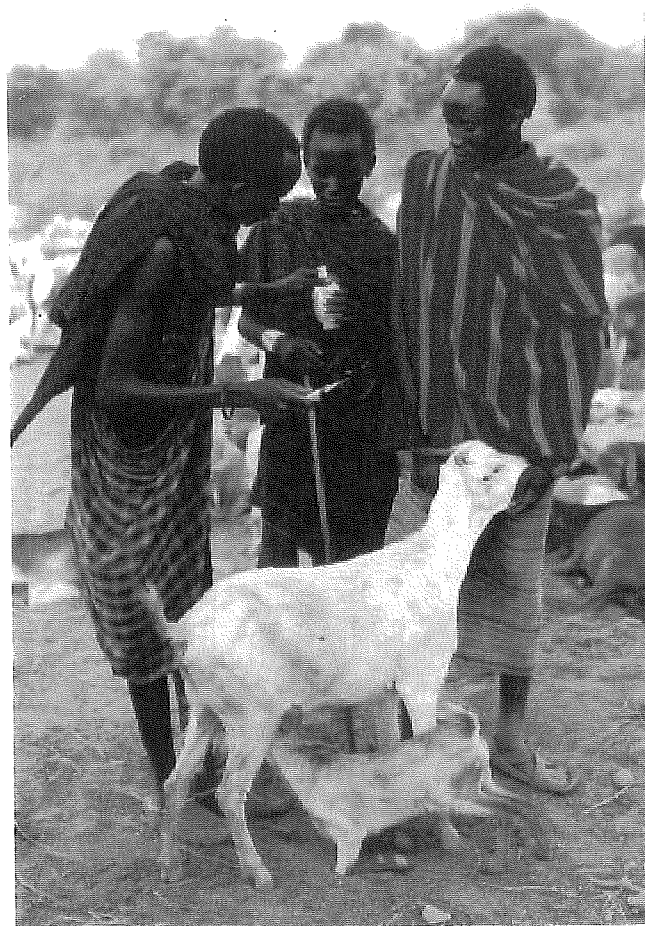


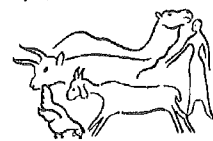
# The Impact of Community Animal Health Services on Farmers in Low-Income Countries: A Literature Review



**Marina Martin**

**VETAID**

**VETAID**



*Healthy Animals – Healthy People*

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VETAID  
Pentlands Science Park  
Bush EH26 0PZ  
Midlothian  
Scotland, UK

Tel. 00 44 131 445 6241  
Fax. 00 44 131 445 6242  
e-mail. [Mail@vetaid.org](mailto:Mail@vetaid.org)

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## Executive Summary

### Introduction

Community animal health services have been promoted in many of the low-income countries over the last 20 years. Recently there has been a growing interest in monitoring and evaluating all types of development projects. Implementers of community animal health projects have also attempted to measure the impact of their work.

This review aimed to bring together as much of the data as possible, in a systematic manner, pertaining to the impact of community animal health services. The data was analysed for evidence that community animal health has an impact on farmers in low-income countries. The quality of the data was scored and recommendations for conducting impact assessments made.

### Main Findings

An innovative methodology was used to perform this literature review. This involved modifying the systematic review methods pioneered by the Cochrane Collaboration (used until now only for human health issues) for animal health and livestock development.

Over 300 documents relating to community animal health services were retrieved from databases, the internet, and organisations' bookshelves. Thirty of these met the selection criteria developed specifically for the review (impact of community animal health interventions).

The quality of the design of these 30 studies was of varying quality and the conclusions drawn by the authors did not always relate to the evidence in the reports. Conclusions on the success and impact of projects were often drawn on implementation indicators rather than on impact indicators (e.g. livelihoods indicators). The quality of the *ex post* assessments relies on the monitoring and evaluation that has been on-going during the project cycle. However, all of the studies showed that community animal health projects have positive benefits on poor farmers and have especially high economic benefits.

### Recommendations

It is recommended that the quality of the design of impact assessments is improved. Impact assessments should follow a generic template which include the measurement of implementation indicators, livelihood indicators, livestock survey and economic appraisal. A step by step guide for *ex post* impact assessment of community animal health projects would include dialogue with project staff, community animal health workers, and beneficiaries. The evaluator should compare data for villages with and without access to community animal health workers or, if a good quality baseline survey is available, they should be able to assess the differences in people's livelihoods before and after the project. The template could also be used for setting up generic monitoring and evaluation systems for community animal health services.

## List of abbreviations

AHS	Animal Health Service
AITVM	Association of Institutions of Tropical Veterinary Medicine
CAB	Commonwealth Agricultural Bureau
CAH	Community Animal Health
CAHW	Community Animal Health Worker
CAMEL	Centre d'Appui Méthodologique à l'Elevage
CBA	Cost Benefit Analysis
CEA	Cost Effectiveness Analysis
CIESIN	Center for International Earth Science Information Network
CLW	Community Livestock Worker
CRG	Collaborative Research Group
CTA	Technical Centre for Agricultural and Rural Co-operation
DELIVERI	Decentralized Livestock Services in Eastern Indonesia
DFID	Department for International Development
ELDIS	Electronic Development Information System
EMVT	Elevage et Médecine Vétérinaire des Pays Tropicaux
FAO	Food and Agriculture Organisation
FFW	Food for work
GNP	Gross National Product
GTZ	Deutsch Gesellschaft für Technische Zusammenarbeit
IFAD	International Fund for Agricultural Development
ILCA	International Livestock Centre for Africa
ILEIA	Centre for Information on Low-External-Input and Sustainable Agriculture
ILRI	International Livestock Research Institute
JHUCCP	John Hopkins University Center for Communication Programs
LiD	Livestock in Development
MRCMPU	Malabar Regional Co-operative Milk Producers' Union
NGO	Non-Governmental Organisation
ODI	Overseas Development Institute
OECD-DAC	Organisation for Economic Co-operation and Development- Development Assistance Committee
OIE	Office International des Epizooties
PAVE	Participatory Approaches to Veterinary Epidemiology
STN-SIGLE	Scientific and Technical Network - System for Information on Grey Literature in Europe
USD	US Dollars
USDA	US Department of Agriculture
VSF	Vétérinaires Sans Frontières
WB	World Bank

## 1. Background

### 1.1. Rationale

Livestock are central to the livelihood systems of many communities living in the arid and semi-arid zones of the world. Not only do they provide their major, or even sole, source of cash income for normal purchases, but also they are often the only significant capital asset that these people and communities can accumulate on which to fall back on in times of need: e.g. when school fees or taxes must be paid; when medical emergencies arise; or when major crises such as drought, famine, plague, or pestilence strike. Access to animal healthcare is therefore a major concern to these farmers and herders. In recent years, animal healthcare has been provided in remote rural areas by a combination of professional veterinarians and para-professional animal health workers. These para-professionals are known by many names, in this review they are referred to interchangeably as community animal health workers (CAHWs) or paravets.

Organisations working in international development are concerned about the nature and scale of impact that CAHWs' work is having on the livelihoods of the poor people with whom they are working. They need to be able to show positive impacts to their funders and to their partners in the countries where they are working. As well as doing their own evaluations, some NGOs are also doing meta-evaluations and syntheses of their results to get a broader picture (Davies, 2001).

In 1981, Caporale *et al.* wrote that there was a "*need for development of economic evaluation as a tool to enhance the efficiency and efficacy of animal diseases management at national level*" (p. 330)

and in 1999 this was still on the agenda:

*"although the need for developing a framework for the systematic evaluation of the delivery of animal health care services is apparent to a lot of scholars, a universally acceptable and workable framework does not yet exist"* (Odeyemi, 1999 p. 26).

At the 9<sup>th</sup> International Conference of the Associations of Institutions for Tropical Veterinary Medicine (AITVM, 1998) recommendations were made for research to be carried out on "*the performance of different livestock health delivery systems and the impact of those health systems on livestock production*".

This review aims to show how agencies have measured impact in the last 20 years and whether these assessments show an impact on poor farmers. It is aimed at agencies implementing and funding community animal health services as well as government agencies monitoring the provision of animal health services to remote and rural areas.

This review seeks to identify the best practices for evaluating the impact of community animal health services, and to make recommendations for designing a framework for assessing the impact of these services.



## ***1.2. Summary of objectives***

To find out how organisations are measuring the impact of community animal health services  
To ascertain the quality of the impact assessments that have been carried out  
To note whether community animal health services have an impact on farmers' livelihoods and on the health of their livestock.  
To quantify impact in economic terms  
To make recommendations for improving the way in which impact assessments are carried out

## ***1.3 Introduction***

### **1.3.1 Definitions**

Some definitions of key terms used in this review are provided below.

*Community animal health services* are animal health services provided by the community for the community. Community associations or individuals take the responsibility to plan, manage, deliver, and finance the provision of services to their own communities. They are an alternative to state services and can complement such services at other levels (DELIVERI, 2000).

*Community animal health workers* are farmers who are selected by their communities then trained to provide a basic animal health service at village level. They may charge a fee for their service and charge for the drugs that they administer, so they are in effect providing a private animal health service alongside the government service. They are trained to recognise and treat the common simple livestock diseases, administer vaccines and provide simple routine services such as castration and to refer more complicated services to qualified veterinary staff (DELIVERI, 2000).

CAHWs differ from other veterinary paraprofessionals because the latter have been trained and salaried by the State. CAHWs are generally unsalaried, work part-time and have lower levels of education and training.

CAHWs and extension personnel provide different services. Extension workers provide information on nutrition, husbandry, and animal health, but don't always supply veterinary drugs or provide curative treatments. However, there is some overlap in activities where CAHWs may have been trained to provide basic extension messages to clients.

*Monitoring and evaluation* are terms that are usually seen together. They can be defined as follows.

Monitoring is the gathering of information to show whether objectives within the control of management are being achieved. Evaluation explores whether the achievement of immediate project objectives leads to desired goals (Poate, 1993).

Monitoring should be an on-going activity of any project which provides data useful for an evaluation. Evaluations should take place at regular intervals during the project cycle. There is increasing emphasis on evaluation as a set of long-term planned processes of learning, adaptation, and knowledge management rather than being discrete one-off snapshot studies (Thin, 1999).

*Impact assessment.* There are two types of impact assessment: *ex ante* and *ex post*. *Ex ante* assessments predict what outcomes a project is likely to have and therefore how much potential there is for a return on an investment. *Ex post* assessments look at a project's outcomes and measure the benefits that the project has achieved against its costs. Impact assessments use different kinds of analyses e.g. economic, social and financial. They attempt to show whether the project provided "value for money".

Edwards (1996) organised impact into the following categories:

- Impact in relation to programme objectives, related to links between project activities and project objectives.
  - Impact on assets, related to the ownership, security and distribution of productive assets.
  - Impact on social organisation and claim-making, related to the capacity of people to organise themselves for collective (or individual) action, including making claims on government and other resources.
  - Impact on self-confidence, related to changes in people's behaviour and values, including patterns of discrimination according to gender, age, class or other factors.
  - Impact on policy and practice, related to the policy of development institutions such as the state, donors, and NGOs (in Catley 1997).
- Riddell (1995) adds:
- impact in relation to programme costs, e.g. by cost benefit analysis, cost effectiveness and cost efficiency (in Catley, 1997).

Definition of *cost benefit analysis* (Begg, 1997): A procedure for making long-run decisions. Compare the present value of costs with the present value of benefits. The action should be undertaken only if the present value of the benefits exceeds the present value of the costs. This is one kind of economic evaluation method.

*An indicator* is a variable used to measure changes in a given situation. Indicators have to be reliable and easy to calculate. Ideally they need to be relevant, objective, verifiable and cost-effective (Thomé, 1996; Rigby et al, 2000).

There are impact indicators and process indicators. Process or implementation indicators give a snapshot of how a project is progressing and how it is affecting people in the short term. E.g. the number of eggs produced per week by a flock are a process indicator for the productivity of a flock.

An example of an impact indicator is household income. This may derive from the sale of livestock products e.g. eggs. However, further information is needed to complete the picture. This may tell us whether a family can afford to feed itself with the eggs and sell the surplus, or must sell all the eggs in order to buy more basic foodstuffs.

*Sustainability* is essential for progress in poverty reduction to be long-term. The delivery of community animal health services is sustainable when it is no longer dependent on external support (financial and external to the country). Grandin *et al* (1991) suggested that a CAH programme is sustainable if "*new practices such as treatments and training skills can be acquired and transferred through existing social and cultural mechanisms and become incorporated into the indigenous knowledge base*".

The *sustainable livelihoods* approach to development is a way of thinking about the objectives, scope and priorities for development, in order to enhance progress in poverty elimination. The principles for this sort of development are that they should be people-centred, responsive and participatory, multi-level, conducted in partnership, sustainable and dynamic (Ashley and Carney, 1999).

### 1.3.2. History of community animal health services

In many low-income countries around the world, the State has been almost entirely responsible for the provision of veterinary services (Schillhorn van Veen and de Haan, 1995). However, over the last 20-30 years there has been a decrease in the funding of state services (veterinary and other) which has led to their steady decline. The private good components of the state-funded veterinary services are being replaced with services aiming at full cost recovery, provided by privately (or self-) employed veterinarians or by paraprofessionals.

Privatised veterinary services, modelled on European or North American systems, have been successfully established in some parts of the world. They have especially worked in urban areas and high potential production systems e.g. in Kerala, India (MRCMPU, 1999). However, in remote

arid and semi-arid areas of the world where livestock herding is very extensive it has been more difficult to encourage private vets to establish themselves as there is little financial incentive to do so. The phenomenon of sparse veterinary services in remote areas was already apparent during the days of the state run service and governments had trained a hierarchy of (sometimes) locally recruited veterinary auxiliaries or veterinary scouts to work in these areas. As funding decreased, these para-professionals had to turn to other employment.

Bilateral donors such as GTZ and DFID, international and local NGOs such as ITDG, Oxfam, VETAID, and *Vétérinaires sans Frontières*, in collaboration with government organisations (e.g. Ministries of Livestock, veterinary departments) have trained community animal health workers for the delivery of animal health services in remote rural areas. The animal health worker is not salaried by the state. He or she may be remunerated by the implementing organisation for a limited time but ultimately must attempt to make a living by selling his or her preventive and curative services. These service providers go by many different names: e.g. community (based) animal health workers (CAHW), paravets, barefoot vets, animal health auxiliaries etc. Their skills vary according to their technical training but generally include: correct administration of vaccines, antibiotic, anthelmintic, acaricidal, and trypanocidal drugs, welfare friendly castration e.g. use of burdizzo, husbandry, nutrition and management knowledge (Hadrill, 1982). The CAHW is usually provided with a start-up kit of veterinary drugs and equipment and is supported by the establishment of a rural pharmacy to replenish stocks. CAHWs can start work after anything from 1 week to 3 months training. The average training lasts 2 to 3 weeks.

Community animal health workers (CAHWs) have been delivering animal health services in Africa, Asia, and Latin America for over twenty years. The organisations that train and support them have been monitoring their work (e.g. by analysing records kept by CAHWs) and attempting to evaluate their impact on the health of livestock and on the welfare of farmers.

This review provides a systematic analysis of evaluation and impact assessment reports of community animal health projects. It aims to clarify what has been shown to work; this will assist prioritisation and planning of future investment.

### 1.3.3. Benefits and harms

Where farmers rely heavily or exclusively on livestock for their income, community animal health schemes have the potential to benefit farmers' lives. Community animal health workers can treat livestock for chronic conditions such as worms or tick infestation which cause unthriftiness and decrease animals' productivity. They can also vaccinate (under the supervision of vets) against diseases that can kill entire herds and that can lead to the farmer's destitution (e.g. rinderpest). Healthy productive herds are a farmer's capital, much like a bank deposit account. The farmer can sell animals when necessary e.g. for paying school fees, for a dowry, or for coping with a crisis. He or she may make an income from selling meat, milk, fibre and eggs that are surplus to the family's requirements.

Community animal health schemes have the potential to be harmful to vulnerable farmers. Community animal health workers must attempt to make a living from selling their services and this means selling veterinary drugs. They may become unscrupulous and attempt to sell farmers drugs that they don't need, at a higher cost, or dilute the drugs. This may lead to drug resistance and to the immediate impoverishment of the farmer (Whitehead, 2000). The community animal health scheme may draw farmers away from using traditional medicines (ethnoveterinary medicines) in order to make money from encouraging the use of allopathic medicines. This loss of indigenous knowledge is culturally harmful and may be an environmental hazard. There may be a potential gender inequity problem, scarce resources could be used to cure animals instead of women and girls.

## 2. Overview of the literature

### 2.1. NGOs and impact assessment

NGO development activity has been growing rapidly in the last two decades and associated with this is a growth in the literature on how to monitor and evaluate development projects (Davies, 2001). A variety of evaluation methodologies have been developed or borrowed from other fields. Many handbooks and guidelines have been written by NGOs based on their experiences to assist them in their evaluations, for example Oxfam's Development Guidelines series (Paul, 1991; Marsden and Oakley, 1990; Pratt and Loizos, 1992) and Save the Children's Toolkits by Gosling and Edwards (1995). Evaluation methods include using the logical framework (AVETMO-VETAID, 1999), the sustainable livelihoods framework (Ashley and Hussain, 2000; Heffernan and Misturelli, 2000), economic analyses (Schreuder, 1995; Holden, 1997) and participatory methods (Catley, 1999a; Goyder, Davies and Williamson, 1998).

Some NGOs have started to group their project evaluations into themes (Davies, 2001). These studies attempt to develop a wider perspective on NGO effectiveness, looking beyond individual projects, across sectors and country programmes. Riddell and Robinson (1992) conducted a review of 16 British NGO evaluations in an attempt to see whether a narrow representative group of poverty-alleviating projects were successful in achieving their objectives and to isolate those factors that contributed to a project's success or failure. The French NGO *Vétérinaires sans Frontières* has been consolidating data for projects with similar goals but based in different geographical locations in order to identify areas of greatest impact (Intartaglia, 1999; Thomé, 2000).

These "meta-analyses" show varying degrees of project success as one would anticipate. They have also added to the debate on how one measures impact, sustainability and project success.

### 2.2. Community animal health reviews

Several literature reviews exist on community animal health services, only a few of which contain information on impact assessment. This section enumerates the reviews that discuss the impact of community animal health services and briefly mentions their findings.

McCorkle and Mathias (1995) produced the first global overview of paravet programmes. They noted that the literature often advocated the need for baseline data in order to design programmes and later evaluate their success, but often projects failed to follow their own guidelines. They found data generally lacking for quantitative assessment of comparative service efficiency, outreach, and production or producer benefits.

*"These findings underscore the need to build systematic monitoring and evaluation into the design of the next generation of paravet programs so as to provide etic/quantitative data on their reach (numbers and frequency of animals or households served), impacts (e.g. net changes in herd health patterns, disease losses, product yields, gender-disaggregated household income, etc.) and cost/benefit profiles in comparison with the equivalent level of conventional services."* (McCorkle and Mathias, 1995. P. 549)

The Participatory Approaches to Veterinary Epidemiology (PAVE) project of the International Institute for Environment and Development has been investigating options for the use of participatory appraisal in veterinary epidemiology (Catley, 1999a). This review covers the historical rationale for community animal health and notes that *"for many years community-based projects produced limited information on project impact"* (p. 56).

Catley discusses participatory tools that can be used for ranking and scoring livestock diseases and ways to treat diseases. He has also been involved in field testing participatory methods for monitoring community animal health programmes in South Sudan (Catley, 1999b).

Oakeley's (1998) literature review discusses the lack of accurate data on the role and impact of CAH programmes. He notes the difficulty in measuring livestock mortality, disease incidence and animal health status which leaves us with qualitative and anecdotal information. His literature review highlighted the need for investigating new and innovative means of either generating more quantitative impact-oriented information, or for establishing improved methodologies for making systematic assessment based upon the qualitative data currently available.

*"Until meaningful impact indicators and parameters are more clearly defined, and practical means of measuring them established, a comprehensive and objective assessment of many CLW [community livestock worker] programmes will not be possible"*(Oakeley, 1998 p. 18).

Vétérinaires Sans Frontières (VSF) France has not produced a comprehensive literature review on the impact of its programmes, however it has an on-going programme of "capitalisation" i.e. of collating project information, analysing it and feeding it back into new and existing projects. The objective is to keep the "memory" of the project going despite changes in staffing and circumstances. The first phase of this programme was to catalogue all VSF publications and to make them available across the organisation (and beyond) for guidance on setting up programmes and, for example, training paravets (Piquet, 1996). The next phase involved looking at the impact of VSF's projects, from community animal health worker training to the effectiveness of institutional strengthening programmes (Intartaglia, 1999; Thomé, 2000). These showed that CAHWs alone are not sufficient to insure a good cover of animal health services in remote, rural areas. They advocate the need for sensitising farmers to the existence of the CAHW and the provision of mass training on e.g. correct drug dosages and disease diagnosis. Reviews of VSF's projects are prepared for the French Ministry of Foreign Affairs (who fund much of VSF's work), these contain some impact data (Thomé et al., 1995 and VSF, 1999).

CAMEL, a livestock development consultancy group based in France, have written a synthesis of the impact of four community animal health programmes (Intartaglia, 2000). These VSF projects were in Cambodia, Guinea, Togo, and Nicaragua. These countries were selected because they were not represented in the anglophone literature uncovered for this review. The report assesses the efficiency of the projects based on technical-economic, social, and institutional criteria.

*"in basic [community] animal health, the analysis of the technical-economic efficiency of the service is based on implementation indicators and hardly at all on impact indicators"* (Intartaglia, 2000)

Intartaglia finds that three of the four projects have had a positive impact on the farmers that were targeted when the project started. Her conclusions are based on a thorough analysis of all documents relating to each of the projects, not on evaluation or impact assessment reports alone. She gives a list of indicators to use for measuring impact but advises that it is:

*"imperative to adapt and modify the indicators used depending on the technical, socio-economic and institutional context of the intervention."*

A summary of CAMEL's review is annexed to this report (annex 9.3).

Livestock in Development (LID) produced a literature review on the delivery of animal health services in developing countries (Holden *et al*, 1996). It is not specifically on community animal health services but they and their impact are mentioned in the review. The authors state that:

*"A measure of impact, in terms of the increase in value of production, would therefore help distinguish between effective and ineffective systems"*(Holden *et al*, 1996 p. 29).

*"Whilst there has been no shortage of vigorous advocates for privatisation, there have been very little hard data and analysis to guide policy makers (Leonard, 1993; Anteneh, 1991; de Haan, 1993; Umali et al, 1994). This review was unable to find any real evidence to support assertions*

*that alternative organisations are able to offer better services than those provided under government reform schemes"*(Holden et al, 1996 p. 68).

In a later volume the same authors review livestock development projects from around the world and put them into three categories: technical and service projects, organisational projects, and institutional projects. Community animal health projects come under institutional projects as they aim to:

*"create new private-sector enterprises, such as community-based animal health workers who are able to deliver basic veterinary services to poor livestock keepers"* (Livestock in Development, 1999 p. 45).

In this category 59 projects are reviewed, not all of which had a CAHW component. The following were among the problems noted: that the activities of the organisation (implementor) were constrained by unfair competition from government, that the organisations' activities contravened national law (administration of certain drugs by non veterinarians), the skill base of the organisations' were insufficient to manage the project.

Livestock in Development (2001) are editing an anthology that brings together the fundamental aspects of community animal health: on policy, legislation, impact, and cost-recovery. It is aimed at the policy-makers in the veterinary profession.

Literature reviews aside, there are many other documents that relate specifically to community animal health. These are mostly unpublished project proposals, reports, evaluations, and impact assessments, and published papers and articles in journals and book chapters. In many of these documents the authors discuss the importance of monitoring and evaluation and the potentials and difficulties of measuring the impact of these projects. There are few published books that are available in the mainstream that are entirely devoted to community animal health, one example is Catley, Blakeway, and Leyland (in progress, due 2001) who have written a how-to guide to community animal health with the assistance of people working in the sector around Africa.

We can conclude from the literature reviews that organisations are attempting to measure the impact of community animal health services but finding it difficult for many reasons: organisational culture, lack of training and staff, remoteness of projects, large distances, the nature of livestock diseases, climate, and the cost of assessment.

### ***2.3. Lessons from other sectors***

The animal health sector may have something to learn from the evaluations and impact assessments that are being done in other fields. Examples from agriculture, human health and social development are briefly discussed here.

A DFID funded research project in the agriculture and natural resource management sector is working on the development of indicators for agricultural and rural livelihood sustainability (Rigby et al. 2000; Howlett et al. 2000; Woodhouse et al. 2000). The project aims to review existing indicators, provide a framework for research on sustainability indicators and engage stakeholders in the identification of indicators of success and sustainability of farming based systems. The overall goal is to assist in the development of more effective and sustainable management of renewable natural resources in Africa. The Sustainable Livelihoods framework (Carney, 1998) forms the basis of the research and the indicators developed for sustainability are similar to those that are seen in impact assessments e.g. income, affordability and access to health and education, health status, farm productivity. The indicators are developed with the communities and vary by geographical location.

The agricultural extension sector bears a strong resemblance to the community animal health sector. The original government paravets and extension agents performed very similar duties to today's CAHWs. There is also a move, world-wide, towards privatisation of the extension system for the same reasons that the veterinary services are being privatised (Umali et al. 1994).

*"Current privatisation experiences [in agricultural extension] vary from a complete withdrawal of state interventions, to a commercialisation and cost-recovery approach (via levies, user charges and contracting public sector services), to an increased involvement of the public services in income generating activities..."* (Kidd et al, 2000 p. 97).

Edwards and Farrington (1993) reviewed 21 natural resource research projects, some of which were extension based. They noted many constraints to the successful uptake of project outputs and subsequent impact on beneficiaries. Some of these are: weakness in project preparation, weakness in project monitoring and review, inappropriate technology development in the UK, inadequate consultation with potential users of project output, inadequate management and training of project staff, lack of continuity in staffing, and inadequate consideration of the effects of external factors.

An example of combined methods for assessing the impact of a human health intervention at community level is the study of joint anthropological and epidemiological approaches to assess the effectiveness of community mobilisation for health education for the control of schistosomiasis. The impact of the health education project in Brazil was measured by collecting ethnographic data on knowledge, attitudes and practices regarding schistosomiasis as well as clinical evidence (Uchoa et al. 2000). The results of the study indicate that differences in the disease prevalence in the study and control areas could not be explained by the existence of the community mobilisation programme. The clinical evidence for the continuing prevalence of the disease was unequivocal, the anthropological data allowed it to be interpreted in a local context.

Oxfam conducted a desktop review of health projects evaluations for the 10 years 1987-1997 (Yanni, 1997). The focus of the analysis was to look critically at Oxfam's experience in health and to look at evaluations as a tool for institutional learning. The review showed that Oxfam has had many successes in health programmes around the world: training health workers, integrating health into development, innovative approaches to health interventions. It also faces many challenges: collapsing public health services in many countries, lack of access of the poor to health services, lack of baseline data at the project assessment stage for measuring impact. The report recommends that for measuring impact, data collection and analysis as well as monitoring and documenting experiences in health need to be integral parts of capacity building for project staff and partners throughout the project cycle. Baseline data need to include social and wealth rankings, for identifying the poorest and vulnerable groups within a community, as well as demographic data and health indicators. Where there is no baseline data, other mechanisms can be used for measuring impact such as retrospective studies. It recommends that Oxfam needs to develop generic indicators for measuring the impact of capacity building in health, especially to measure the trickle down and across, of its benefits, to the community.

The John Hopkins University Center for Communication Programs' Population Communication Services has designed a framework for the project cycle called the P Process. Step 5 of this framework is impact evaluation. It notes that:

*" programs that are not evaluated waste time and money because they have little impact on future development"* (JHUCCP, 2000)

In the social development sector, the OECD-DAC working party on aid evaluation has extensively discussed methods and approaches for evaluating development assistance for poverty reduction. They are concerned that:

*"evaluability (and particularly measurability) may be being used consciously or otherwise as a criterion for defining strategies and priorities for implementation. Poverty reduction efforts should be guided by their judgement about what is good to do, not what is easy to evaluate; and evaluability should not be confused with measurability"* (Thin, 1999).

A DFID-funded review of social development projects showed that there is *"some confusion between an output and an outcome, between monitoring implementation and measuring impact. This confusion arises partly out of a recognition that monitoring and measuring*

*social processes is difficult and that monitoring project implementation is much easier than monitoring impact."* (Kothari, 2000 p. 15).

Food-For-Work (FFW) projects function as welfare safety nets for poor communities in food insecure areas, they are a transition between emergency relief and long term development. Evaluations of FFW projects in Ethiopia are designed to assess their effectiveness. A literature review of these evaluations showed that:

*"certain aspects of the project are prioritised according to pre-conceived definitions of key issues, which as this review illustrates are conventionally those features that are more easily quantified. The benefits of an evaluation that incorporates the impacts on beneficiaries are generally intangible and inherently subjective when weighed against the costs"*(Humphrey, 1998 p. 28).

The examples above show that other sectors are also struggling with impact assessment. They have developed methods for conducting them, but they are not necessarily easy to replicate or cost-effective. The results that they come up with are not always conclusive and the conclusions that they draw are not always based on the evidence collected.



### 3. Methodology

The objective of this review is to summarise the existing reliable evidence on the effects of community animal health services on standard indicators for household wealth and health or farmers' livelihoods.

The literature for the review is sparse and mostly unpublished. In order to obtain as many of the relevant reports as possible a strategy for a systematic search of the literature had to be devised. The systematic review methods used in evidence-based medicine seemed to be appropriate for this purpose. This section describes the methods that were used to collect the literature and analyse it.

#### ***3.1. Background to the methodology***

##### 3.1.1. Evidence based healthcare

The following quotes are taken from the field of human medicine and healthcare but can be applied to animal healthcare in a developing world context.

*"Evidence-based medicine is the conscientious, explicit and judicious use of current best evidence in making decisions about the care of patients. The practice of evidence-based medicine means integrating individual clinical expertise with the best available external clinical evidence from systematic research"*(Sackett et al. 1996 p. 71).

In this review, the patients are the livestock that the CAHWs care for. Are community animal health workers the best solution to the problem of healthcare of livestock in remote rural areas and should we continue to train them and to promote their services? By analysing the evidence presented in the literature we can make an informed decision.

*"At present, many healthcare decisions are based principally on values and resources – opinion-based decision-making; little attention has been given or is paid to evidence derived from research – the scientific factor"*(Gray, 1996).

In the field of community animal health, this is very much the case. Until now many decisions have been made on anecdotal evidence.

*"This will change: as the pressure on resources increases, decisions will have to be made explicitly and publicly; those who take decisions will need to be able to produce and describe the evidence on which each decision was based. Even in cases for which evidence is difficult to find or poor in quality, the decision-maker must search for it, appraise and present it, even if the decision taken may ultimately be dominated by values and resources"* (Gray, 1996).

This is the point that has been reached by the veterinary profession, the donor agencies and policy-makers. They need to see the evidence that community animal health is having an impact on farmers' livelihoods so that they may know how to pursue legislation, who to fund and how.

*"Thus, as the pressure on resources increases, there will be a transition from opinion-based decision-making to evidence-based decision-making"*(Gray, 1996).

Resources have always been scarce for international development and poverty reduction. Community animal health services have to be able to prove that they are having an impact and can continue to do so if they are to be adequately funded. They need to compete with other methods of controlling animal disease and of increasing livestock productivity.

### 3.1.2 Systematic reviews

Literature reviews are useful because they enable us to appraise the evidence available in multiple studies, rather than searching and reading individual studies and attempting to get a picture of what they are telling us overall. Traditional literature reviews have several flaws however. They are not always written by people who are impartial to the evidence that they are collating. Selectively citing studies may build a case for the reviewers' opinions. Traditional reviews are rarely explicit about how studies are selected, assessed and integrated (Davies and Crombie, 1998). In the late 1980s several medical professionals exposed the inadequacies of these reviews and the consequent bias in their recommendations. It was particularly of concern where recommendations issuing from reviews were resulting in dangerous medical practices (Lau et al. 1992, in Davies et al, 1998).

The rigorous systematic review started to take shape at that point. This led to a formal process of review that is now well documented and used in medical science all over the world. It aims to bring all evidence pertaining to a specific subject together. The following steps are involved:

1. Defining the review question. This requires a clear statement of the intervention of interest, the participants and the outcomes. The details are used to select studies for inclusion in the review and are written up in the form of a protocol.
2. Searching the literature. The published and unpublished literature are carefully searched for all reports of the intervention. For an unbiased assessment, this search must cover all the literature including non-English sources. Further, studies reported only at conferences, in company reports or unreported and buried in filing cabinets must be sought. This concern is over publication bias: published reports are more likely to show positive effects than unpublished reports, thus leading to an over optimistic view of the intervention's effectiveness.
3. Assessing the studies. When all the studies have been identified, each one must be assessed for eligibility for inclusion, quality and reported findings. Ideally this is done by two independent reviewers.
4. Combining the results. The findings from the individual studies must then be aggregated to produce a "bottom line" on the effectiveness of the intervention. This aggregation can be quantitative (a meta-analysis) or qualitative.
5. Placing the findings in context. The findings from this aggregation of an unbiased selection of studies then need to be discussed to put them in context. This will address such issues as the quality and heterogeneity of the included studies, the likely impact of bias and chance and the applicability of the findings. Thus judgement and balance are not obviated by the rigour of systematic reviews, they are just reduced in impact and made more explicit.

(taken from Davies et al. 1998)

The systematic review method is not without drawbacks, it can be done badly and studies can be inappropriately aggregated. However, it was still seen as a useful way of attempting to review the impacts of community animal health services. The steps outlined above were followed with the help of the Cochrane Collaboration and the reviewers' handbook (Mulrow and Oxman, 1997).

### 3.1.3 The Cochrane Collaboration

The Cochrane Collaboration<sup>1</sup> is an international organisation that aims to help people make well-informed decisions about healthcare by preparing, maintaining and promoting the accessibility of systematic reviews of the effects of healthcare interventions. These reviews are prepared and maintained by Collaborative Review Groups (CRG). The CRGs are made up of researchers, healthcare professionals, and consumers of healthcare services in specific interest areas of health e.g. infectious diseases or stroke. Not all systematic reviews are Cochrane reviews, but those that

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<sup>1</sup> <http://www.cochrane.org>

are enter the Cochrane Library<sup>2</sup> and are highly regarded in the medical profession as being as unbiased and as well researched as it is possible for reviews to be.

The Infectious Diseases CRG provided help in this review by advising on how to prepare a protocol for the review and then on how to analyse the studies that were retrieved and met the inclusion criteria. The protocol was reviewed by two Infectious Diseases CRG reviewers and will be included in the Cochrane Library. See annex 9.1 for full protocol.

### ***3.2. Defining the review question***

This is a review of the impact of community animal health services for improving people's livelihoods and health status in low income countries.

Systematic reviews attempt to include studies that are of the highest possible design standard: i.e. randomised controlled trials. This review could not confine the studies' design to this gold standard because none were available, therefore any study which recorded at least one of the outcomes listed below was included.

From each study, we recorded the study design, setting, participants (human and animal), intervention, and the measures of assessing outcomes (impact). A study is an individual project review (evaluation or impact assessment).

### ***3.3 Searching the literature***

The following criteria were used when searching for the literature, they were used to decide whether a study was to be included in the review.

The inclusion criteria were categorised into the following groups: participants, types of study, types of intervention, and types of outcome.

Studies should fit some or preferably all of the inclusion criteria.

#### **3.3.1. Participants**

The participants are both human and animal:

- Low income communities who keep livestock. No restriction on setting (rural or urban) or ecological zone.
- Livestock keepers can include settled farmers, nomadic and semi-nomadic herders, pastoralists and agro-pastoralists.
- Livestock keepers include the head of the household, his or her family and the community or extended family amongst whom they live.
- Low income countries as defined by the World Bank are those countries where GNP per capita per year is 520 USD or less<sup>3</sup>.
- No restriction on species (includes cattle, sheep, goats, camels, llama, pigs, poultry)

#### **3.3.2. Types of study**

- All types of study design are included
- No language exclusion

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<sup>2</sup> <http://www.cochrane.co.uk>

<sup>3</sup> World Bank Development Indicators 2000: 520 USD includes China and India. The GNP per capita for Sub-Saharan Africa is 510 USD.

- Published and unpublished literature included

Items included were: all community animal health and animal production schemes; surveys where agricultural extension services which include animal health and/or animal production projects are recommended; general reviews where animal health, production or veterinary schemes are mentioned.

Unpublished reports, journal papers, conference papers, book chapters are included.

### 3.3.3. Types of intervention

- Includes basic preventive and curative animal health services provided by a community animal health worker, all paravet practices such as: vaccination, castration, drug administration, with or without extension (health, nutrition and husbandry messages)
- Community animal health services may be delivered by governmental or non-governmental organisations with or without the support of multilateral or bilateral donors.
- These services may be initiated as projects or programmes of a finite timespan.
- Excludes animal health services provided by qualified veterinarians (public or private).
- Excludes traditional animal health services provided by a healer or other.
- Excludes extension where extension is provided by an extension worker who is salaried and who is not expected to recover the cost of veterinary drugs.

### 3.3.4. Types of outcomes

- Livelihood indicators: number of children sent to school, monthly household income and expenditure, possession of goods such as radio, bicycle, or tin roof.
- Health indicators: nutritional status of children under five; infant mortality rate.
- Productivity indicators: livestock productivity (products sold: animals, milk, eggs).
- Animal health indicators: livestock mortality, Livestock fertility (interbirth intervals), Livestock illness episodes (morbidity)
- Implementation indicators: number of animals seen, number of visits, number of workers trained, number of workers active at 2 years after programme started, number or value of drugs sold.

### 3.3.5. Identification of studies

To search the databases, search terms had to be defined. The following were used:

- Key search terms: barefoot, village, vet scout, para vet, intermediate service, paraprofessionals, extension and vet, extension and animal health, veterinary services, animal health, disease control, rural development, community development, pastoralism, co-operative extension service.

- The following websites were searched: the World Bank (plus Sustainable Rural Development Information System of CIESIN and the World Bank), Food and Agriculture Organisation, International Livestock Research Institute, One World, Kenya web (Ministry of Agriculture, Livestock Development and Marketing), Eldis, Centro de Estudios Uruguayo de Tecnologias Apropriadas, Global Forum on Agricultural Research, ILEIA, Care, ODI, Deliveri project, Africa news online, Partners in Rural Development (Canada), New Agriculturalist, USDA, panasia.org, The African Development Bank Group, Ford Foundation, International Development Research Centre, IFAD, CTA.

These sites were searched because they were most likely to contain relevant studies, some of the sites came up as a result of pearling (when one reference leads to another).

- The following databases were searched: STN SIGLE was searched from 1976 to present (July 2000), CAB was searched from 1973 to present (July 2000), AGRIS (FAO database) was searched from 1975 to present (July 2000)

- Searches of internal reports. We contacted the following organisations in order to obtain unpublished internal reports: Actionaid, Action Against Hunger, Adventist Development and Relief Agency, African Muslim Agency, Africare, Agency for Development Co-operation and Research, Care International, Catholic Relief Services, Christian Veterinary Mission, DELIVERI, Development Aid from People to People, Farm Africa, EMVT, German Agro Action, GTZ, Livestock in Development, Lutheran World Federation, Norwegian Peoples Aid, Oxfam, SivTro, United Mission to Nepal, TearFund, VETAID, Vetermon, Vetwork, VSF Belgium, VSF France, VSF Switzerland, War on Want, World Vision International,
- Items excluded were: extension systems in Western Europe, Australia, New Zealand, North America; descriptions of veterinarians as clinical practitioners in rural areas.

## 4. Results

### 4.1 Assessing the studies

The databases, internet sites, journals, and unpublished reports were searched as described in the previous section. Over 300 references were retrieved. Those retrieved from the databases were stored in a reference managing software programme (Reference Manager). All the abstracts were read and if they met the inclusion criteria they were kept, otherwise they were excluded and the reasons for their exclusion noted.

Thirty documents in total met the inclusion criteria for participants, settings and interventions and some, but not all, of the criteria for outcomes. A table listing the included studies is in annex 9.2. A table listing the studies that were excluded is in annex 9.3.

Data from each included study were entered into a data extraction form (see below). This form was devised with the assistance of the Infectious Diseases Collaborative Research Group and a checklist for assessing the methodological quality of studies in health interventions (Downs and Black, 1998). The form is in 3 parts. The first part describes the study, the second part is a checklist for the quality assessment of the observational studies (the evaluation or review) and the third part is a checklist for the assessment of the quality of the economic evaluations (not present in all studies). An example of a completed data extraction form is in annex 9.4.

#### 4.1.1 Data Extraction form

##### Part 1: Data collection

The first part of the form shows why the study has been included: it collects the data for the inclusion criteria that have been met: for setting, participants (animal and human communities), interventions, and outcomes.

Study e.g. name and date of paper	
Study design e.g. sampling	
Setting e.g. country	
Animals i.e. species	
Communities i.e. production type	
Interventions	
Outcomes	
Methods of assessing outcomes	

## Part 2: Quality assessment of observational studies

This part of the form assesses the quality of the study design. It shows whether the project's evaluation was methodical and rigorous in its design or whether it was a more *ad hoc* review.

	Yes/No	Score
Control group		
Comparability of control group		
Is the aim of the study clearly described?		
Are the main outcomes to be measured clearly described?		
Are the characteristics of the animals included in the study clearly described?		
Are the interventions clearly described?		
Are the main findings in the study clearly described?		
Have all important adverse effects been mentioned as a consequence of the interventions		
Were the animals representative of the entire population of animals?		
Were statistical tests used to assess the main outcomes appropriate?		

## Part 3: Economic quality assessment

Some project evaluations also include an economic assessment, usually a cost benefit analysis. These analyses are assessed for quality in part 3 of the form.

	Primary analyses presented		
Data collection	Time period stated		
	Source of cost information		
	Discount rate <sup>4</sup> mentioned		
Analysis	Sensitivity analysis <sup>5</sup>		
	Statistical comparisons made		
	Methods and/or analysis appropriate		
Conclusions	Authors' conclusion		
	Reviewers comment on their conclusion		

### Scoring the studies

Where a question on the form received a "yes" answer, it scored 1, where it received a "no", it scored 0. There are 10 questions in the section on the quality of the observational studies, a score of 7 or more denotes a study of high quality. For the economic evaluation there are 6 questions, a score of 4 or more denotes high quality. The scores have an equal weight. The threshold for high scoring studies were set by the author of this report.

The summary of the studies' outcomes and quality assessment is shown in Table 1.

The table defines the studies by their outcome criteria. This is because project outcome equates to impact and was therefore considered to be the most important inclusion criteria to discuss. It can be assumed that the studies met all the other inclusion criteria (participants, study design etc.)

<sup>4</sup> It is assumed that a monetary unit received today is worth more than a monetary unit to be received a year from now. This assumption requires that in order to determine the present value of future sums, the analyst uses an interest rate to discount these future sums. This is known as the discount rate.

<sup>5</sup> This is the analysis of the influence of 1 or a group of observations to a statistical model. It measures the change of the parameter estimated in a statistical model where an observation is omitted.

Table 1 gives a brief description of the authors' results based on the outcomes that they are measuring. The quality score relates to the confidence that the reviewer has that the authors' results reflect the project situation on the ground.

Table 1: Summary results of included studies and their quality assessment

The \* denotes a study assessed by two reviewers, hence two scores.

<u>Study</u>	<u>Outcomes measured</u>	<u>Authors' Results</u>	<u>Quality Score</u>	<u>Reviewers' comments</u>
Abdel-Messieh, F. W. 1989. Lesotho	No of drugs sold, no of treatments carried out	65% of small ruminants have been treated by CAHWs in 5 months	N/a	Not an evaluation report
Almond, M. 1987. South Sudan	No. of paravets working, no. of vaccinations given	High number of vaccinations compared to other efforts	N/a	Not an evaluation report
Anthra, 2000 India	Mortality, morbidity	Percentage mortality and morbidity for ruminants and poultry have decreased during the project intervention C B Ratio 1:4	2/16	The study design is not very strong and the CB analysis can't be validated
Blakeway, S. 1995. South Sudan	Livestock mortality	C B Ratio 1:34	2/16* 1/16	The author didn't have much data to go on so ratio is open to question, also no discount rate mentioned
Catley, A. 1996. Somaliland	No. of CAHWs trained No. of animals treated (figure not given)	30 CAHWs	N/a	Not an evaluation report
CAMEL, 2000 Cambodia, Guinea, Togo, Nicaragua	No. of CAHWs trained No. of animals treated No. of CAHWs still active after 3 years Calving rate	In Cambodia, 90% of CAHWs are still active after 3 years. In Guinea, deparasitised cattle have higher calving rates	N/a	The author presents 4 case studies: CAHW programmes in Cambodia, Guinea, Togo and Nicaragua. The data is drawn from multiple reports.
Chabaril, F. N. and J. K. Mathooko. 1996. Kenya	Sero-conversion for rinderpest	Increased sero-conversion from 37% in 1993 to 64% in 1994.	N/a	Not an evaluation report
Grandin, B, R. Thampy and J. Young. 1991. Kenya	No. of CAHWs trained No. of animals treated	Average of 17 cases treated per CAHW/month	N/a	Not an evaluation report



<u>Study</u>	<u>Outcomes measured</u>	<u>Authors' Results</u>	<u>Quality Score</u>	<u>Reviewers' comments</u>
Groot, Theo. 1997. South Sudan	No. of CAHWs trained No. of animals treated	No. trained is smaller than no. planned 17,365 animals treated (Jan-Jun 1997) internal assessment of CAHW performance	1/16	This is not a full project evaluation, it is an internal auto-evaluation We aren't told what criteria are used to determine CAHW performance
Hadrill, D. 1989 Nepal, India	No. of CAHWs trained No. of animals treated	299 CAHWs trained between 1981 and 1986 in Nepal 4,000 cases treated in India in 2 years.	N/a	Not an evaluation report
Hammel, R. 1995. Tchad	No. of CAHWs trained No. of animals treated	Paravets average 1 case per day	N/a	Not an evaluation report
Holden, Sarah. 1997a (Wajir, Oxfam) Kenya	Mortality survey No. of drugs supplied Impact on pastoral welfare	CB Ratio 1:2 Statistically significant differences in mortality rates in project and non-project areas.	11/16* 8/16	No calculation for C B ratio available for cross-checking
Holden, Sarah. 1997b (Kathekani, IT) Kenya	Mortality survey Number of livestock per farm	Villages with CAHWs had (significantly) less cattle and sheep and goat deaths from ill health compared to villages without. Villages with CAHWs had more livestock than those without due to decreased ill health, animals don't need to be slaughtered early.	6/10	More detail on sampling methods for villages needed
Huttner, K. 2000 Malawi	Mortality survey Livelihood indicators and assets (roof, glass windows, radio)	C B Ratio 1:16 Users of the CAHW service obtained a higher net income than non-users. Users had more assets than non-users	4/16	Cost benefit results not cross checkable
Jones, B. et al. 1999 South Sudan	No. of CAHWs No. of vaccinations Sero-conversion of animals (76%) No. of rinderpest outbreaks (decreased from 12 to 2) No. of animals treated	1,057 CAHWs, 12% drop out rate 1 million cattle vaccinated against rinderpest each year (31% coverage), 23% of which vaccinated by CAHWs	N/a	Not an evaluation report

<u>Study</u>	<u>Outcomes measured</u>	<u>Authors' Results</u>	<u>Quality Score</u>	<u>Reviewers' comments</u>
Jost, C. et al. 1998 Uganda	No. of animals vaccinated Immunity to rinderpest (sero-conversion)	CAHW communities' herds had no immunity to rinderpest, compared to 6% of herds in non-CAHW areas. No statistical difference between no of animals vaccinated in each community.	N/a	The authors were not able to differentiate between CAHWs and government vaccinators' efficacy in delivering rinderpest vaccinations.
Kaberia, B. K. 1999. Tanzania	No. of CAHWs No. of animals treated	44 CAHWs in 1998, 8453 animals treated	N/a	Not an evaluation report
Lohr, K. F. et al. 1986 Thailand	Number of farmers participating in programme, number of animals treated	If all calves are treated for roundworm the CB ratio for reduced calf mortality is 1:8 If liverfluke infected animals are treated the CB ratio is 1:47	5/16	CBA calculations are not available for cross-checking
Mariner, J. C., D. M. O. Akabwai, J. Toyang et al. 1994. Uganda and Cameroon	Sero-conversion of animals No. of cattle vaccinated by CAHWs	Vaccination efficiency of 86%, herd immunity rate in cattle under 3 years of 83% 16,000 cattle vaccinated in Cameroon 35,000 vaccinated in Uganda	5/10	This is an evaluation of the efficiency of the vaccine, not of the impact of the CAHWs
Meemark, N. and R. S. Morris. 1989 Thailand	Animal survival, increased market values	C B Ratio 1:209	5/16* 5/16	Very large CB Ratio. Need a comparison group to determine if the benefits are all attributable to the programme.
Moktan, D., B. K. Mitchelhill, and Y. R. Joshi. 1990 Nepal	No. of CAHWs active	33% of CAHWs active after x years.	N/a	This is an evaluation of the CAHW training programme
Odhiambo, O., S. Holden, and C. Ackello-Ogutu. 1998 Kenya	-	-	-	See Holden 1997a, Wajir study
Roche, C. 1999 Kenya	-	-	-	See Holden 1997a, Wajir study
Sanaag CBO. 1999. Somaliland	Morbidity, market value of animals	Reduced morbidity between 1992 and 1999	2/10	Review is based on interviews and anecdotal evidence

<u>Study</u>	<u>Outcomes measured</u>	<u>Authors' Results</u>	<u>Quality Score</u>	<u>Reviewers' comments</u>
Schreuder et al. 1996. Afghanistan	-	-	-	See Schreuder 1995
Schreuder et al. 1995. Afghanistan	Livestock mortality survey Cost benefit analysis	The survey showed decreased mortality in districts covered by CAHWs C B Ratio 1:5	11/16* 12/16	Good survey methods, C B ratio varies when sensitivity analysis conducted
Schreuder, B. E. C. et al. 1998. Afghanistan	Mortality survey on animals in the winter	Following on from Schreuder 1995, this survey shows that in the winter the programme has no impact on adult small ruminants	9/10	Shows problems with measuring mortality as an impact indicator: mortality higher in some seasons
Tacher, G. 1986 Central African Republic	Livestock mortality survey	Economic analysis shows Internal Rates of Returns between 12% and 36%	5/16	Confusing results due to several different hypotheses
Ward, D. E. et al. 2000. Afghanistan	Birth rate, death rate, herd sizes	Improvements in mortality rates were statistically significant and could be attributed to the programme (which includes CAHWs).	5/10	Not an evaluation report
Young, Stoufer, Ojha and Dijkema. 1994. Nepal	No. of CAHWs trained No. of CAHWs active after 5 years	361 CAHWs trained since 1981 (see Moktan et al. 1990) 70% still working after 5 years	3/10	PRA covered more than just impact of CAHWs, impact became secondary to a general livelihoods analysis.

Thirty studies are listed in the table, however 5 studies related to 2 project evaluations: Holden 1997a, Odhiambo et al. 1998, and Roche, 1999. Schreuder 1995 and 1996 relate to the same review. Holden 1997a was used as the reference study because it was the most complete report. The two Schreuder studies were identical, the earlier publication was chosen as the reference.

Thirteen of the studies were evaluation reports, the rest are articles and book chapters based on project documents.

Fifteen of the studies received a score. Those studies that received no score were not evaluation studies or were articles that did not contain enough data to be scored. Two studies that were not evaluation studies received a score because they gave some description of the study design. Of the 15 studies with scores, only 3 of them had high scores (7/10 or 11/16 and higher).

Eight studies included economic evaluations, only 2 of these scored highly.

Four of the studies were assessed by two reviewers, the rest were assessed by just one person. The two reviewers found very similar scores for these studies and concurred in their comments. The author of this report was the principal reviewer, the second reviewer was a researcher from the Infectious Diseases Review Group.

Weighting the scores would have yielded different results. The analysis of the results are presented in the next section.

## 5. Discussion

Table 1 shows us that, with a few exceptions, the quality of the design of many of the studies is poor and the conclusions arrived at are not necessarily the logical end point based on the evidence shown. Although the studies' authors tell us that the projects are having a positive impact on beneficiaries, the evidence that they present is not sufficient to back up those claims.

In 13 of the 30 studies, the only outcomes measured are the number of CAHWs trained and the number of animals treated. These figures may be large and may impact on animal health, but they do not indicate an impact on farmers' livelihoods. For example a large number of CAHWs may have been trained in one project, but the figure needs to be put in the context of how many villages or how many animals the CAHWs are expected to administer to. CAHW reports and veterinary pharmacy stock records may show that the number of animals treated may be large, but without knowing what percentage this is of the total herd in the area, the number loses its significance. Some of the reports do give an indication of the context from which the figures came (Schreuder 1995 and 1996). It is difficult to attribute a link between the numbers of CAHWs, the number of treatments dispensed, and impact on farmers' livelihoods. These outcome indicators are useful as process or implementation indicators for project reviews, e.g. for completing logical frameworks, and not for impact assessments.

In 13 of the studies, the outcome indicators are mortality, morbidity and sero-conversion. These measurements are costly to make and it is difficult to validate them for their accuracy. However, these indicators do provide more information on impact than process indicators. Mortality and morbidity surveys give some indication of the efficiency of drug disbursement and administration. They can tell us if the CAHW is providing the right drugs at the right time and in the correct manner. The problem with these surveys is that there are many factors that affect the data e.g. unseasonal weather can provoke an outbreak of a disease, or a new disease can occur in an area from in-coming herds. Taking blood samples to check for the sero-conversion of animals that have been vaccinated may be a useful indicator of the efficiency with which the vaccine was administered. However, these indicators still don't give much information on the impact of CAHWs on farmers' livelihoods.

Two of the studies (Holden, 1997 and Huttner, 2000) provide livelihoods indicators. In Holden's study of a pastoral development project in Kenya, five indicators are chosen to assess welfare:

- The number of days a family has required food aid in the last year
- The quality of people's diet, measured by the frequency with which milk is consumed by adults and children
- The occurrence of seasonal peri-urban destitution. Destitute families are often forced to relocate near town centres to secure food aid and water
- Perceptions of changes in quality of life and ability to survive drought
- Incidence of child mortality

Holden is able to identify positive changes in the pastoralists' livelihoods by asking the above questions. These changes can be attributed to the programme (Holden provides a cause and effect diagram in the report), but events beyond the programme may also have contributed to the changes in pastoralists' perceptions of their present and future well-being.

Huttner's study of a basic animal health service in Malawi uses indicators of income:

- Does the farmer's house have clay walls or walls of burned bricks?
- Does the house have a grass roof or iron sheeting?
- Is there glass in the windows or no glass?
- Does the farmer own an oxcart?
- Does the farmer own a plough?
- Does the farmer own a radio?

Huttner's baseline study found that farmers using the CAHWS' services were wealthier than those that did not use them. The farmers were probably wealthier and better educated at the start of the project which is why they were able to access it. This is a problem for the less educated and very poor farmers which the project is attempting to address. However, these indicators could be useful in the future when the project will want to assess change in wealth status as a result of the project's activities.

Nine of the studies provide some sort of economic evaluation (see table 2). It is important to indicate that economic appraisal, either cost-effectiveness or cost-benefit analysis, is a powerful framework for impact assessment. Cost-effectiveness is useful but limited in the sense that it allows impact assessments to be conducted using technical efficiency criteria. This means that the impact assessment must limit itself to comparing the relative costs of delivering on exactly the same impact using different intervention methods or technologies. The method that delivers the impact most cheaply is the most cost-effective. It is a useful adjunct to the use of data on clinical efficiency and ideally any systematic review should be collecting cost data as well as that on clinical effectiveness. This is currently the debate in health economics (Moran, 2001).

Cost-effectiveness is a limited form of assessment since most of the impacts deriving from CAHW promotion are more multidimensional. Livelihood impacts comprise those that relate to animal health outcomes and the process utility deriving from the way a service is delivered. It does not make sense to speak of the cost-effectiveness of two programmes that deliver different health outcomes.

In contrast cost-benefit analysis circumvents the uni-dimensional limitations of cost-effectiveness analysis by attempting to put money values on outcomes and if possible the value of the delivery process. If it is possible to do this then it is possible to compare across programmes to see which – among a set of entirely different interventions or programmes- delivers the most economically efficient in terms of its benefits outweighing its costs. To use plain English this is a good way to judge how to prioritise interventions that give the biggest net benefit.

The measurement of economic efficiency is an important advantage of CBA because it tells us whether a project is actually worth doing. Cost effectiveness analysis (CEA) measures the relative cost effectiveness of the competing option (with identical outcomes) but does not actually say whether any of them are actually worth doing in an economic efficiency sense of the costs being greater than the benefits.

The complicated part of using cost benefit analysis is that monetary valuation is required. So far much of the literature has focussed on the valuation of productivity improvements or savings using market prices (Bennett and Kitching, 2000; Morris, 1999; Rushton, Thornton, and Otte, 1999). In quantitative terms (and if impact assessment is to become more quantitative) the challenge is to go beyond the more obvious market impact measures and to determine values for more outcomes and delivery processes. The fields of environmental economics and health economics provide some insights for this task.

In his review, Groot (1997) is unable to provide an economic analysis as vital financial data was not available to him. The remaining 8 analyses are of varying quality. Some of them are missing accurate data and are based on estimates, many of them are not verifiable because data is not present in the document. However, what they all have in common is that they show positive cost-benefit ratios. Some of the ratios are huge, it is possible that the authors did not apply discounting and did not perform sensitivity analyses. However, even the most conservative estimates show that investing in community animal health leads to high returns in terms of the benefit to people and their livestock. Table 2 provides a summary of the economic evaluations. The table shows the benefits of the CAH programme on the farmers and their livestock. The costs are calculated from programme expenditure and donor grants. The monetary cost and monetary benefits are identified as accurately as possible. In the monetary cost column we have also included the valuation method, these are all based on local market values. Some of the analyses were made *ex ante* and some were *ex post*. The indicators column shows the outcome of the cost-benefit

analyses: the cost-benefit ratio and the discount rate used for the calculation where provided. The time horizon column shows over what time scale the costs and benefits have been calculated.

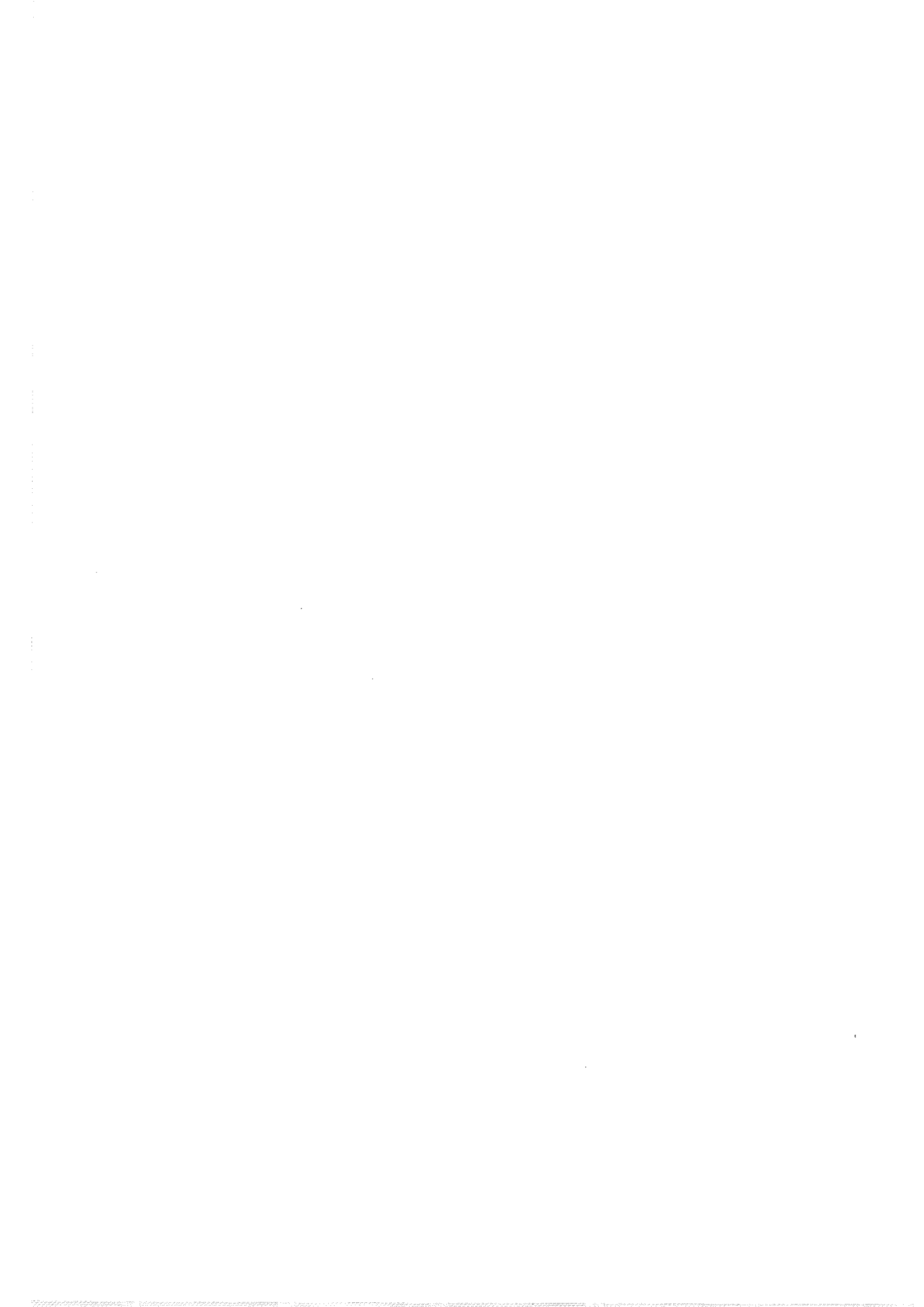




Table 2: Summary of economic evaluations in the literature

Intervention/ Identifier	Benefits	Costs	Monetary Cost	Monetary Benefit & valuation method	Indicators	Time horizon
Anthra, 2000 Ex post	Increase in offtake due to reduced mortality	Training 22 CAHWs for 1 year	Rs 231 000	Rs 943 250 Market values	CB ratio: 1:4	Not cited
Blakeway, 1995 Ex post	i. Savings from decreased calf mortality ii. Savings from increased production in the long term	UNICEF/JOLS Livestock Programme for 1994	500,000 USD	i. 3.8 M USD ii. 3 M USD Total: 6.8 M USD Market values	CB ratio: 1:34	Not cited
Holden, 1997 Ex post	Savings from reduction in livestock mortality Increase in livestock capital and milk production from restocking (not CAH) Reduction in livestock theft losses Reduction in drug expenditure	Oxfam project expenditure	not cited	Reduction in mortality: saving of £490,000 Increase in capital and milk: £101,000 Other benefits approx £84,000 Market values	CB ratio: 1:2.2 with a discount rate of 15% NPV: £1,305,663 IRR: 55%	10 years
Huttner, 2000 Ex ante	Annual gross income per livestock species according to farm-status	Expenditure of the "Foundation for the Improvement of Animal Health" 1998/99	57,000 USD For year 1998/99	860,000 USD Net benefit	Partial budget analysis CB ratio: 1:16.1 d. rate 3%	5 years
Lohr et al. 1986	Benefits from treating calves for roundworm Benefits from treating for liverfluke	Cost of treatment Cost of training and support of CAHWs.	Not cited	Not cited	CB ratio: 1:8 CB ratio: 1:47	Not cited

Intervention/ Identifier	Benefits	Costs	Monetary Cost	Monetary Benefit & valuation method	Indicators	Time horizon
Meemark and Morris, 1989 Ex post	Increased monetary value of animals that have been treated for parasites improved calving rate and herd performance	Project expenditure: training village keymen, set-up of revolving drug fund. Cost incurred by the community through training keymen and supplying them with promotional materials	15 USD/ keyman	Increase in value of 49% 170 USD/ farmer Market value	Partial budget analysis CB ratio: 1:209	Not cited
Schreuder et al. 1995 Ex post	Decrease in mortality rate by measuring difference between project and non-project areas	Includes salaries and operational expenses, training, veterinary inputs, monitoring and supporting programme, admin costs of NGO	24,986 USD/ annum/ district	120,620 USD/ annum/ district	CB ratio: 1: 4.8	5 years
Tacher, 1986 Ex post	Calf survival due to treatment with anthelmintics Young animals treated for helminths Blood parasite treatment Pasteurella treatment Blackquarter Treatment Overall: Increase in meat production	Project expenditure: Vehicles/equipment Civil engineering Maintenance Veterinary products Expatriate staff Local staff Studies/surveys Rinderpest costs	5 Billion F CFA	Not cited	IRRs calculated for 5 different hypothetical scenarios, vary from 6% to 178%	20 years

We can conclude that economic approaches, CEA and CBA, are useful frameworks for considering a programme's impact and complement the use of process indicators and livelihood indicators. Cost benefit analyses measure the impact of the programme on farmers' livelihoods because we assume that the projects' benefits are distributed equally to all the farmer beneficiaries. Full impact assessment using economic criteria is consistent with considering the range of assets that livestock contribute to household livelihoods. While process indicators are useful, a cost benefit assessment requires some monetary values to be assigned to these. This is problematic and time consuming and probably not worthwhile when considering small programmes. However, the issue of CEA does merit further attention. More emphasis needs to be placed on the consistent measurement of effectiveness and costs.

## 6. Recommendations and best practice

In future, *ex post* project evaluations and reviews need to be of better quality so that we can see clear evidence that project outcomes and impact are attributable to project activities and outputs. This has repercussions at all stages of the project cycle: *ex ante* and on-going monitoring and evaluation of projects.

A framework needs to be designed, (or existing ones improved upon), which can be used in different locations to evaluate project outcomes. The high-scoring studies from this literature review can be taken as examples of good practice in project impact assessment, and they can form the basis for designing the framework.

The framework for impact assessment will take the form of a document that incorporates several questionnaires, instructions on how to analyse them, and an easy to use method for performing an economic evaluation. Information can be elicited using participatory tools such as ranking, proportional piling, and seasonal calendars.

There are three categories of questions in the framework as discussed earlier: process indicators, livelihood indicators, and economic indicators.

### *Process indicators*

Process indicator questions are posed to the project staff and to the CAHWs and are based around the logical framework of the project. Answers are also elicited from project documents and the CAHWs' records

- How many CAHWs has the project trained?
- How many CAHWs are active after 2 years?
- How many animals does each CAHW treat in an average month/year?
- How many drugs/what value/type has the CAHW dispensed in an average month/year?

### *Livelihood indicators*

We can divide livelihood indicators into those that relate directly to farmers' health and wealth status, and those that relate indirectly to them – their livestock's health status.

Holden et al. (2001) devised a questionnaire for assessing the impact of community animal health services. This is based on the questions asked in the 1997 study in Kenya (Odhiambo et al. 1998; Holden, 1997). Their questions fall into the farmer livelihood category and the livestock survey category:

- Sources of household income (what proportion is from livestock and livestock products?)
- Household quality of life (nutritional status of family, number of children at school).
- What species of animals does the household own?
- What kinds of healthcare have been administered to these animals?
- What animal healthcare providers are available, which have been used, and how often?
- Where were veterinary drugs bought, how much was spent on these?
- Herd dynamic profile: how many animals does the household have now compared to a year ago?
- Herd health profile: how many healthy or sick animals does the household have now compared to a year ago?

Schreuder et al (1996) designed farmer questionnaires focusing on livestock productivity and mortality. The questions asked were on the presence or absence of animal health measures, the availability of medicines and anthelmintics, animal husbandry practices, and the numbers of livestock owned, born, sold, and died. The survey was based on farmers' recollection of the 2 years preceding the survey. Data was collected for all species of livestock, young and adult animals.

*Economic indicators*

Economic indicators need to sit in the context of CEA and CBA methodology. To be amenable to fieldworkers the information to be collected should be in a simplified form but lend itself to more detailed economic analysis/scrutiny. A standard *pro forma* for data collection would involve the collection of cost and benefit data. The tables below outline some of the details. The tables can be set up as a spreadsheet to facilitate the calculations.

The idea is to develop a step-by-step guide for undertaking CEA or CBA of an intervention. Every intervention will differ and the elements in the table provide an indication of what data should be collected. Table 3 details a list of likely costs that might characterise an intervention.

Table 3: Costs associated with a CAH intervention

COSTS	Unit of cost	Cost in £
Initial community meeting for selection: Transport: vehicle plus fuel Staff salary and per diems Refreshments for meeting	£/km £/day £/head	
Training: trainers fees trainers per diems equipment, books trainees per diem and actuals Venue hire	£/day/trainer £/day/trainer £/head of trainee £/head/day £/day	
Demonstration days Transport to field Per diems Refreshments Drugs	£/km £/day/head £/head £/animal	
Start-up kits	£/kit/person	
Set-up of revolving drug funds Either set up or support of village pharmacy Election of drug fund committee	£/pharmacy	
Refresher training (see training above)		
Monitoring visits by vets: Transport of vets to project area Per diems and actuals Retainer salary to vets	£/km £/day £/vet	
Evaluation meeting with communities	£/meeting	
Administrative back up of project: Project manager salary office rent etc (proportion)	£/employee £/month	
<b>Total costs</b>		£

Table 4: Details of the methods that might be used to derive the benefits or the returns to an intervention

Intervention	Impact	Valuation methods	Unit	Benefit in £
Vaccination	Death avoided	Market prices, willingness to pay (WTP)	no. of animals	
Worming	Unthriftiness avoided Increased productivity	Market prices, WTP	no. of animals	
Tick control	Tick borne disease avoided Death avoided Illness avoided Increased productivity	Market prices, WTP	no. of animals	
Wounds dressed	Infection avoided or curbed Productivity unimpaired	Market prices, surrogate market, WTP	No. of animals	
Local drug supply set-up	Long distances to travel avoided More time spent on farm Increased productivity of farm	WTP	No. of farm products e.g. milk, eggs	
Welfare and hygiene-friendly interventions e.g. castration using burdizzo	Infection avoided Quick recovery – increased productivity	WTP	No. of farm products	
Extension e.g. nutrition	Deficiencies avoided Productivity improved	WTP	No. of farm products	
Extension/education e.g. hygiene	Disease avoided in animals and humans Productivity improved	WTP	No. of farm products	
<b>Total benefits</b>				<b>£</b>

Table 5 requests two other important parameters for a discounted cash flow assessment

Table 5: Time horizon and discount rates

Select time horizon	No. of years for discounted cash flow
Select discount rate	5-10% (varies from country to country and year by year)

The cost effectiveness ratio and net present value can be calculated by inserting the appropriate values into the above tables.

Using process indicators, livelihood indicators, and economic evaluation, it is possible to obtain a holistic picture of a community animal health service's impact. The recommendations set out here are best practice and form the basis for a framework for conducting *ex post* impact assessments in the field.

Here are some preliminary guidelines for performing an *ex post* impact assessment. These are based on a scenario of an external evaluation at the end of a project cycle. They do not presuppose that indicators have been set at the beginning of the project, although if they have and project monitoring and evaluation has been carried out it will considerably enhance the quality of the impact assessment.

#### Step 1

The evaluator finds out if there is a baseline survey of the project area and beneficiaries. This might have been conducted as a feasibility study or in the first few months of a project. The survey is read critically. What survey methods were used? What was the strategy for sampling? Was a representative sample taken? What sort of data was collected? Is the data useful, does it relate to beneficiaries' livelihoods?

The strategy for sampling and data collection for the impact assessment can be modelled on the baseline survey, if it is of good quality.

#### Step 2

The evaluator, in collaboration with project staff, prepares questions for the enumerators in order to gain information on implementation and economic indicators. Questions should be open ended (semi-structured interviews). This should provide the reviewer with information on project achievements against the log frame, costs, constraints, potentials.

#### Step 3

Questions are prepared for the CAHWs and supervising vets. These will provide implementation data:

CAHW records should be consulted and where appropriate stock records from village pharmacies or revolving funds.

#### Step 4

Where no baseline is available a "with" and "without" survey can be conducted. Questions are prepared for 2 types of communities: beneficiary communities and communities with no CAHW services.

There should be general questions to set the scene and then more specific ones on the informants' experience of the CAHW service, how it has affected their livelihoods and their animals' welfare and health status.

Where a baseline is available, a survey of beneficiaries, ideally those who were consulted in the baseline survey should be conducted. Any changes in their status can then be noted.

#### Step 5

In order to calculate the economic effect of the CAH service, the monetary costs and the monetary benefits of the programme should be ascertained and the cost benefit ratio calculated.

## **7. Conclusions**

The review shows that the quality of the evidence for the impact of community animal health services is not always very high. However, it shows that from the evidence we do have, community animal health services are having a positive impact, although there may be some negative impacts as well. With modest investment community animal health services are providing large returns to the farmers and herders in terms of improved animal health and increased production, leading to the improved health and wealth status of the farmers. However, these benefits are difficult to measure in monetary terms.

In order to carry out high quality impact assessments a combination of methods and information is needed. This includes the routine collection of implementation indicators, the collection of data on changes in people's livelihoods and in the health status of their livestock. Economic data should also be collected.

It is recommended that a framework is designed for assessing the impact of community animal health services that can be used by any organisation working in this field. The framework or template would provide an impact assessment report that is reliable and provides accurate data based on the evidence in the field. These high quality reports will help those working in CAH to show professional bodies, donors, and all stakeholders how they are progressing in achieving their goal of an efficient, effective decentralised and sustainable animal health service.



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## 8. Bibliography

This section provides a few additional references that were key background reading for the author. Many of the references in the report are unpublished documents and may be difficult for the reader to obtain, therefore a few of the "secondary source" documents are listed below.

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Jones, Karen. 1994. *Paraveterinary personnel in developing countries: a literature review*. Unpublished essay, CTVM, Edinburgh. 21 pp.

Kleeman, Gunter. 1999. *Service Management in Livestock Development*. Universum Verlagsanstalt, Wiesbaden, Germany. 430 pp.

<http://www.livestockdevelopment.org>

The livestock development studies group contains papers on the delivery of animal health services.

<http://www.vetaid.org>

This website contains unpublished papers on community animal health.

<http://www.vetnetwork.org.uk>

This website also contains many unpublished papers on community animal health

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## 9. Annexes

### *9.1 Cochrane protocol and review*

This annex is the protocol for this review as it appears in the Cochrane Library (Martin, 2001).

## Background

Livestock are central to the household economy for some communities in developing countries. Ill health or death of these animals results in households losing income and increased poverty. This means that access to basic veterinary care could have a major impact on the wealth and health of households. In recent years, governments and donors have provided resources for low-income country community animal health worker schemes. This review aims to summarise existing evidence as to whether these schemes are effective.

Where farmers rely heavily or exclusively on livestock for their income, community animal health schemes have the potential to benefit farmers' lives. Community animal health workers can treat livestock for chronic conditions such as worms or tick infestation which decrease the animals' productivity. They can also vaccinate herds against diseases such as rinderpest that sometimes kill entire herds which can lead to the farmer's destitution. Healthy productive herds are a farmer's capital, and farmers use them like a deposit account at a bank: they sell animals when they need money for household expenditure such as school fees, or dowry payments. In addition, cows, goats, and chickens provide a regular income through milk and eggs that are surplus to the family's requirements.

### History of community animal health services

In most low income countries, the State has provided veterinary services (Schillhorn 1995). However, over the last 20-30 years there has been a decrease in the funding of state services (veterinary and other) which has led to their steady decline. In the 1980s and 90s, the World Bank and International Monetary Fund encouraged governments to privatise a large proportion of state services, as part of structural adjustment policies (Leonard, 1993). In the case of the veterinary services, they are to be replaced with services provided by privately (or self) employed veterinarians. Privatised veterinary services, modelled on European or North American systems have been established in some parts of the world with great success. They have especially worked in urban areas and high potential production systems (Mpelumbe, 1994). However, in remote arid and semi arid areas of the world where livestock herding is very extensive it has been more difficult to encourage private vets to establish themselves as there is little financial reward and few resources (Odeyemi, 1994). The phenomenon of sparse veterinary services in remote areas was already apparent during the days of the state run service and governments at the time had trained locally recruited veterinary auxiliaries or veterinary scouts to work in these difficult areas. As funding decreased, these para-professionals were made redundant and often returned to farming and herding.

Western government aid donors and non-governmental development organisations, in collaboration with government livestock and veterinary departments have revived the concept of the basic animal health worker as deliverer of animal health services in remote rural areas (Huttner, 2000). A variety of schemes have been supported and implemented through the Department for International Development UK and non-governmental organisations such as Vetaid, UK, *Vétérinaires sans Frontières*, and Oxfam. Typically in these programmes the animal health worker does not receive a salary from the state, but is given funds through the programme for a limited time. The aim is that the animal health worker will ultimately make a living by selling his or her livestock services, thus making the programmes self-sustaining. These service providers go by many different names: for example "community (based) animal health workers", "paravets", "barefoot vets", and "animal health auxiliaries". Their skills vary according to their training but generally includes: correct administration of vaccines, antibiotic, anthelmintic, acaricidal, and trypanocidal drugs, husbandry, nutrition and management knowledge (Hadrill, 1982). The CAHW is usually provided with a start-up kit of veterinary drugs and equipment and is supported by the establishment of a rural pharmacy to replenish stocks (Muir, 1999).

Community animal health workers have been delivering animal health services in Africa, Asia, and Latin America for over twenty years. While provision of basic animal health services seems common sense, very little work has evaluated its impact or sought to determine exactly what outcomes are intended by such schemes. The organisations that train and support them have been monitoring their work and attempting to evaluate the extent of their impact on the health of livestock and on the welfare of farmers (Matti, 2000). However, until now there has been no systematic analysis of the evaluation and impact assessment reports so the extent of the impact of these schemes on farmers and their livestock is not exactly known.



## Benefits and harms

Community animal health schemes have the potential to be harmful to vulnerable farmers. Community animal health workers must attempt to make a living from selling their services and this means selling veterinary drugs. They may become unscrupulous and attempt to sell the farmer drugs that he doesn't need, at a higher cost, or dilute the drugs. The community animal health scheme may draw farmers away from using traditional medicines (ethnoveterinary medicines) in order to make money from encouraging the use of allopathic medicines. This loss of indigenous knowledge is culturally harmful and may be an environmental hazard. Unscrupulous drug sales may lead to drug misuse both by the community animal health worker and by the farmer. The cost of drugs may lead farmers to become poorer before benefiting from the long-term outcomes to their herd and themselves.

## Objectives

To summarise reliable evidence on the effects of community animal health services on selected indicators of household wealth and health in low income communities.

## Criteria for considering studies for this review

### Types of studies

- all types of study design

### Types of participants

- Low income communities who keep livestock. These are people who practice subsistence agriculture or herding and do not own much or any land.
- No restriction on setting (rural or urban) or ecological zone.
- No restriction on species (includes cattle, sheep, goats, camels, llama, pigs, poultry)
- Livestock keepers can include settled farmers, nomadic and semi-nomadic herders, pastoralists and agro-pastoralists.
- Livestock keepers include the head of the household, his or her family and the community or extended family amongst whom they live.
- Low income countries as defined by the World Bank are those countries where GNP per capita is 520 USD or less.

### Types of interventions

#### Includes

- basic preventive services such as vaccination against diseases e.g. rinderpest
- curative animal health services: drug administration e.g. anthelmintics, acaricides
- General husbandry services: e.g. castration, wound treatment
- Community animal health services may be delivered by government or non-government organisations with or without the support of multilateral or bilateral donors. Interventions are considered irrespective of who delivers them.
- These services may be initiated as projects or programmes of a finite time.

#### Excludes

- animal health services provided by qualified veterinarians (public or private).
- traditional animal health services provided by a healer

### Types of outcome measures

- Livelihood indicators: number of children sent to school, number of daughters sent to school, monthly household income and expenditure, possession of consumer goods (radio, bicycle)
- Health indicators: nutritional status of children under five; infant mortality rate.

- Productivity indicators: livestock productivity (animals, milk, eggs).
- Animal health indicators: livestock mortality, Livestock fertility (interbirth intervals), Livestock illness episodes (morbidity)
- Implementation indicators: number of animals seen, number of visits, workers active at 2 years after programme started, number of drugs sold or administered, number of paravets trained

## Search strategy for identification of studies

- Key search terms are: barefoot, village, vet scout, para vet, intermediate service, paraprofessionals, extension and vet, extension and animal health, veterinary services, animal health, disease control, rural development, community development, pastoralism, cooperative extension service.
- The following websites were searched: the World Bank (plus Sustainable Rural Development Information System of CIESIN and WB), Food and Agriculture Organisation, International Livestock Research Institute, One World, Kenya web (Ministry of Agriculture, Livestock Development and Marketing), Eldis, Centro de Estudios Uruguayo de Tecnologias Apropriadas, Global Forum on Agricultural Research, ILEIA, Care, ODI, Deliveri project, Africa news online, Partners in Rural Development (Canada), New Agriculturalist, USDA, panasia.org, The African Development Bank Group, Ford Foundation, International Development Research Centre, IFAD, CTA. These sites are searched as they are the most relevant to community animal health.
- The following databases were searched: STN SIGLE was searched from 1976 to present (July 2000), CAB was searched from 1973 to present (July 2000), AGRIS was searched from 1975 to present (July 2000)
- Searches of internal reports. We contacted the following organisations in order to obtain unpublished internal reports: VETAID, VSF France, Vetermon, VSF Belgium, VSF Switzerland, SivTro, IEMVT, Oxfam, Actionaid, German Agro Action, Agency for Development Cooperation and Research, Development Aid from People to People, Adventist Development and Relief Agency, Africare, Action Against Hunger, African Muslim Agency, Care International, Catholic Relief Services, Lutheran World Federation, Norwegian Peoples Aid, World Vision International, War on Want, Vetwork.
- Items excluded were: extension systems in Western Europe, Australia, New Zealand, North America; descriptions of vets as clinical practitioners in rural areas.
- Items included were: all community animal health and animal production schemes; surveys where agricultural extension services which include animal health and/or animal production projects are recommended; general reviews where animal health, production or veterinary schemes mentioned.
- Include unpublished reports, Journal papers, conference papers, book chapters.
- No language exclusion
- Any length follow-up included

## Methods of the review

- The reviewer applied the Inclusion criteria. When uncertain, the reviewer consulted with an experienced reviewer or the co-ordinating editor of the Cochrane Infectious Diseases Group.
- Quality was assessed using standard criteria.
- For each study, we sought possible influences on whether schemes influenced the outcome. Characteristics that may influence the effect included:
- Differences in support (financial, logistic, technical, social) provided by external agencies such as government or non-government organisations. Are community animal health services more effective when managed by government or non-governmental organisations.
- Age, literacy level, length of training of community animal health workers
- Quality of evidence: experimental versus observational.

## 9.2 Included papers

This table lists the studies that meet the inclusion criteria. The reason for inclusion has been specified as the type of outcome. It can be assumed that the studies meet all the other inclusion criteria (types of participants, types of studies and types of intervention). The left hand column contains an asterisk where the studies were retrieved from the CAB or AGRIS databases. All the other studies were retrieved either via the internet or by contacting the relevant organisations.

Table 4— Papers meeting the inclusion criteria

CAB /AG RIS	Author	Title and reference	Reason for inclusion (type of outcome)	Setting
	Abdel-Messieh, F. W. 1989.	Introduction of basic animal health services in the kingdom of Lesotho. Proceedings of the International Seminar on Animal Health and Production Services for Village Livestock held 2 <sup>nd</sup> – 9 <sup>th</sup> August 1989 in Khon Khaen, Thailand.	No. of cases attended, no. of paravets	Lesotho
*	Almond, M. 1987.	A para-vet programme in South Sudan. Pastoral Development Network paper 24c. ODI	No. of animals vaccinated	South Sudan
	Anthra. 2000	Impact of Animal Health Workers and the Practical Applications of Ethno-Veterinary Medicine	CBA, mort. Morb survey	India
	Blakeway, S. 1995.	Evaluation of the UNICEF Operation Lifeline Sudan/Southern Sector Livestock Programme.	Cost benefit analysis	South Sudan
*	Catley, A. 1996.	Pastoralists, paravets and privatisation: experiences in the Sanaag region of Somaliland. ODI	No. of animals treated	Somaliland pastoralism Kenya
	Chabaril, F. N. and J. K. Mathooko. 1996.	An adaptive animal health delivery system for nomadic pastoralists: an example from northern Kenya. GTZ	Quantity of drugs sold, sero-conversion of cattle through vaccination	Kenya
*	Grandin, B, R. Thampy and J. Young. 1991.	Case study: village animal healthcare: a community-based approach to livestock development in Kenya. IT Publications, London	No. of cases attended, no. of paravets trained, See Holden 1997 for in-depth analysis of same programme.	Kenya
	Groot, Theo. 1997.	From input to impact: auto-evaluation of the community based animal health programme in South Sudan. VSF Belgium	No. of paravets, no. of cases attended	South Sudan
*	Hadrill, D. 1989	Vets in Nepal and India – the provision of barefoot animal	No of paravets trained	Nepal and India

	health services. <i>Barefoot book: economically appropriate services for the rural poor</i> . IT Publications, London	no. of cases attended.	
Hammel, R. 1995.	SECADEV working with agro-pastoralists in Chad. Arid Lands Information Network paper No. 7.	No. of paravets trained, no. of cases attended	Chad
Holden, Sarah. 1997a	Wajir Pastoral Development Project. Notes for the final report on an assessment of economic impact. Livestock in Development, UK.	Cost-benefit analysis	Kenya
Holden, Sarah. 1997b	Community Based Animal Health Workers in Kenya: An Example of Private Delivery of Animal Health Services to Small-Scale Farmers in Marginal Areas. IT Kenya.	No. of paravets still active after 4 years. Mortality rates,	Kenya
Huttner, K. 2000	Impact assessment of a community-based animal health service program in Northern Malawi. MSc thesis, Massey University, New Zealand.	Cost-benefit analysis	Malawi
Jones, B. et al. 1999.	Community-based animal health services in southern Sudan: the experience so far. <a href="http://www.vetnetwork.org.uk/baj-sudan.html">http://www.vetnetwork.org.uk/baj-sudan.html</a>	No. of paravets No. of cases attended See Blakeway 1995	South Sudan
Jost, C. et al.	Comparative ethnoveterinary and serological evaluation of the Karimojong community animal health worker program in Uganda. Annals of the New York Academy of Sciences.	Livestock morbidity, no. of animals vaccinated	Uganda
Kaberia, B. K. 1999.	Farm Africa Experiences. Proceedings of the 8 <sup>th</sup> decentralised animal health workshop, Meru, Kenya. ITDG	No. of cases treated.	Kenya
Lohr, K. F. et al 1986	Farmers' self-help basic animal health service in north-east Thailand. Paper presented at Livestock Production and Diseases in the Tropics. Proceedings of the Fifth International Conference on Livestock Production and Diseases in the Tropics held in Kuala Lumpur, Malaysia from 18 <sup>th</sup> to 22 <sup>nd</sup> August 1986. p 235-239	No. of participating farmers, no. of calves born, no. of calves treated, cost-benefit analysis	Thailand
Mariner, J. C., D. M. O. Akabwai, J. Toyang et al. 1994.	Community -based vaccination with thermostable vero cell-adapted rinderpest vaccine (Thermovax). The Kenya Veterinarian 18(2):507-509	Sero-conversion of cattle no. of cases attended	Cameroon and Uganda
Meemark, N. and R. S. Morris. 1989	Economic analysis of the benefits of the basic animal health service. Proceedings of the International Seminar on Animal Health and Production Services for Village Livestock held 2 <sup>nd</sup> - 9 <sup>th</sup> August 1989 in Khon Khaen, Thailand.	Cost-benefit analysis	Thailand
* Moktan, D., B. K. Mitchellhill, and Y. R.	Village animal health workers in the Koshi hills: an evaluation report, Pakhribas Agricultural Centre, Kathmandu, Nepal	No. of workers active after 2 years	Nepal

	Joshi, 1990	Oxfam Wajir Pastoral Development Project: Economic Impact Assessment Report. Oxfam UK/Ireland, Nairobi.	Various outcome measures	Kenya	
Not yet rec'd	Odhiambo, O., S. Hoiden, and C. Ackello-Ogutu. 1998.				
	Quesenberry 1987	The training and role of veterinary auxiliary workers in boosting Nepal's livestock production to the level of Asian standards. Bull. Vet.sc. and A.H. Nepal vol.15	No of workers active after 2 years	United to Nepal project	
	Roche, C. 1999	Impact Assessment for Development Agencies: Learning to Value Change. Oxfam, UK	Cost-benefit analysis	Kenya	
	Sanaag Community based organisation, 1998.	Actionaid Somaliland Programme Review	Uptake of vet drugs, use of paravets	Somaliland	
	Schreuder, B. E. C. 1996.	A Benefit-cost analysis of veterinary interventions in Afghanistan based on livestock mortality study. Preventive Veterinary Medicine. 26:303-314	Benefit-cost analysis	Afghanistan	
	Schreuder, B. E. C. et al. 1995.	A Benefit-cost analysis of veterinary interventions in Afghanistan based on a livestock mortality study. Livestock Production and Diseases. Proceedings of the 8 <sup>th</sup> Conference of the Institute of Tropical Veterinary Medicine. Berlin, Germany.	Benefit-cost analysis	Afghanistan	
*	Schreuder, B. E. C. et al. 1998	Further observations on the impact of a veterinary programme in Afghanistan on seasonal livestock mortality. Tropical Animal Health and Production 30(2)83-89	Mortality survey	Afghanistan	
	Tacher, G. 1986	Project de developpement de l'élevage dans l'Ouest. Evaluation ex post	Cost-benefit analysis	Central African Republic	
	Ward, D. E. et al. 2000	Community-based animal health and production improvement in Afghanistan	No. of paravets trained, mortality rates	Afghanistan	
*	Young, J. 1994	Kenya: the wasaidizi of Kamunijini. Village animal health worker training. Rural Extension Bulletin 6:39-42	No. of paravets trained Cases attended		
*	Young, J. et al. 1994.	Animal healthcare training: Nepal's animal health improvement training programme. IT Publications, London.	No. of paravets trained	Nepal	

### 9.3 Excluded papers

This table lists those studies that were retrieved from the databases or from other sources and on ground of their titles and abstracts were considered for the review. On further examination of the studies it became apparent that they did not meet all the inclusion criteria, particularly for types of outcome, and were therefore excluded. The reason for their exclusion is noted.

This list of studies is included in this report because the reader may find useful references to community animal health programmes. It can be regarded as a sort of bibliography.

Table 4: Studies excluded from the review

CAB /AG /RIS	Author	Title and reference	Reason for exclusion (type of outcome)	Setting
*	Almond, M. 1991	Pastoral development and the use of para-vets in southern Sudan. Development in Practice 1(1):34-42	No outcome measures	Sudan pastoralism
*	Anon. 1991.	A para-vet programme in South Sudan. Assisting African livestock keepers. The experience of four projects. ODI, London, UK	Identical paper to Almond 1987.	Sudan
*	Bainbridge, T. 1999.	Community-based animal healthcare in Zambia. Development in Practice 9(3)337-341	No outcomes re. Paravets; some outcomes re. Cattle clubs	Zambia
	Baumann, M. 1988	Central Rangelands Development Project Veterinary Component – Primary Veterinary Care in Somalia. GTZ. Project Report.	No of trainees, quantity of drugs shipped – insufficient data	Somalia
	Blakeway, S. 1997.	Evaluation of the global project (community based animal health) in South Sudan of Vétérinaires sans Frontières Belgium.	No outcome measures Suggestions of monitoring indicators provided	South Sudan
	Catchero, D. L., and J. L. Orprecio. 1992.	A Case Study Report of the Community Animal Health Volunteer Training Program in the Philippines. HPI	Insufficient outcome measures: no. of paravets trained, no info. on length of service	Philippines
	Catley, A., P. Delaney, and H. McCauley. 1998.	Community-based animal health services in the Greater Horn of Africa: an assessment for USAID and USDA.	No outcome measures – see individual assessments of PARC-VAC and OLS.	Horn
*	Chowdhury, M. R. and Hans Helmriche. 1991.	Livestock improvement through farmers' participation. Progressive Farming 11(1):81-84	No outcome measures	Pakistan
*	Compere, R. 1986	A situation of underproduction implementing strategies for	No paravets	Burundi

		livestock farming development in Burundi. In: Future production and productivity in livestock farming: science versus politics. Proceedings of a DSA symposium held in Strasbourg, 23 <sup>rd</sup> – 25 <sup>th</sup> April 1986. P 177-201.			
*	Cornelius, S. T. 1997.	Veterinary physiology and community development: are they compatible in a new South Africa. Journal of the South African Veterinary Association 68(4):159-161	No paravets	South Africa	
*	Dorji, D. T. 1986.	Livestock development in Bhutan: the development of animal husbandry. Production Pastorale et Soci�t�. 19:107-113.	No paravets, farmer training in extension and animal health	Bhutan	
*	Esuruoso, G. O. and B. O. Olugasa. 1997	Actualization of strategies for privatized preventive veterinary services to nomadic herdsman in Southern Nigeria. Epidemiologie et Sant� Animale. 31/32:02.22.2-02.22.3	No outcome measures	Nigeria	
*	Gunn, I. M., C. G. Grimshaw, and W. M. Miller. 1982.	Communicating directly with villagers. Low-cost extension programme in Afghanistan. Agricultural Information Development Bulletin 4(1):7-10.	No outcome measures. Project stopped due to security problems	Afghanistan	
*	Haan de, C. and N. J. Nissen. 1985	Animal Health Services in Sub-Saharan Africa: Alternative Approaches. World Bank Technical Paper Number 44.	Not an impact document	Africa	
*	Haan de, C. 1986	New and appropriate concepts for the promotion of livestock production and animal health in Africa. In: Livestock Production and Diseases in the Tropics. Proceedings of the Fifth International Conference on Livestock Production and Diseases in the Tropics held in Kuala Lumpur, Malaysia from 18 <sup>th</sup> – 22 <sup>nd</sup> August 1986. Ed. M. R. Jainudeen et al., Malaysia	Not an impact document	General	
	Haan de, N. and E. Musskuya. 1999.	Babati Agricultural Project: Mid Term Review Report. Farm Africa.	No outcome measures No. of paravets trained no data on length of service.	Tanzania	
	Hadrill, D. 1997.	VETAID Mozambique Livestock Rehabilitation Project, Tete Province. Project Evaluation	No paravets	Mozambique	
	Hanks, J. and R. Oakeley. 1998.	Improved methodologies for community animal healthcare services: a preliminary review of methodologies and findings from Ghana. VEERU, UK.	No outcome measures – only qualitative and not of outcomes identified in protocol.	Ghana	
	Hanks, J. and R. Oakeley. 1999.	Assessing the impact of community animal health care programmes: some experiences from Ghana. VEERU, UK.	No outcome measures See other docs by Hanks and Oakeley	Ghana	
	Johnson, Peter J. and Cesar Chahuares. 1990	Training Aymara veterinary technicians in the southern Peruvian Andes. Convergence. 23(4):14-22	No outcome measures	Peru	

Jost, C. 1995.	The Karimojong CAHW Program: Impact Assessment. Mission Report for Tufts University school of Veterinary Medicine.	No. of paravets trained, no data on length of service. No. of cattle vaccinated	Uganda
* Leidl, K. et al. 1997	Field experience with the delivery of effective animal health extension to smallholder farmers in Northern Malawi. <i>Epidemiologie et Santé Animale</i> 31/32:02.A.13	No impact. See Huttner 2000	Malawi
* Moris, J. R. 1988	Interventions for African pastoral development under adverse production trends. ILCA.	No impact measures	Various
* Mpelumbe, I. S. 1994	Perspectives on the privatisation of veterinary practice in the context of livestock production in Africa. <i>Office International des Epizooties</i> . Pp. 73-87.	No outcome measures. This is a background document on privatisation	Tanzania
Mwangi, F. G. 1999.	Integrated Small Livestock Project, Nyeri, Kenya. Annual Report 1998. MOA-GTZ.	Extension not paravets	Kenya
* Peacock, C, K. Yilma, et al. 1994	Ethiopia: goats and women: lessons from participatory training in a dairy goat project. <i>Rural Extension Bulletin</i> 6:25-27	No impact data	Ethiopia
* Peters, C. 1996	Sudan: a nation in the balance. Oxfam Publications, Oxford, UK.	Background document, no outcome measures	Sudan
* Preuss, S. 1989	Buffalo management – work allotted [sic] to women in the Punjab. <i>Entwicklung und Landlicher Raum</i> 23(3):18-20	No paravets	India
Quesenberry, Peter.	Animal health training programs for farmers in developing countries. Unpublished Christian Veterinary Mission.	Not an impact document	None
* Ram, J. 1988.	Organization and working of dairy cooperatives in Rajasthan – a case study. <i>Indian Cooperative Review</i> 25(3):273-282	No paravets	India
* Sandford, D. 1981	Pastoralists as animal health workers: the range development project in Ethiopia. <i>Pastoral Development Network Paper</i> 12c. ODI	No outcome measures	Ethiopia
* Serrao, U. M. et al. 1991	Local veterinary attention. <i>Boletín del Centro Panamericano de Fiebre Aftosa</i> 57:67-73	No paravets	Various
* Start, D. and J. Young. 1999.	Getting the balance right- public and private livestock services in Indonesia and Kenya. <i>Appropriate Technology</i> 25(4)10-13	Outcome measures taken from Holden 1997.	Indonesia and Kenya
Tibbo, K. 1998.	Dairy goat and animal healthcare project, Meru and Tharaka-Nithi Districts, Kenya: Impact assessment. <i>Farm Africa</i>	No outcome measures	Kenya
* Turk, J. M. 1995	An assessment of animal health projects: U.S. Agency for International Development 1960-1993. <i>Agriculture and Human Values</i> 12(2):81-89	No outcome measures Follow-up on Niger Project	Various
* Yilma, K. and C. Peacock.	Le rôle des organisations d'éleveurs dans le développement	No outcome measures	Ethiopia



	caprin en Ethiopie. Capricorne 10(2):9-16	
*	Zarate, A. V. (ed). 1987	No paravets
	Current situation and the potential of pig production for improving small farmer performance in the province of Gran Chaco, Bolivia. (in Spanish). Technische Universitat Berlin Nr. 95.	



#### 9.4 Example of completed data extraction form

Data extractor: MM

Study	Schreuder et al. 1995
Study design	Economic evaluation based on interviews with farmers Cluster sampling of villages in 4 districts with intervention and 4 control districts Comparative
Setting	Afghanistan
Animals	Cattle, sheep, goats
Communities	Nomadic pastoralists
Interventions	Training of paravets and vaccinators under supervision of veterinary personnel and within structure of Veterinary Field Units. Tasks: vaccination, drug administration
Outcomes	Livestock mortality reduction
Methods of assessing outcomes	Interviews with farmers

#### Quality assessment of observational studies

	Yes/No	Score
Control group	Yes	1
Comparability of control group	Yes	1
Is the aim of the study clearly described?	Yes	1
Are the main outcomes to be measured clearly described?	Yes	1
ARE THE CHARACTERISTICS OF THE ANIMALS INCLUDED IN THE STUDY CLEARLY DESCRIBED?	Yes	1
Are the interventions clearly described?	Yes	1
Are the main findings in the study clearly described?	Yes	1
Have all important adverse effects been mentioned As a consequence of the interventions	No	0
Were the animals representative of the entire population of animals?	Yes	1
Were statistical tests used to assess the main outcomes appropriate?	Yes	1

Score out of 10. 7+ is good, less than 7 is poor

#### Economic quality assessment

	Primary analyses presented		
Data collection	Time period stated	5 years	1
	Source of cost information	Market values	?
	Discount rate mentioned	No	0
Analysis	Sensitivity analysis	Yes	1
	Statistical comparisons made		0
	Methods and/or analysis appropriate		0
Conclusions	Authors' conclusion	Benefit cost ratio 5:1	-
	Reviewers comment on their conclusion		

## *9.5 Summary of CAMEL document*

### Impact and Evaluation of Basic Animal Health Services: Analysis from Case Studies

Summary of a study prepared by Diane Intartaglia of CAMEL (Centre d'Appui Methodologique a l'Elevage,), Lyon, France, December 2000.

[This study was prepared in the context of the analysis of existing references relating to basic animal health in Africa and to the effects of such references, undertaken by VETAID. The aim is to make recommendations, available to funders and implementers, to improve the sustainability of animal health services and their impact on the conditions of life of rural communities.]\*

#### 1. Introduction

##### 1.1 *Justification*

See [ ]\* above

##### 1.2 *Targets*

To present impact evaluation elements of animal health services (AHS) programmes set up in 4 different countries.

Criteria:-technical & economic efficacy of basic AHS; social efficacy; institutional elements relevant to establishment of these AHS

The analysis is centred on indicators used for the above impact criteria (application, conclusions therefrom), then allowing the setting-up of methodological ways to improve the pertinence and efficacy of such services for the producers.

##### 1.3 *Method of evaluation : based on two hypotheses*

The social and institutional basis of the set-up of the AHS is as important as its technical & economic efficacy to ensure its pertinence, effectiveness and, to some extent, its sustainability.

Due to the difficulty of establishing, beyond the 3 above criteria, *a priori* evaluation indicators of effects, as such effects arise from the specific objectives and progress of the project as well as from local context, the constructing of these indicators is an integral part of the follow-up/evaluation system to be established at the onset of the project, orienting it as it progresses.

##### 1.3.1 *Technical and economic efficacy*

Analysis rests on result indicators rather than on impact indicators.

Mortality /morbidity rates are hard to measure: costs, weight of formalities, evolution seldom attributable to setting up of AHS but rather to a multitude of factors causing animal mortality.

There are no significant conclusions as to the AHS's impact on mortality/morbidity rates.

The evolution of economic results could be examined but again the data obtained may not necessarily establish a direct causality between the project and the income due to weight of other factors (market evolution, producers' strategy, difficulty to assess herders'work...).

- Usable data are thus the results indicators as recorded in the various projects , ie

- Pertinence of service technical offer –versus pathological constraints
- trained agents' activity rate
- animal numbers/types treated by trained agents
- ratio animal cover versus relevant pathology
- medicine sales through pharmacies set up via project
- trained agents' income from sale of animal health services
- distribution of animal health practices between trained agent, pre-existing providers, private vets, the State...

### 1.3.2 *Social efficacy*

Potential users' access to/exclusion from AHS

Indicators : client numbers on given territory, participation stakes such as motivations (unbiased interest, gain expectation, "snake & ladder" strategy to gain further aid, quasi-compulsive participation, etc). Access can also be gauged from exclusion processes (information means, implementer's delusions re village community, choice of village representative, control/take-over by particular village group) : trained agent's economic/social/political status is one key to analysis of exclusion processes.

Method can show if there is a discrepancy between target group and population actually benefiting from the AHS offer after its installation.

### 1.3.3 *Institutional mechanism*

i.e., organisational/relational modalities on which the service is built.

Three main indicators chosen to evaluate its pertinence and efficacy :

- pertinence of the service architecture in relation to project objectives as well as to social/institutional/organisational/local/national contexts
- role and nature of trained agents' groupings in relation to local society, their effectiveness in relation to targets given by operator and actual output
- relevance of AHS within the existing privatising policies of the State in order to appreciate political coherence of service with role of State, as well as of private and "collective" sectors. Analysis of such coherence can be way into broaching pertinence and durability of service.

## 1.4 *Choice of case studies*

Based on diversity criterion relating to AHS project strategy, results and impact of the AHS.

### II Cambodia : Family livestock rearing project

- Technical and economic efficacy : an undeniable success
- Framework of pre-existing social connections reinforced :
- Discrepancy between target group and actual users of AHS

### III Western High Guinea project

Technical efficacy of service based on division of work between beneficiaries (agro-pastoralists/trained agents/private vets)

AHS access to agro-pastoralist community linked to nature of livestock rearers' groupings

Pertinence of AHS institutional mechanism within the State privatising policies :-the AHS "architecture" allows consideration of agro-pastoralist interests. Livestock rearers' groupings link village and project with authorities, AHS insertion in national policies favours herders' representation and State regulatory role.

### IV Togo : Poultry farming programme

The setting-up of a private AHS in Togo corresponds to the national privatisation policies of farming services inaugurated in French speaking Africa in the 1980s, generally along the following lines : State centralised stores to be replaced by accredited wholesalers' enterprises, private vets installation to be encouraged, rural agents to be trained through variously sponsored projects.

Outcome : a relative efficacy of a commercial private service centred on poultry farming.

Technical and economic efficacy limited to poultry vaccinations. Possibility that social efficacy is limited to/by commercial reasoning. Institutional mechanism based on technical and commercial reasoning. A large scale AHS could benefit neither the users' interests nor the regulatory role of the State.

## V Nicaragua : Traditional farming and technical assistance project.

Aim : to improve producers' basic foodstuffs and income through better farming and animal resources management , especially by promotion of animal health .

Outcome : failure of a AHS due to discrepancy between local production systems and survival strategies of dry lands farmers. Weak technical and economic efficacy of the AHS. Limited social efficacy : control of project resources at stake. AHS in discrepancy with most producers' objective interests. Extension agents agreed to the AHS not so much to improve their income through the sale of services but to gain access to the project resources. Institutional mechanisms were badly suited to a poorly efficient service: due to nature of social system and to fact that offer of AHS was ill-adjusted to local requirements, thus : the AHS was turned into an NGO, slippage of emphasis from animal health to banking and commerce.

### 6. Summary and leads for the setting-up of AHS

#### 6.1 Summary

#### 6.2 Some leads to help set up AHS

##### 6.2.1 *Facts to consider before setting-up AHS*

The nature of farming systems and analysis of rural thinking, eg specialised breeders –v- farmers occasionally rearing animals. Diagnosis of pre-existing AHS in order to identify offer of services and thus its potential deficiencies. The analysis of privatisation policies of livestock rearing services and

of existing stakes in animal health, which would help determine the service sustainability as well as its political and social aims. Consideration of local social systems to ensure access of target group to the AHS and control of AHS by its users.

##### 6.2.2. *Some methodological indicators in the setting-up process of an AHS*

All technical aspects of the project to be quite clear to implementers and beneficiaries alike. Selection method of auxiliaries: essential to achieve complete separation between technical functions and other functions (i.e., representation, mediation) conferred on same individual.

Creation of an income-earning status for the local auxiliary to be avoided : conferring know-how to a local actor provides him with an economic, political and social status. There must be the possibility for project know-how holders to be replaced through the widening of training access to more people and through the creation of control mechanisms by service users.

Control by service users : no one single solution. Control allows for pertinence and appropriateness of service and its ends to evolve in accord with users' interests and strategies

-Mass training of livestock farmers : broadens livestock auxiliary's scope if training centred on prevention and vaccination, encourages local communities in setting up services they require, ensures control and efficacy of AHS and opens access to technical know-how.

Rationalisation from inception of the AHS training structures durability : if AHS life not necessarily an end in itself, durability of training and information systems is an end of the aid/development action.

Necessity for AHS to be inserted in national policies, even if difficulties in linking nation-wide policies and local scale micro-actions

Necessity and specificity of State role in animal health (cf health policies, public interest market regulations).

#### 6.3 Elements to evaluate the impact of AHS programmes

Measuring impact can only be effective if indicators have been defined.

Monitoring and evaluation should be set up from the start of the project.

The three criteria mentioned in the introduction should be used for analysis of impact:

The technical-economic efficacy of the service

The social efficacy especially the difference between the target group and the actual group benefiting from the service  
The efficacy of the institutions set up

### *9.6 Neuchâtel Initiative*

During the 1980s a debate developed over different views of how agricultural extension in sub-Saharan Africa should be supported. The Neuchâtel Initiative was formed in 1995 to help bring a measure of convergence to thinking on the objectives, methods and means of support for agricultural extension. The different members of the Initiative have contributed to a framework in order to establish a basis for better applying these ideas in extension practice. The group is comprised of representatives from the European co-operations, USAID, FAO, IFAD, EC, CTA, and the World Bank. At their meeting in Mali in 1998 they were joined by extension workers and agricultural producers from around Africa.

The group has six principles

1. A sound agricultural policy is indispensable
2. Extension consists of "facilitation" as much if not more than "technology transfer"
3. Producers are clients, sponsors and stakeholders, rather than beneficiaries of agricultural extension.
4. Market demands create an impetus for a new relationship between farmers and private suppliers of goods and services
5. New perspectives are needed regarding public funding and private actors
6. Pluralism and decentralised activities require co-ordination and dialogue between actors

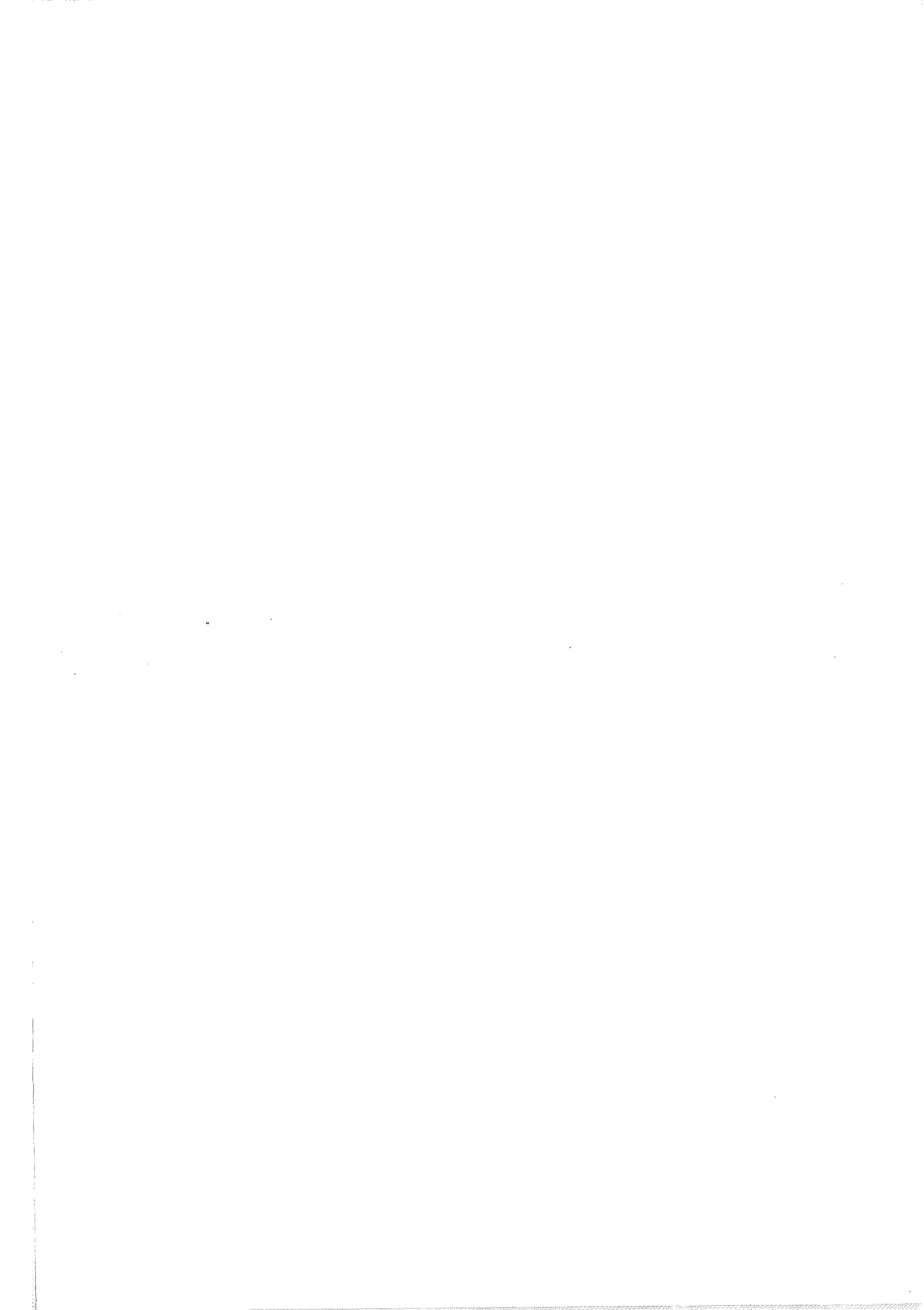
The six commitments of NI members

1. Support negotiated national policy-making between actual stakeholders
2. Consider the long-term financial viability of extension activities
3. Include exit strategies in all planning
4. Facilitate funding of producer initiatives
5. Ensure that all extension activities are flanked by support for agricultural training, farmer organisations and agricultural research
6. Establish closer co-ordination between co-operation agencies

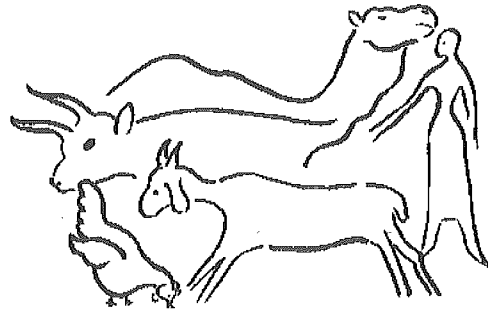
Source: Neuchâtel Group, 1999

There is a lot of similarity between extension and community animal health. Both of these services were once provided by the state and have now been privatised. Community animal health could benefit from an initiative such as Neuchâtel. It could help with the harmonisation of legislation for community animal health workers as well as provide guidelines for their training and supervision.





# VETAID



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