind credit	Hashin vet pharmacy	AHA		
2010	Active	SC UK credit	Badbado	AHA	Government animal health staff	NP
2010	Active	Own	Kabeyah vet drug shop	CAHW	Private	2 relatives
2010	Active	RAIN	Kulmeyer pharmacy	CAHW	Private	2 relatives
2011	Active	Own/MC	Ararso vet drug shop #2	CAHW	Private	1 relative
2011	Active	RAIN	Badbado vet pharmacy	CAHW	Private	1 relative
2011	Active	RAIN	Gobyerey vet pharmacy	AHT	Government animal health staff	1 relative
2011	Active	RAIN	Shinile vet pharmacy	AHT	Private	
2011	Active	RAIN	Bike vet drug shop	AHT	Government animal health staff	
2011	Active	RAIN	Asbuli vet drug shop	AHT	Government animal health staff	

The evaluation found a distinct difference between CAHWs interviewed in the environs of Shinile compared to those in the Yabello area. In Shinile, CAHWs were still managing to access veterinary drugs.

They stated that, on average, 25% of their income came from CAHW-related work and the remaining proportion from either livestock or crop production.

Table A5.2
CAHWs in the Shinile area, sources of income (%)

Site	Livestock production	CAHW work	Crop production	Remark
Lasder	64	36	-	All CAHWs considered skills used for treating their own animals and strong social ties with communities as useful incentives
Kalabeydh	64	36	-	
Edshale	36	18	46	
Mudhibali	16	34	50	
Aredaqufa	26	32	42	
Average	41	31	46	

In the Yabello area, CAHWs interviewed appeared to have ceased making any significant income or benefit from their CAHW training, bar treatment of their own stock and providing advice to neighbors (Table A5.3). They explained that this was due to lack of any viable mechanism

from them to restock their drug kits. However, some CAHWs in the Yabello area were still operating. Private pharmacies were able to show the evaluators their sales figures for sales to CAHWs.

Table A5.3
CAHW source of income before and after 2004, Yabello area

Income source (%)	CAHW 1		CAHW 2		CAHW 3		CAHW 4	
	Before 2004	After 2004	Before 2004	After 2004	Before 2004	After 2004	Before 2004	After 2004
Livestock	50	65	55	60	45	60	45	60
Crop	15	20	10	20	15	25	10	15
Cash for work	10	15	0	20	5	15	0	25
CAHW work	25	0	35	0	35	0	45	0

Note:

The CAHWs were trained around 1994. The income scores were acquired from proportional piling.

One of the issues identified on both field visits was the fact that some government clinics and private vet pharmacies did not differentiate between farmers and CAHWs. They were sold drugs at the same price. In this situation, the farmers can save money by buying direct from the pharmacy and treating their own stock.

Community-based slaughter destocking (courtesy of FAO Ethiopia)



2.3.2 CAHW and emergencies

NGOs reported paying CAHWs to assist with restocking programs by inspecting the quality of animals prior to their distribution. CAHWs were also used for simple meat inspection in emergency slaughter initiatives. There are no reports in the literature to suggest any problems with these inputs. Ideally, such work should be carried out under the guidance and supervision of more technically qualified staff.

In humanitarian responses, CAHWs are primarily utilized in support of vaccination and emergency treatment campaigns. NGOs provide funding, logistical support, and training/refresher training for CAHWs. The CAHWs are paid a stipend for their support. A 2007 analysis of livestock emergency response in Ethiopia suggested that direct implementation by NGOs had, over many years, weakened the capacity of *woreda* veterinary authorities (Feseha and Daginet, 2007). The report to the Addis-based Livestock and Pastoralist Group (LPG) recommended NGOs and FAO work through zonal veterinary authorities and support them to coordinate emergency responses. The report also encouraged regional veterinary authorities to work through the private sector and to shift away from outbreak response to broader-based disease prevention. This involved regular vaccination and integrating animal health responses with the provision of feed and water to breeding animals in emergency situations. The report made the point that recovery in pastoralist areas is complex and takes much longer. Pastoralists who lose 50% of their animals may require 5–10 years to replace their original number of livestock using remaining breeding animals.

In 2008, the Ministry of Agriculture and Rural Development published a national guideline for livestock relief interventions in

pastoralist areas of Ethiopia. The evaluation noted that most NGOs were now working through regional veterinary authorities. However, levels of coordination at *woreda* level remain weak.

During the evaluation, private pharmacies complained about emergency veterinary responses undermining their business viability through free or subsidized drugs and services. It was determined that the humanitarian community is beginning to address this, e.g., FAO Addis Ababa decided in 2011 to stop distributing free vaccine and drugs during future emergency responses.

With the support of the European Community Humanitarian Organisation (ECHO) and OFDA, NGOs such as VSF Swiss and SC have, since 2005/6, built significant experience with voucher schemes. Vouchers can support small private pharmacies in times of drought emergency rather than undermine them. Participatory impact assessments have shown that livestock owners who utilized treatment vouchers experienced dramatically decreased mortality both in cattle and small ruminants (Bekele, 2009). Diseases treated by CAHWs included CCPP in goats and CBPP and trypanosomosis in cattle.

The modalities of voucher schemes have been described elsewhere (FAO, 2011a; Regassa, 2010). The basic model is one of distributing vouchers to the community-selected beneficiaries. These vouchers can then be traded for CAHW drugs and services. The CAHWs get reimbursed by a private pharmacy in the form of drugs. The incentive for the CAHW is the additional drugs s/he is restocked with. The facilitating NGO nearly always works at the pharmacy level reimbursing vouchers for cash. The incentive levels for CAHWs vary between NGOs but appears to be around 20–30% in the more successful schemes. Key challenges included:

- The large organizational workload to get a voucher scheme operational (this may include training/refresher training CAHWs, training private pharmacies on the technical backstopping for CAHWs);
- Working out the value of the voucher, which drugs/treatments might be used, where it might be used, and for how long;
- Managing migration. Livestock may move away due to the emergency;
- CAHWs not having sufficient initial drug stocks and local pharmacies not having sufficient capital to loan drugs to the CAHWs on a large scale;
- When to end the voucher scheme;
- Deciding whether to issue vouchers for complementary services and products such as animal feed.

Generally, communities that have experienced voucher-based animal health relief thought these schemes were better than blanket coverage through mass vaccination and treatment campaigns. Campaigns often favor the better-off pastoralists, who have access to labor to take advantage of the presence of vaccination teams. Voucher schemes are local and flexible; this helps female-headed households, the disabled, and the poor.

2.3.3 Supervision and training

In 2004, the CAHW Unit within the Ministry of Agriculture and Rural Development published national minimum standards and guidelines for the design and establishment of CAHWs. This manual was revised and upgraded in 2009 and accompanied by a training guide for CAHW trainers, plus a training guide for the trainers of trainers (TOT). Twenty TOTs completed a course managed by the EVA in 2009.

Over the past decade, significant numbers of CAHWs were trained and refresher trained as part of emergency response to drought; approximately 2,000 CAHWs in Somali Region and 250 in Borena Zone. The evaluation team met with CAHWs who had been refresher trained by Mercy Corps (RAIN Project) and Save the Children in Shinile in 2009, 2011, and 2012.

It remains vital for NGOs to utilize the recommended 15-day initial training course seen in the national guidelines. All CAHWs interviewed by the team who had undergone such training and refresher training were found to be technically sound in terms of disease symptoms and transmission mechanisms, how they excluded other health problems through differential diagnosis, and the type of drugs administered against each of the discussed diseases, followed by control and prevention measures focusing on vaccines. CAHWs recently trained by one USAID/OFDA-funded project were found to be technically weak. It was discovered, contrary to the national guidelines, these CAHWs had been trained through a translator and without using local disease names.

2.3.4 Policy and institutional issues

Ethiopia's policy position is favorable to CAHWs. National livestock development policy falls within the wider economic and development plans and strategies, as prescribed in the *Plan for Accelerated and Sustained Development to End Poverty* (PASDEP) (2005/06–2009/10), the *Growth and Transformation Plan* (GTP) (2010/11–2014/15), and the *Agricultural Growth Programme* (AGP), 2010, which all discuss in broad terms the need to accelerate market-based agriculture development and support private sector development. The policies also confirm that the government will continue to train more veterinary professionals and provide veterinary services to protect the public good. PASDEP confirms that the government will “strengthen veterinary services, in both the public and private sectors, to enhance the possibility of controlling livestock diseases; and training of community-based animal health workers from pastoralist communities. The government will also continue to build veterinary infrastructure (veterinary clinics and health posts) to service the needs of the people.” Many of these health posts in pastoralist areas are funded through a World Bank loan mechanism.

The more specific 2002 *Animal Disease Prevention and Control Proclamation* (267/2002) of the Ministry of Agriculture not only officially recognized CAHWs as a cadre of “animal health representative,” it also mentions the formation of a veterinary council to register animal health professionals. Furthermore, the Ministry will create favorable conditions for the promotion of private animal health service delivery. Finally, the Ministry will define the roles of the public and private sectors in animal health services.

These policies, whilst very positive, were not accompanied by any strategy or legislation. There is still no veterinary council in Ethiopia, and a road map for the privatization of veterinary services remained in a zero draft and not distributed in December 2013.

The Ministry of Agriculture made some progress in the regulation of veterinary medicines. It had managed to separate the registration and control of veterinary medicines from human medicines. However, the new veterinary drug control authority has yet to become active; consequently, there has been no significant impact in improving drug quality.

3. CAHW workshop Ethiopia

The evaluation convened a workshop on 6 December 2013 with OFDA-funded NGOs and other key stakeholders. The workshop had three objectives:

- To present and discuss evaluation team's initial findings;
- To provide an opportunity for USAID-funded NGOs and key organizations such as the Ministry of Agriculture to share information;
- To gather views from stakeholders on the way forward.

Following the presentation of initial findings and conclusions, participants were offered the opportunity to correct errors and make additional comments. The participants were invited to divide into an “improving resilience to emergencies” group and a “development group” to discuss the opportunities for the effective utilization and sustainable development of community-based animal health worker delivery systems. The results of their analysis are presented below:

Opportunities identified by the “improving resilience to emergencies group”

Priority is to build CAHW services: without these already in place, it is not possible to access and improve health. (Group noted that emergency animal health is actually a minor part of building resilience).

Vouchers Schemes (as long as CAHW services are strong enough to use them):

- Should be incorporated into the new version of the Livestock Emergency Guidelines and Standards (LEGS);
- Should be built into “national guideline for emergency interventions in pastoral areas;”
- Should be refined to clarify the following issues:
 - o best practice on exit strategies for voucher schemes;
 - o best practice on targeting recipients of vouchers;
 - o when to commence the voucher scheme and how to build flexibility into implementation, e.g., in drought situations, most drug treatments are mainly needed once the rains come back (i.e., not during the drought);
 - o building on local coping mechanisms, e.g., cash might be more appropriate than vouchers.

Review the “**crisis modifier**” mechanism in terms of:

- Ensuring flexibility within the mechanism, e.g., animal health needs may not coincide with the emergency event—drugs needed at start of rains but vaccination needed at the end of the rains or several months after a drought;
- Ensuring emergency response is built into the national animal health system;
- Need a tripartite agreement between government, NGOs, and CAHW-based services (private pharmacies);
- Stakeholders need to be advocates, through the Agriculture Task Force and the Livestock Technical Committee.

Opportunities identified by the “development group” **Existing policies are encouraging:**

- Agriculture Growth Program;
- Growth and Transformation Program;
- Guidelines and Standards for CAHWs.

Recent institutional developments are encouraging:

- Establishment of a State Minister for Livestock;
- Decentralization to state governments;
- Establishment of Feed and Veterinary Drug Authority;
- Veterinary drugs are now more available via the private sector compared to the 1990s;
- There is increased interest in building resilience from the government and donors;
- There is increased interest in linkages between livestock and nutrition and addressing malnutrition;
- There is increased interest in disease control such as peste des petits ruminants (PPR) eradication.

This provides opportunities for institutional strengthening of national animal health services.

Increased concerns about food safety and accompanying obligations for government.

Increased number of veterinary professionals trained who can engage on drugs supply in pastoralist areas.

Development group's suggested way forward:

- Form an Animal Health Group within the Livestock Technical Committee to work under the umbrella of the government/

donor "Rural Economic Development and Food Security Sector Working Group" (RED&FS);

- Involve the Disaster Risk Management Agriculture Task Force (DRM AFT) (working under the umbrella of the State Minister for Disaster Risk Management and Food Security Sector, MoA) in the development of CAHW initiatives.

Participants of the CAHW workshop demonstrated a clear understanding of constraints and institutional opportunities for the development of CAHW-linked private veterinary services in Ethiopia. The importance of novel donor coordination mechanisms, such as the RED&FS, that bring together both humanitarian and development partners, was recognized.

Suggested way forward	Possible implementing partner
• Formulate best practice guidelines for voucher schemes and upgrade the "national guideline for emergency interventions in pastoral areas."	Ministry of Agriculture
• Form an Animal Health Group within the Livestock Technical Committee of RED&FS to support the institutional strengthening of the Veterinary Department, the Feed and Veterinary Drug Authority, roll out of the veterinary privatization road map, etc.	RED&FS
• Build upon existing policy and strengthen recent institutional developments: - Re-establish the CAH Unit within the Veterinary Department; - Strengthen Feed and Veterinary Drug Authority; - Establish proposed statutory body (Ethiopian Veterinary Council); - Finalize and discuss road map for the privatization of veterinary services.	RED&FS with Ministry of Agriculture



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