

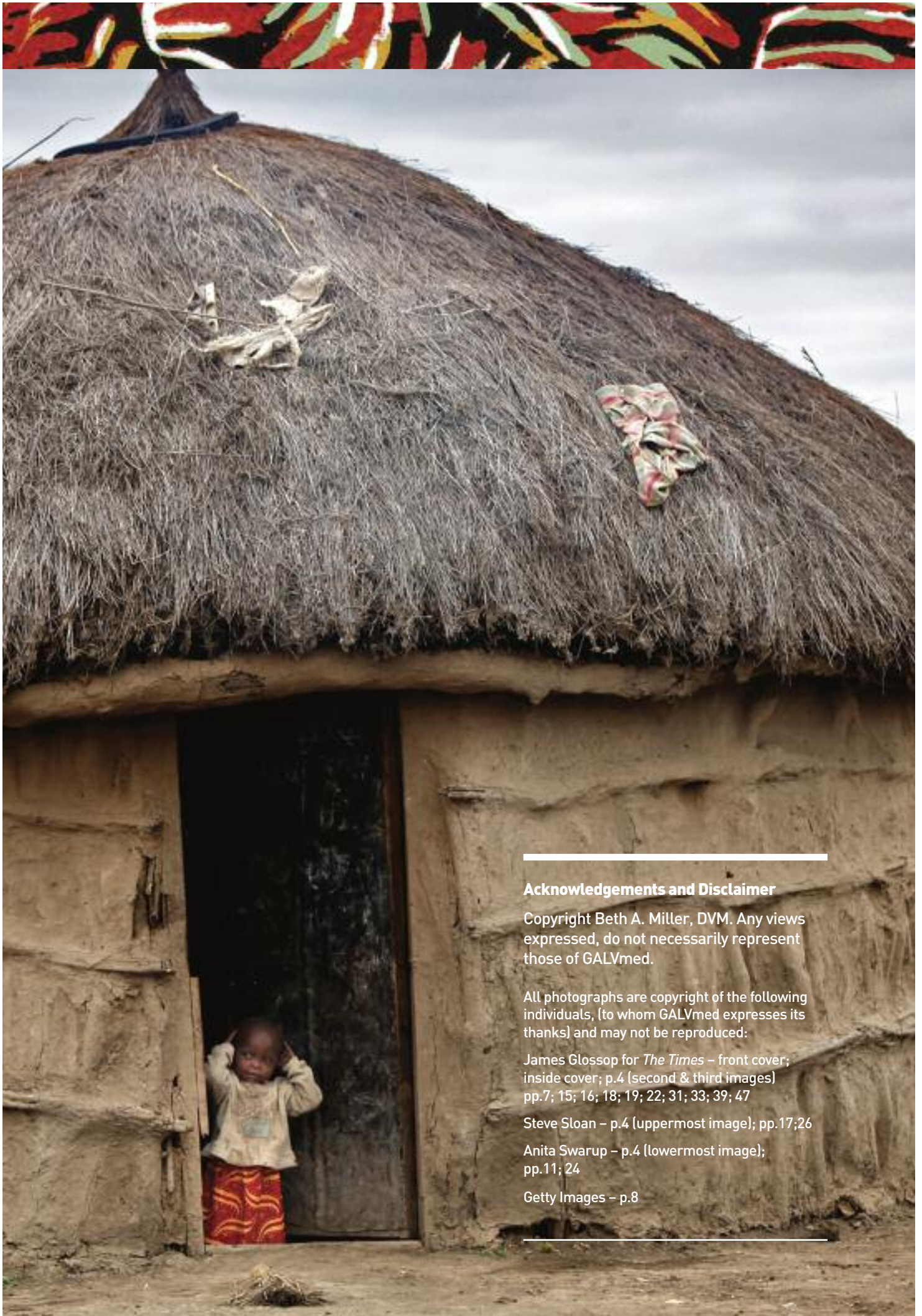


The Gender and Social Dimensions to Livestock Keeping in Africa: Implications for Animal Health Interventions

**Prepared for GALVmed
By Beth A. Miller, DVM
7 March 2011**



Protecting Livestock – Saving Human Life



Acknowledgements and Disclaimer

Copyright Beth A. Miller, DVM. Any views expressed, do not necessarily represent those of GALVmed.

All photographs are copyright of the following individuals, (to whom GALVmed expresses its thanks) and may not be reproduced:

James Glossop for *The Times* – front cover; inside cover; p.4 (second & third images) pp.7; 15; 16; 18; 19; 22; 31; 33; 39; 47

Steve Sloan – p.4 (uppermost image); pp.17;26

Anita Swarup – p.4 (lowermost image); pp.11; 24

Getty Images – p.8

Contents

Acronyms	4	7.2.1.2 Agricultural ministries	31
Executive Summary	5	7.2.1.3 National policies	31
1 Introduction	9	7.2.2 Universities and Research Institutions	32
2 Definitions	10	7.2.3 Producer organizations	32
2.1 Gender	10	7.2.3.1 Women's groups in villages	32
2.2 Household	11	7.2.3.2 Producer groups and cooperatives	33
2.3 Ownership and property rights	12	7.2.4 The Private Sector	33
3 Roles of livestock	14	7.2.5 Non Governmental Organizations	33
3.1 Priorities	14	7.3 Program level strategies	34
3.2 What is work?	14	7.3.1 Planning	34
3.3 Livestock management	14	7.3.2 Training programs	34
3.3.1 Daily chores	15	7.3.3 Accountability and assessment	35
3.3.2 Slaughter	16	7.3.4 Hiring Female Staff	36
3.3.3 Breeding	16	7.4 One Health	36
3.3.4 Animal health	18	8 Strategies to improve women's access to markets	38
3.3.5 Indigenous knowledge systems	18	8.1 Groups	38
3.3.6 Assessing gender roles	19	8.2 Technology	38
3.4 Zoonoses	20	8.3 Integrated services	38
4 Species preferences	21	8.4 Credit and financial services	38
4.1 Cattle and Camels	21	8.5 Formal ownership	39
4.1.1 Dairy Cattle	21	8.6 New products	39
4.1.2 Draft Oxen	22	8.7 The private sector	39
4.2 Small Ruminants	22	8.8 Focus on women	39
4.3 Swine	22	9 Trends for the future	40
4.4 Poultry	23	9.1 Globalization	40
4.5 Microlivestock	24	9.1.1 Religion	40
4.6 Equids	24	9.2 Livestock confinement	40
5 Constraints to women's access to animal health services	25	9.3 Population pressure	40
5.1 Women's "deficits"	25	9.4 Climate change	40
5.2 Institutional culture and policy	25	10 Lessons learned	40
5.3 Government policies and priorities	25	10.1 Invest in institutions and people as well as technology	40
5.4 Animal health delivery	26	10.2 Market incentives work best after women's skills are upgraded to be competitive	40
6 Constraints to women's access to markets	27	10.3 Social attitudes and behaviors change over time	40
6.1 Credit and financial services	27	11 Recommendations to GALVMed	41
6.2 Commercialization and male appropriation	27	11.1 Gender Strategy-Institutional	41
6.3 Market information	28	11.1.1 Gender Audit	41
6.4 Meat sales	28	11.1.2 Gender Policy	41
6.5 Government regulations	28	11.1.3 Staff Issues	41
6.6 The Private Sector	28	11.1.4 Central Coordination	41
7 Solutions and strategies to increase women's access to animal health services	29	11.1.5 Board of Advisors	41
7.1 Institutions	29	11.2 Gender Strategy- Project level	41
7.1.1 Commitment	29	11.2.1 Goals and objectives	41
7.1.2 Policy	29	11.2.2 Monitoring and assessment	41
7.1.3 Staff training	29	11.2.3 Advocacy	41
7.2 Partner institutions	30	11.2.4 Integration of vaccines into packages	41
7.2.1 Government	30	11.2.5 Species focus	41
7.2.1.1 National Promotion of gender equality	30	Bibliography	42-47

Acronyms

AAHH	AIDS Affected House Hold
AIDS	Acquired Immune Deficiency Syndrome, caused by the Human Immunodeficiency Virus (HIV)
BMGF	Bill and Melina Gates Foundation
DFID	Department for International Development of the United Kingdom
EADD	East Africa Dairy Development Project
ECA	Economic Commission for Africa
FAO	Food and Agriculture Organization of the United Nations
HIV	Human Immunodeficiency Virus
IFAD	International Fund for Agricultural Development
MHH	Male headed households
MIL	Mother in Law
PLWA	People Living With AIDS
SR	Small Ruminants
TB	Tuberculosis
VPH	Veterinary Public Health
WHH	Women Headed Household
WHO	World Health Organization



Executive Summary

The gender and social dimensions to livestock keeping in Africa: implications for animal health interventions

GALVmed has commissioned this report to evaluate the role of gender in livestock in sub-Saharan Africa as an initial step towards formulating its gender strategy and implementation plan. Women's contribution is essential to successful livestock keeping because they already supply the majority of labor and expertise on small holder farms, and in the peri and urban setting. In pastoral communities, both men and women have well defined and essential livestock responsibilities. Intentional outreach to women with assets like information, vaccines and other supplies, training, and market linkages will improve production more than outreach to men alone, and is an opportunity to raise women's social status and opportunities. Gender training with both men and women can increase women's use of income from livestock enterprises, which is linked to improved family nutrition, health and welfare. In order to reach and benefit women livestock keepers, it is necessary for all programs and activities to include women's empowerment as an explicit goal, with staff training, budget and accountability.

Although the African household is the place of production and consumption, assets like cash, food, tools, labor, and decision-making power are not shared equally. Therefore intra household analysis is necessary to ensure that women as well as men get the tools they need, and can enjoy the benefits from their work.

1 Importance of livestock to women

Poor rural families are more dependent on their livestock than the better off, and women are the majority of the poor in Africa. In addition, women headed households (WHH) and AIDS Affected Households (AAHH) are the most vulnerable to food insecurity and poverty. Increasing and protecting their livestock assets is a key survival strategy, yet intentional effort to reach them is required because of their marginalized social position.

The gender and age division of labor within households depends on ethnicity, tradition and class. In pastoral societies, women care for all animals kept near the home, and are responsible for the health of animals when they return from pastures at night. Herding responsibilities are often gendered, with men herding larger animals and women and children herding sheep and goats. Decisions about moving animals to pastures or water sources, as well as selling or gifting livestock are usually made by men.

In mixed crop livestock systems, men and women typically own different animals and farm different plots of land, and keep the income from their own sales. Intensification and commercialization of dairy and poultry typically increase women's workload and shift income from women to men, which results in less spending on food and household welfare.

On a daily basis, women typically clean manure, feed animals, and treat sick individuals. Since they spend more time on the farms than their husbands, they observe the animals more regularly for signs of disease. Milking may be done either by men or women, but domestic processing milk is always the domain of women.

Because of their exposure to manure, offal, milk, raw meat and often animal birth fluids, women are more exposed to zoonotic disease such as brucellosis, tuberculosis, taenia and echinococcus. Slaughter and tanning hides exposes either men or women to anthrax depending on the ethnic group. HIV/AIDS patients are especially vulnerable to all zoonotic diseases, include cryptosporidiosis. Although women do not get infected with TB or Brucellosis at a higher rate than men, they are slower to seek treatment and take medication. Women are now the majority of HIV/AIDS patients in Africa. Women are key to the prevention of zoonotic disease but only if education efforts target them specifically. Women cannot protect themselves from HIV until their social and economic status is strengthened.

2 Species preferences

Although women work with all species and sizes of livestock, they are often able to own and manage small ruminants and poultry with minimal interference from men. Milk and milk products has traditionally been the domain of women, whether from cows, goats or camels.

Vaccine and health care improvements for small ruminants and poultry will have the greatest positive impact on women, since they often can control the benefits from the animals. Women often depend on food and income from dairy cows and camels, even when their husbands have formal ownership. Women prefer to own larger and more valuable animals to increase their economic security, which takes deliberate effort with men to ensure their support.

Men own the majority of livestock in Africa, from cattle and camels to small stock and poultry, so they also will benefit from improved health care for all species. Intentional outreach to women also increases animal health care for poor men and marginalized groups, and for the better off producers, due to overall increase in services.

3 Constraints to accessing animal health care

Although women usually are not denied access to animal health care through deliberate decision, men receive the bulk of training and replacement stock. Information is shared through dip tank committees or livestock producer groups, which are nearly always men. Transmission of information or training from husbands to wives is minimal. Livestock training and Farmer Days usually are not targeted to women, and rarely focus on women's animals like small ruminants and poultry. Veterinarians and extension agents are usually men, who will not or cannot interact with women.

Women's other constraints are a longer workday, illiteracy, lack of mobility and lack of confidence. They may need permission from husbands to travel. They need to purchase health products like medicine in the village or near the home, and preferably from another woman.

4 Constraints to accessing markets for animals and products

Women lack market contacts and information compared to men. Livestock coops rarely include women, so they cannot influence group marketing to their benefit. WHH and poorer HH in East Africa are less likely to have cell phones, which are now necessary for effective livestock trading.

Illiteracy, innumeracy, inexperience and lack of financial skills all hinder women's success in the market place. Traders offer lower prices to women because they have fewer options for selling because they cannot travel far. Women have less access to credit, or are limited to the tiny amounts available through microcredit lenders, which husbands may appropriate.

Women often need permission from a husband to sell an animal, even when he is away from a farm, so they are disadvantaged by delayed decision making. If a husband or male relatives sells a woman's animal or products, not all of the income will return to her. Commercial dairy collection plants usually send a milk check to the head of household, limiting married women's access to income they once enjoyed.

Government regulations on informal sales of milk and other foods of animal origin may further limit women's market opportunities.

5 Improving access to animal health services and markets for women and other marginalized groups

Groups of women or marginalized groups can access information, training, credit, supplies and markets much more easily than individuals, but they often need assistance to develop leadership and market skills. Groups that integrate technical and social objectives, and provide multiple services such as livestock production and literacy are the most successful. Women belong to as many groups as men, but men's are more agriculture and market oriented, while women's tend to focus on family health and welfare.

Animal health information can be shared through existing women's networks such as PTA's, religious organizations, the wives of traditional leaders and their own groups or societies. Women need to be explicitly invited to meetings and training, and men need to support their participation.



Animal health training should be in the village, less than a day, in the local language without technical jargon or reliance on written materials. Women only trainings are useful to encourage women to ask questions and practice new skills. Frequent follow up and self monitoring are also helpful.

Institutions such as government and universities often do not have the commitment and capacity to design and implement effective training for women, so effective partnerships with them may require additional sensitization and training. The best source of information, animal health products and care for women producers is village based and from another woman, so female CAHW's are critical, but require intentional efforts to recruit and retain.

Institutions which effectively deliver animal health care products, services and training to women have developed gender policies, and explicitly designated

gender equity as a goal for all activities. Their accountability systems look beyond the household, and in addition to income generation or animal production, include child nutrition and change in gender division of labor and decision making as indicators of success.

Additional strategies to reach women include joint activities with human health services, and partnerships with social welfare organizations. Increasing the number of women as members and leaders in producer organizations or coops takes intentional training of members, change of membership criteria and quotas.

National issues which especially impact women are property rights, informal market regulation and statistical assessment of women's labor and participation in the national economy.

6 Recommendations to GALVMed

- 1 Develop a Gender Strategy through a participatory process including management, staff, field offices, and partner organizations. Address both institutional issues such as personnel policies, and project issues such planning, monitoring and evaluation.
- 2 Ensure a common understanding of and commitment to gender equity and women's empowerment for all staff and partners.
- 3 Designate one person to coordinate and harmonize gender related programming, training and assessment, with adequate authority, time and budget, although responsibility for gender integration must be shared by all staff and programs.
- 4 In addition to formal surveys, use informal data on intra-household division of labor and control. Analyze gender data in each activity location because of the differences across cultural groups.
- 5 Based on the literature review, and evidence of systematic marginalization of women and AAHH from animal health care activities, assume a proactive strategy to reach them, even before baseline data is collected.
- 6 Bundle vaccine interventions into packages that include animal health training, marketing, credit and leadership training for women
- 7 Prioritize vaccines and training for small ruminants and poultry which represent a greater share of women's assets and livelihoods



1 Introduction

Gender issues are central to the achievement of GALVmed's goal of Protecting Livestock-Saving Human Life in Africa. Women are key managers of most livestock, and increasing their access to animal health care will improve productivity, and enhance their status. Although women in general own fewer productive animal resources compared to men, they manage all types of livestock from cattle and camels to sheep, goats, pigs and chickens. Women use livestock to generate food and income to enhance food security and family welfare. Nearly all rural families have some livestock, and livestock are increasingly important to the urban and periurban households (HH) as well. Two-thirds of the world's 600 million poor livestock keepers are rural women (Thornton et al. 2003).

There is common agreement among development agencies that gender inequality limits economic growth and sustainable development in Africa, so enhancing recognition of the value of women and their activities, and increasing their productivity and decision-making alleviates poverty (WB, FAO, IFAD, ADB). Donors such as The Bill and Melinda Gates Foundation (BMGF), and Department for International Development (DFID) of the United Kingdom insists that all development efforts explicitly enhance the status and well being of women.

Poor families are disproportionately dependent on livestock for their livelihoods compared to the better off (Heffernan 2003). Women headed households (WHH) and AIDS Affected Households (AAHH) are among the poorest across Africa, so their livestock are a key strategy for survival. In addition, women in conventional households or compounds provide labor and expertise that make livestock production viable, and would benefit from increased information, technology and social contacts.

Sub Saharan Africa is a vast place where local customs and attitudes are diverse. There are some valid generalizations about gender and livestock, but there is no substitute for gender and social analysis in each targeted location, both to improve service delivery, and to help local people assess their own situation and plan sustainable solutions.

Stewart 1998

Historically, the household (HH) has been used as the unit of impact analysis in development, assuming shared resources and benefits among members. More recent research shows that household members have different preferences, and do not pool their resources or labor (Quisumbing 2010), so baseline and impact studies on resources, work load and benefits need to be disaggregated by age, gender and HIV status to be meaningful.

Throughout Africa, men and women farm separate fields, keep separate budgets and have different responsibilities within the family. They may own different livestock, which may or may not be managed together, and whose products may or may not be shared.

The African household is the place for agricultural production and consumption, but information, income and benefits are not pooled.

Kabeer 2003

Development interventions that result in increasing resources controlled by women improve agricultural productivity, as well as family health and nutrition (Quisumbing 2010). However, without deliberate planning, livestock interventions can shift resources from women to men, to the detriment of family well-being. Therefore, gender analysis and focused targeting of information and resources is essential to project success.

Successful outreach to women must intentionally overcome gender based constraints, and has the added benefit of making resources more available to other marginalized people, such as poor men, and members of AIDS Affected Households.

FAO 2005

Access to and benefits from animal health services and livestock markets are also gendered, so strategies for success and case studies from other organizations will be examined, leading to recommendations to GALVmed.

2 Definitions

2.1 Gender

Gender refers to the socially defined roles and responsibilities of men and women in a given place and time, in contrast to biological sex which is universal and unchanging. Age, class and ethnicity are also social constructs that affect individuals' roles, resources and rewards. Another important social variable in Africa is HIV/AIDS status, which carries a strong social stigma in addition to consuming family resources due to health care costs, lost labor and knowledge, and funeral expenses.

In Africa, many development workers use the terms gender, sex and women interchangeably. "Women's Projects," or "Gender Projects," to help women generate income to compensate for their marginalization are still popular but mostly unsuccessful because of miniscule funding and failure to address the root cause of women's disadvantage, which is the lack of power in the family and community. Past women's projects typically generated low profits, or if successful, could not prevent husbands from taking over. Now the phrase "gender project," more properly refers to components of any project that teaches staff and participants how to analyze gender difference, and to close gaps so that women as well as men benefit from all project activities.

Rather than simply generating income, the goal of "women's empowerment," includes women's control of agricultural decision-making and women's participation in and leadership of farmer organizations (BMGF 2008).

2.1.1 Gender differences are not necessarily a problem, if they are recognized and respected. For example, women are more likely to view livestock as means to ensure food security for the family, whereas men value livestock to meet present and future cash needs (Heffernan 2003). However if development interventions reward only income generating activities at the expense of food production, and women do not have the cash to buy food, family welfare declines.

2.1.2 Gender Analysis is an examination of gender difference to identify bottlenecks to production and equality at the household, community and national level. The most useful analytical categories are workload, access to and control of resources and control of benefits in the home, and membership and leadership in organizations. This type of analysis is most effectively done in a group setting, which makes women's work visible to men as well as the women themselves, highlighting the obstacles which must be overcome, and leading to specific local strategies to be implemented.

2.1.3 Gender Constraints are obstacles to women's participation or benefit from an activity that are specific to gendered roles and opportunities in a given society. In Africa, women have less formal education, less land and other natural assets, less access to credit and other financial resources, and less mobility compared to men of the same age, class and ethnicity. They typically have a longer work day than men, so time is a serious constraint. Local traditions and customary law may allow men to appropriate women's labor, cash and livestock. Their lower social status, measured by decision-making and community equality (Smith 2003), leaves them vulnerable to violence and further marginalization from productive assets or community services.

2.1.4 Gender mainstreaming is the strategy of integrating gender equality objectives into every aspect of an organization's work, including internal practices and policies as well as project development, monitoring, evaluation and funding. This legitimizes gender equality as a fundamental value and choice of the organization, and is both a vision of a better future and a means to accomplish it (UNDP 2000).

2.2 Household

African households are diverse, dynamic and resist easy categorization. A household generally means a group of people who eat and live together. In Africa, it is also the basic unit of production and consumption, although resources are not shared equally (Kabeer 2003). In some polygamous households, several wives may occupy the same compound with the husband's family, but each woman manages her own household, with varying degrees of support from her husband and grown sons. In other cultures, co-wives live far away from each other. In matrilineal societies in Ghana, a woman lives close to her natal family, which increases her social capital, or the people she can depend on in times of need.

In some studies, each woman cooking for her own children is considered a woman headed household (WHH), although there is an official male head of household (MHH) as well. If a man is present, he is considered the "head of household," and final authority on family decisions, although some official "MHH," are young male children. Women can head their own households following death or divorce ("de jure," or legal heads), although they often are still subject to the authority of the husband's brothers or father, their own fathers, or brothers or sons. Many men migrate for paid work, and may return home weekly, monthly or rarely. Their wives become

de facto heads of household, taking on both male and female agricultural tasks, but decision-making is often delayed, since a woman may fear to take a decision without the husband's consent.

In pastoralist societies, when husbands take herds away for distant grazing for weeks or months at a time, women manage their households as *de facto* heads. Often they are active in the marketplace, especially selling dairy products, but may lack authority to buy or sell live animals.

Child headed households, or children living with elderly relatives are becoming increasingly common as AIDS kills one or both parents. AIDS affected households (AAHH) are among the poorest. In many parts of Africa, women are more vulnerable to HIV, due to female biology, low status, and customary deference to men. The practice of vaginal drying herbs in Southern Africa increases the likelihood of female infection from a male partner. The stigma of AIDS further marginalizes these households from livestock and other support services (FAO 2005).

Livestock are especially important for People Living With AIDS (PLWA), since they provide nutritious food, and income for medicine. Small ruminants and poultry are often easiest for them to acquire and manage, because they are inexpensive compared to cattle, and reproduce more quickly, while still providing valuable products (FAO 2005).



2.3 Ownership, property rights and inheritance

Development reports in Africa often note that the male head of household is usually the “owner” of land and livestock, but women have some rights to use them through relationships. Increasing women’s assets is key to women’s empowerment. Livestock are more available and socially more acceptable than land, but intentional efforts are needed to build and safeguard women’s livestock assets (Kristjanson 2010).

The term “ownership” is still used in most surveys and government statistics, although differentiating between access and control of resources is more useful to development planners. Smith-Oboler (1996) notes “that the concept of ownership is misplaced in speaking of indigenous African property systems. There is no single individual who has the kinds of rights in most cattle that are implied when an English speaker talks about “owning” something. In the case of cattle, the rights of control by any individual are constrained by the rights to the same animal held by other individuals.”

Men and women differ in the types of rights they have to livestock. Meinen-Dick et al (2005) explains property rights as overlapping “bundles,” which can be grouped as use rights (usufruct) and control or decision making rights, such as sale, slaughter or gifting. These rights are flexible and dynamic depending on social relations, the weather conditions (drought or non-drought) and the value of the animal. Several individuals or groups may have different kinds of rights over the same resource.

For example, in some cases women control cattle milk when it is used for home consumption, however they cannot sell it and keep the income (Valdivia 2001). Guèye (2000), in a review of backyard poultry in Africa, notes that women often own and care for poultry; however, they can seldom take sole decision over the use of the birds or eggs (consumption, selling, exchange etc.). McPeak and Doss (2006) found that, among mobile pastoralists in northern Kenya, women had the right to sell milk; however, men were responsible for the overall herd, and chose which animals to milk or sell.

Buhl and Homewood (2000) notes that there is always a household head whom must be informed of decisions, and there are further levels of subordinate decision-making. Every household member has a range of rights and obligations determined by sex,

age and status. Often a young bride’s access to resources is determined by her mother-in-law (MIL) rather than husband, although the MIL’s control is not as profound [or detrimental] as in South Asia. Senior wives often can assert authority over junior wives.

Competing preferences or interests within a household can be settled through negotiation, intermediaries or force. Although the male has final say in the African context, and his use of force is culturally sanctioned, a woman’s bargaining power often increases with the assets she brings to the household, and the income she generates (Quisumbing 2003). First wives often have more influence in polygamous households, and age bring increased respect and influence to both men and women. However, women tend to be an average of 15 years younger than their husbands, less educated, raised to defer to men, and undervalue themselves and their work (EADD 2010). They lack confidence and are often unable to recognize or assert their concerns, preferences or rights.

Men are expected to make decisions for the entire household, but often lack information on women’s activities, especially the time and resources needed to produce food for the family, and provide cooking, cleaning and health maintenance. Men often do not intend to overload their wives with work or deprive them of resources, but communication norms in the traditional household make transparent sharing of information between men and women difficult.

Quisumbing 2010

Although the modern sense of “ownership,” meaning absolute decision-making and control of property is increasing across Africa, customary meanings still protect rural women’s right to livestock. Formal and recognized ownership rights would bring women greater protection, but this is often beyond their means. Since ownership systems are in transition, women easily lose control of livestock, especially after a husband’s death, due to “property grabbing,” by his relatives. Governments are aware of this, and Botswana has tried to outlaw it, with limited success. Some NGO’s have worked with traditional leaders willing to enforce “joint ownership,” contracts so widow’s property rights to livestock can be preserved. (Heifer Zambia 2010).

In many places in Africa including Ethiopia, upholding female property and inheritance rights helps prevent “levirate marriage,” of a widow to the dead husband’s brother, because she will have resources to maintain herself (Flinan 2008). Preserving women’s property and inheritance rights are key for women acting as heads and/or primary caregivers of HIV/AIDS affected households (Kabeer 2003).

In Muslim areas, girls are supposed to inherit half as much as their brothers after the death of a father, but this may not occur in practice, and questioning male decisions may not be tolerated (Kabeer 2003).

Women often own livestock in name only, and their animals become mingled into the family or clan herd. Talle (1988) notes among the Maasai, women ostensibly own cattle and small stock but don’t exercise any real control over off take. If her husband is not present during an emergency, a woman needs to consult a male relative prior to selling stock, who is responsible for defending the decision upon the husband’s return.

Women often receive gifts of livestock from relatives, which are then managed by their menfolk on their behalf, but women are forbidden from enquiring after them. In southern Africa, the mother of a bride usually receives a cow from the groom’s family, and some women have become wealthy as these cows reproduce over the years. However, most of the “mother’s cattle,” are taken into the family herd and are not seen again. There is a bitter joke among women in Zambia that during hard times, the “mother’s cattle,” die or are “carried off by wild beasts,” at a higher rate than others (Miller 2002). However, among Fulani pastoralists in Burkino Faso, no woman complained [to the anthropologist authors] that male family members cared less well for her animals than the herder’s own (Buhl 2000).

Kristjanson et al (2010) found no published evidence that women lose animals to drought, disease or theft at a higher rate than do men, but this has not been investigated systematically, nor have self-managed and male managed animals been compared. Given women’s limited access to livestock-related inputs and services, it is likely that they do lose more of their self-managed animals, which could decimate their asset base.

Large animals such as cattle often need to be “registered,” in parts of Africa where dipping is common to control tick borne disease. In practice, nearly all cattle are registered in a man’s name, and he is responsible for bringing animals to the dipping location, and interacting with animal health staff.

Zimbabwean women’s cattle are generally registered in their husband’s names with the Department of Veterinary Services for dipping, and this excludes them from information and other livestock initiatives

Chawatama et al. 2005

Transmission of information from husbands to wives about livestock is unreliable, and is estimated at under 5%.

Maarse 1999

Therefore, dip registration could be an opportunity to document ownership of individual animals, and increase transparency in ownership which women individually cannot demand. Improved registries will not only help women assert claims to benefits from these animals (although they may also inherit fees for services), it will help epidemiologists understand herd mingling patterns which affect disease transmission, and trace epizootics back to their source.

Livestock or land ownership is often necessary to join Livestock Associations, where technical and market information is shared, and decisions on prices are taken. Women are effectively excluded due to lack of formal ownership (Waters-Bayer 2010).

Women’s ability to claim ownership of valuable livestock and make management decisions vary widely across ethnic groups. Tuareg women in Niger have long been autonomous in their livestock management, and can become wealthier than their husbands (Niamir-Fuller 1994). Ethiopian women increasingly participate in open livestock markets by buying and selling live bulls (Rubin 2010). However, women must have starting capital, financial information and a supportive culture to assert their rights to livestock.

3 Roles of livestock

3.1 Priorities

Women prioritize keeping livestock to provide for family food, and use milk, meat and eggs to feed the family, or purchase foodstuffs with cash from the sale of surplus, while men keep animals for income, emergencies, social status, and gift giving (Heffernan 2003).

Traditional or sacrificial uses of livestock are important to both men and women, and although these uses do not show up on an economic ledger or survey, they influence people's preferences and decision-making. For example, poultry often have a significant customary role in addition to home consumption and exchange for goods and services. In Ghana chickens play a special leading role in cementing marriages, friendships and even resolving quarrels and enmity between neighbours, lovers, brothers and comrades. Referring to a specific traditional society of the Manprusi in Ghana, Veluw (1987) report the functions of poultry as 35% sacrifice, 28% sale, 15% consumption, 13% gift and 10% breeding stock. In Niger, home consumption and ceremonies account for 35%, gifts 20%, sales or barter 45% (Kaiser 1988). In the case of Ghana as a whole, 71% of poultry eggs are kept for hatching, 18% for sale, 5% for gifts and 5% for consumption Kitalyi (1996).

When cattle or goats are milked, women prioritize home consumption while men prefer to sell it. Increasing commercial opportunities can turn milk production into a "cash crop" at the expense of child nutrition, creating intra household conflict (Maarse 1999). Therefore, child nutrition is a better indicator of family welfare than income.

Both men and women will sell chickens or a goat to pay for school fees or buy food or medicine. The majority of cattle in Kenya are sold by pastoralists to purchase food and other basic needs such as paraffin for lamps and cooking oil. (Heffernan 2004). Both men and women keep livestock as a form of savings, which can be sold in times of need.

As banking and financial services improve across Africa, and pasture resources shrink, the "non food," function of livestock is predicted to decrease. Modern production practices include chemical fertilizer rather than manure, mechanical power over animal traction, and brideprice in cash rather than cattle. The market for food of animal origin is continuing to grow, but as formal markets overtake informal local sales, women's participation in and benefit from sales tend to decrease, unless intentional provisions are made (Gerber 2010).

3.2 What is work?

Government, the United Nations (UN) and academic surveys have long underestimated women's contribution to all aspects of agriculture when using the narrow International Labour Organization (ILO) definition of "work," as activities done for pay or profit. Women's unpaid work within the household was therefore invisible and unvalued, and women's activities received neither attention nor resources to improve productivity or reduce drudgery. Today there is broad agreement that "work," must include both paid and unpaid labor in the household and both formal and informal markets (Latigo 2004). NGO's are increasingly using this strategy, and some United Nations indices are trying to use it, but older definitions prevail, continuing to hide women's labor from national and international attention, and therefore resources (Kabeer 2003).

3.3 Livestock management

Gender roles in livestock management vary by class, age and ethnicity. The main activities are feeding, watering, milking, cleaning, slaughtering, breeding and animal health care.

Among both mobile pastoralists, and settled agropastoralists, from a very young age, children are involved in herding, with girls herding small stock with boys, and young men responsible for cattle (Bekure 1991).



Girls are more likely to be kept home from school to help their mothers with agricultural tasks including gathering feed and water for livestock. When children are orphaned, and live on their own, they often do not know how to care for animals, and production declines. They may not be strong enough or wealthy enough to provide inputs such as supplemental feed, vaccines or animal health products (FAO 2005).

Older men and women with weakened physical strength can still be seen herding sheep and goats, and also sharing information in markets and public meeting places. Age is greatly respected in African societies, and women especially find their status improves after they become the mother of sons and then grandmothers. When their childbearing years are over and they become “more like men,” (Rasmussen 2000), they can have more autonomy. Due to the AIDS epidemic, however, many grandparents find themselves caring for grandchildren and orphans, which deplete household resources. If they do not have the strength to care for livestock, they may be forced to sell them. If illness limits their mobility, they may have more difficulty accessing information and inputs to keep animals healthy. When they die, the orphaned children have no one to teach them how to grow crops or manage livestock, increasing their vulnerability.

3.3.1 Daily chores

Livestock need daily **food, water, sanitation, observation for disease, and for dairy animals, milking**. In general, women are more responsible

for the daily on farm activities. Men attend to the off farm activities, such as herding, or purchasing inputs such as supplemental feeds, veterinary drugs and new animals. However, this varies greatly depending on ethnicity, proximity to shops, and education (Heffernan 2003).

For example, women dairy farmers in Tanzania reported that if an item such as concentrate or medicine were available in the village, they would walk there and purchase it directly. However, if travel were out of the village, the husband or son would purchase it, but the arrival might not be as timely as needed. Muslim women whose mobility was even more restricted, always relied on male relatives for dairy purchases, but often found the incorrect item had been purchased for them. They would prefer to have supplies directly delivered to their homes. Literate women were more confident about purchasing recommended items, since they could read the labels (Kirui 1994).

Men provide most of the herding of larger animals like cattle and camels, while women and children are more likely to herd small ruminants. This varies by distance from the homestead, pasture availability and ethnicity. When large animals are kept close to the home, women are more likely to be in charge of grazing or cutting and carrying feed to them. Men and women both have specialized knowledge about feeds and pastures, however men are more likely to have modern knowledge of improved pastures and disease control due to increased contact with extension agents (Heffernan 2003).



Increased confinement especially with dairy animals can increase women's workload as they physically collect and carry feed and water to the animals. A single cow can drink 50 litres of water a day, and carrying water by headload is an onerous and time consuming task. As more boys and girls attend school, the workload for individual women also increases. Therefore, reducing women's workload is essential to improving livestock production as well as quality of life for women (Kirui 1994).

Cleaning manure is universally a female task. Women may collect it to make dung cakes for fuel or housing, or compost it or use it for fertilizer. Sanitation and clean barns or kraals are especially important for confined animals, since internal parasites are easily transmitted back to animals if manure builds up. Women and girls who clean manure with bare hands are vulnerable to zoonotic disease and fecal contamination of the family food supply.

In most pastoralist societies, women milk animals and process it for home use or sale (Talle 1988), but **milking responsibilities** do vary widely Africa. Among the Fulani, men milk and bring it to the women, who can use it as food or market it and keep the income. Among settled Ugandan agropastoralists, men typically milk the cows, and bring some to their wives, while keeping knowledge of total production to themselves, to prevent wives from demanding more for household use (Kirui 1994).

3.3.2 Slaughter

Slaughter of larger animals like cattle is typically done by men, although there is more flexibility in practice than generally acknowledged (FAO 2005). Women usually slaughter chickens and sometimes small ruminants. Women typically cook the meat, and are responsible for sanitary handling to prevent zoonotic disease. They are also responsible for handling the offal, or unused internal organs such as intestinal contents, bones or lungs, which is another source of zoonotic disease transmission. Tanning hides into leather is also gendered, but in some cultures it is the exclusive activity of men and in others it is women (Robinson 2003).

3.3.3 Livestock breeding

Many studies claim that livestock **breeding** is the domain of men, but when animals are confined near the home, it is women who notice signs of heat indicating the animal is ready for breeding. In addition, women are expected to know more about dystocia (birthing difficulties) and other female reproductive disorders because of their personal experience as females. Women managing stall fed dairy cattle in Kenya where artificial insemination (AI) is available have to contact the AI technician to breed the cows. Women were as likely to contact the AI tech as male dairy managers (Maarse 1999).

Pastoralist men may spend a large amount of time selecting the proper male to breed to each cow, balancing many desirable genetic traits such as appearance, mothering ability, fecundity and longevity. For women, the most valued genetic traits are those allowing animals to survive with minimal inputs, and are typically found in indigenous breeds, while exotic breeds that are less hardy require more labor to supply them with additional feed and water (Köhler-Rollefson 2000).

Among settled dairy producers in East Africa, the introduction of male cattle (bulls) with the genes for increased milk production could significantly increase output per daughter, if she is fed and managed efficiently. By tradition, uncontrolled breeding of cows to any available male was the norm amongst dairy farmers surveyed (EADD 2009). After training and the availability of improved or exotic males to genetically upgrade local cows, controlled mating of cows increased. Among dairy producers in Kenya, Uganda and Rwanda, controlled mating was used by 26% of the sampled households, and highest in Kenya where 39% of female headed and 33% of male headed households reported practicing it.

Castration of non-breeding males is a recommended technology to improve the genetic quality of a breeding herd of animals, making controlled breeding easier. In 2009, the East Africa Dairy Development (EADD) project found that 24% of female headed and 19% of male headed households using castration of non-breeding male cattle in Kenya, while in Uganda, 16% of female headed and 15% of male headed households reported doing so. Although the survey did not ask who performed the operation, or confirm how often it was done, the FHH were more likely to adopt the practice.

Nearly all Artificial Insemination (AI) technicians in Africa are men, who can often make a comfortable living from providing the service. Livestock management procedures requiring training or physical strength such as branding or inserting nose rings in bulls are typically performed by men (Ayoade 2009).

Bekure (1991) found that pastoralist men identified themselves as managers and supervisors of livestock activity, and assigned subordinates (male and female) to actual tasks. Their main responsibilities were gathering information on range conditions, water availability, and the market. They made the subsequent herding decisions, as well as decisions on the sale and slaughter of animals.

In Kenya in the 1980's, the National Dairy Development Program (NDDP) recommended castration of non-breeding male cattle and goats to improve dairy herds. The procedure was typically performed by men, although women were quite capable and interested in learning.

A female livestock officer in Kenya reported that she was prevented from demonstrating goat castration to a mixed sex group of farmers because her supervisor was uncomfortable. In the 1990's, this was still considered unremarkable, although she did protest the decision as undermining her expertise and utility.

Maarse 1998





3.3.4 Animal health activities

Animal health responsibilities within the household vary widely as well. Bekure (1991) noted that in most pastoralist societies, women are responsible for caring for the young stock and any sick animals. They are expected to observe animals returning from pastures in the evening for problems. Among settled agro-pastoralists, women are on the farm more than men, so they are more likely to notice signs of illness like poor appetite, nasal discharge or lethargy.

Both men and women report inadequate public and private veterinary staff and extension officers to meet their animal health needs. Therefore, the main health care activity for both was the purchase of medicine to treat sick individual animals (Okumba 2010) or consultation with a traditional healer.

In Heffernan's 2003 study in Kenya, both men and women livestock keepers purchase veterinary drugs from dukas or agrovet stores. The majority of women interviewed stated a preference for buying drugs close to home. There was a perceived opportunity cost of travel time for women as most had household and child-rearing responsibilities. Also, women were more often involved in curative treatments and hence had a more urgent need to source drugs close to home. Men were generally responsible for preventative animal healthcare e.g. the purchase of tick dip and dewormers. More men stated that price was a factor in purchases, but both valued advice from the seller. More women than men chose specific providers due to issues of trust.

In Rwanda and Uganda, male headed households spent more on animal health than female headed households. WHHs spent \$62/year while MHHs spent \$89/year. There were no significant differences in male and female headed household expenditure on artificial insemination or bull service in Kenya, Uganda and Rwanda combined (EADD 2009).

Men and women both purchase inputs such as concentrates or hay for their animals, but men purchase more. Women would like to purchase

more, but cited lack cash or credit to make the purchase (Hill 2009). Men are also more likely to own wheelbarrows and barn boots than women. Both men and women use manure on forage crops like napier grass, but there can be competition for this resource. Women are more likely to use manure on napier when they keep milk income, but will divert it to food crops if they do not realize any benefits from dairy production (Kirui, 1994).

Animal health monitoring and delivery systems in most countries tend to be male-dominated, thus contributing to the exclusion of "women's livestock," from organized animal health activities. Participatory appraisal techniques provide the ideal means of gaining a deeper understanding of the dynamics of women's farming activities, and particularly of the diseases affecting their livestock (FAO 2000). These techniques tend to be used by NGO's more than government or large multilateral donors.

It is generally true that an interview conducted by a male animal health worker with a male household head will yield little information of any value on livestock managed by women members of the household (FAO 2000).

3.3.5 Indigenous Knowledge Systems

Both men and women are repositories of local knowledge, including grazing areas, local names for disease and traditional remedies. In Cameroon, traditional animal healers are mostly men, while in East Africa, women are equally likely to possess this knowledge (Hill 2009). Young people are often uninterested in traditional ways, and government and private veterinarians and animal health agents often look down upon traditional medicines, although they are used by the majority of livestock keepers. The best animal health programs build on existing and working methods and add new technologies like vaccines to them (Heffernan 2003).

Often livestock research on local knowledge excludes women which limits the understanding of the system. (Waters-Bayer 2010)

3.3.6 Assessing gender roles in livestock production

The magnitude and importance of women's livestock activities still perplexes researchers and front line extension and veterinary professionals. Ayoade et al (2009) found that women in northern Nigeria perform fodder cutting, watering and feeding of animals, shed cleaning, milking and dung cake making on a daily basis. Oddly enough, they conclude that the majority of the women rarely participated in livestock production! Their survey identified 14 different management practices, and they asked women if they ever performed each activity. They did not ask about the frequency of each task, or how much time was involved. Since women rarely castrated or branded stock, and said they diagnosed disease or vaccinated "rarely," the authors calculated a participation index score minimizing women's participation. Men's activities, which occurred once a year such as castration and branding, rather than daily, were not measured at all.

The English word "participation," can be used to mean either work or decision-making, and has been used to justify lack of specific outreach to women since they already "participate," in livestock through their (unpaid) labour. Wives as well as husbands may become members in groups such as producers' organizations to satisfy a donor's request to increase women's participation, without changing their subordinate status or lack of decision-making. It is the quality of the participation, including decision-making, which indicates whether women have the resources and control to improve their lives and that of their families.

Surveys on gender division of labor can also be misleading if respondents' answers are not confirmed. For this reason, Participatory Rural Appraisal (PRA) and related tools are preferred because the facilitator and other participants can probe misleading assertions. For example, the EADD 2009 baseline survey reported that in Uganda and Rwanda, men do most of the dairy work, although the responses were not gender disaggregated.

While interviewing men for her thesis on livestock extension for women, Amuguni noted that one man said he completes most of the duties relating to animal care. Meanwhile, his wife was carrying out the tasks as he spoke. When asked who she was, he responded, "When I said I do the work, I actually meant we do the work." It is typical for women to under report their contributions and for men to over report theirs.

Amuguni 1999

The English word "shared," or "joint control," can be misunderstood in surveys on gender and livestock. Many men reported shared decision-making with their wives on the EADD 2009 survey, but this was not confirmed by their wives. Dairy farmers have had enough experience with donors in East Africa to know the "correct" answer. In Tanzania, women reported being informed of decisions after they were made, by husbands who claimed to "share," decision making. This was still considered more progressive than traditional households where men did not routinely inform their wives of anything, and simply gave orders (Kirui 1994).

Among the Kikuyu in Kenya, there is a saying "Cia mucii ti como," or home affairs cannot be told to the public, which limits the value of responses to intra-household survey questions with strangers. Participatory methods, especially with single sex groups can raise difficult questions in a safer setting, yielding valuable information to project planners, and more valuable insights among participants (Maarse 1998).



3.4 Zoonoses

Owing to their close proximity to animals and their handling of raw animal products, women are in many cases more exposed to zoonotic diseases. (Kristjanson 2010)

Awareness of men and women's different roles in livestock production and food handling can increase the effectiveness of Veterinary Public Health (VPH) educational campaigns. For example, Echinococcus is transmitted through dogs eating offal from infected ruminants, and infecting humans through their feces.

The echinococcosis eradication campaign in Morocco targeted existing women's groups for training in safe offal disposal because they were the ones who actually handled it, and were most concerned about their children contracting the disease. This was considered extremely innovative because most VPH messages were disseminated through all male producer groups or male veterinarians or extension agents.

(Robinson 2003; Kachani 2011).

Since women handle milk for family use and sale, sanitation training will have greater impact when given directly to them. Pasteurization of cow and goat milk will prevent transmission of brucellosis, tuberculosis and other zoonotic agents, but will only occur when women understand its importance.

Endemic zoonotic diseases such as anthrax, tuberculosis, brucellosis, cysticercosis, echinococcosis (hydatid disease), rabies and zoonotic trypanosomiasis (sleeping sickness) occur throughout the African continent where conditions for their maintenance and spread exist. These diseases perpetuate poverty by attacking not only people's health but also their livelihoods. Women's active participation in educational and monitoring events will be critical for successful control, but will take greater effort than currently exists (WHO 2009).

Anthrax infection is associated with tanning and handling of hides, which is strongly gendered in most cultures, but not predictably male or female.

The World Health Organization (WHO) notes that socioeconomic factors have an impact on tuberculosis (TB) control efforts, especially for women, who suffer from disproportionate poverty, low social status, less education (which impedes seeking diagnosis), and barriers to health care. Tuberculosis is often linked to HIV infection in Africa and is the third leading cause of death among women of reproductive age (15–44 years) in low-income countries (WHO 2009).

In general, when a woman is sick with TB, the impact on her household is greater than with an ill man, and food production and preparation decline. Female children are expected to take on far more household responsibility than male children, limiting their education. Further, women are most likely to be guardians of sick patients and thus more likely to lose time for income-earning opportunities. (Kemp 2005).

Women may find it more difficult to comply with treatment once symptoms subside, especially if they live far from health services, and there are actual and opportunity costs to being away from home, even if the cost of medicine is subsidized. Often uneducated women do not understand the course of the disease, and may equate decline of symptoms with a cure, while men are more likely to be literate, and read the literature offered at the health clinic (WHO 2009). When faced with inadequate resources, women tend to decrease expenditures on their own food and health first (Quisumbing 2010).

Women, children and ethnic minorities, especially those living in remote areas with restricted access to services, are most at risk of all infectious disease, including zoonoses. In general, women are more exposed to communicable diseases than are men – and suffer more in terms of both illness and death. Women also face additional barriers to seeking and receiving treatment. The consequences of stigma attached to many neglected tropical diseases [especially TB] are often more severe for women within their families and wider society (WHO 2009).

People Living With AIDS (PLWA) are especially susceptible to zoonotic diseases, such as cryptosporidiosis, which is not generally a problem for healthy individuals. Therefore, AAHH need more education and resources to prevent zoonotic infection (FAO 2005).

4 Species preferences

Men tend to own more livestock than women, especially large and valuable animals like cattle and camels. Women often find it easier to assert rights to smaller animals such as sheep, goats, pigs or poultry which are perceived as less valuable. When their livestock enterprises become commercially successful, men often take over both the management and profits (Miller 2001).

4.1 Cattle and camels

There is a cattle bias in Africa. Cattle are valued beyond their economic or food security function. This bias goes beyond the traditional cattle cultures like the Maasai that define themselves by their cattle, to include researchers, government and donors. To best address women's needs in animal health, it is necessary to look beyond cattle, and include small ruminants and poultry. In Tanzania, 51% of the women interviewed mentioned that they wanted to receive information on small ruminant production but extension agents were only interested in cattle (Kristjanson 2010).

Ownership, use and contact with cattle is linked to both ethnicity and gender. Among the Samburu in Kenya, men own all the cattle, but in Ethiopia among mixed crop livestock farmers, both men and women owned cattle, sheep and goats, although men owned more of each (Yisehak 2008).

In Afra and Oromiya regions of Ethiopia, men own and look after the camels that need to be taken to distant pastures and water, while women own and look after small stock that is managed close to the home (Care Ethiopia 2008). Touareg women in Algeria, Niger and Mali may own and herd cattle and camels as well as small ruminants, while Somali women manage the cattle, sheep and goats and their menfolk care for the camels (Niamir-Fuller 1994).

In Botswana, men and women both own cattle and goats, but men own 5 times more cattle and 3 times more goats than women. However, goats constituted a larger share of women's livestock portfolio (Oladele 2008).

Livestock interventions must tailor their activities to local conditions and behaviors. Heifer International's Samburu Camel Project in Kenya distributed camels to women to address gender inequality because they could be owned and milked by the women. Cattle and other species are considered the property of the husbands. The camel has become known as "the women's dairy cow," (Heifer International 2001).

Due to changing economic circumstances, such as male migration or death due to AIDS, women are taking on responsibilities for livestock that had been in the realm of men, such as cattle in southern Africa. Women from Ethiopia to Zambia are learning to use cattle to plow (Waters-Bayer 2010).

4.1.1 Dairy Cattle

Milking cattle is often the domain of women, such as among the Karamojong and Jie in Uganda (Niamer-Fuller 1994), although the cow may be owned or managed by her husband or other male relative. Many women have full control of the milk, including sale and use of income.

Women increasingly own exotic dairy cattle, especially in East Africa, although they often receive them as "living loans," from NGO's while men tend to purchase them outright. Dairy cattle under women's control performed better than those managed by men, provided they could keep some or all of the income generated (Maarse 1999).

Likewise, milk processing and marketing in the informal sector tend to be women's work, even where women are not involved in the actual task of milking. As chilling plants and factories become more common, dairy income tends to shift from women to men because checks are sent weekly to the head of household. The East Africa Dairy Development (EADD) project is considering requiring members of the cooperatives to use "family bank accounts," that both husbands and wives could access, so that women would not have to ask husbands for cash, but this has not yet been implemented (EADD 2010).



4.1.2 Draft oxen

Animal traction has been introduced to Africa fairly recently, but has the potential to increase crop acreage and income. Oxen are usually considered men's animals, and they facilitate men's most important agricultural task, preparing land for planting. Cotton and other cash crops are favored for this newly cultivated land. However, gender blind animal traction projects can be devastating for women and their children. Women's labor gets reallocated to weeding the cash crop, leaving less time for food crops and health maintenance.

Due to male migration to cities in search of paid labor, and the resulting "feminization," of agriculture, women are increasingly using oxen to plow land and transport goods.

Gokwe, Zimbabwe Draft Animal Project

Heifer International supplied draft oxen to marginalized Tonga families in Zimbabwe, and household income rose 400% in just 5 years, due to expansion of the cotton cash crop. Group members were delighted, but when visited in their homes, their wives were troubled. Children were sick and hungry because women could no longer produce enough food. They feared to ask for money from their husbands, considering it disrespectful. Much of the profit had gone towards brideprice for new wives, to produce children to weed the crops, making older wives' situation more precarious. AIDS infection rate skyrocketed due to cotton profits used to pay prostitutes.

This one project galvanized Heifer International to accept that inattention to gender can be detrimental to family welfare, and that income alone is a poor indicator of development success. This led to the development of their proactive Gender Program in 1996.

(Miller 2000)

4.2 Small Ruminants (SR)

Women who cannot own cattle are often able to own, manage and control the sale of smaller livestock, such as sheep and goats. Goat projects for food and income in Africa are often focused on women, because they are the ones usually responsible for looking after them (Peacock, 1996).

Although men own more sheep and goats in absolute numbers, they are more important to women since they make up a larger share of their livestock portfolio (Oladele 2008). Poorer households which have fewer cattle are more dependent on small ruminants than their wealthier neighbors, making diseases and losses of them relatively more costly and potentially devastating (Perry 2009).

Women value the milk from small ruminants because they know it is nutritious for their children. Men are less likely to intervene with their sales of surplus because amounts are so small. However, they do become interested when operations expand and larger profits are generated.

Small ruminants, like swine and poultry, are "short cycle," animals meaning they reproduce fairly quickly, bringing a quick return on investment. For poorer women and men who need cash, this is a great advantage, since the wealthy are more likely to have other resources to live on while waiting for their cattle to reproduce.

4.3 Swine

Swine production is increasing in parts of Africa due to the strong market in non-Muslim areas, and many women find them good investments. Pig production is increasing in Uganda (EADD 2009), Cameroon, Central African Republic and Zimbabwe (PigTrop). Most pigs are raised in a semi-intensive scavenging system where owners provide shelter and water, and about half of their food. In Botswana, most of the pig raisers were married women over 40 years old (Cirad 2005). Although African Swine Fever is endemic throughout sub-Saharan Africa, outbreaks are sporadic. As swine populations increase, and production intensifies, the risk of outbreaks increase (PigTrop).

Pigs reproduce quickly and can be kept near the home, making them a good animal for poor women. There are fewer cultural taboos about owning and selling pigs (for non Muslims) compared to cattle, which can be tied to a man's or clan's status. Most swine in Africa are raised without any healthcare inputs, disease surveillance or training for the women who manage them (PigTrop). In Western Kenya, women raise pigs for income rather than family food, but marketing can be difficult. Pigs grow best with supplemental feed, but the increasing cost of feed has made profits more challenging (Cirad 2011).

4.4 Poultry

The family members who keep backyard poultry are often the women and girls. In many parts of the world, women can decide about vaccinating, slaughtering and selling of poultry without consulting their husbands, and they can control the income from selling poultry products. Although IFAD (2007) generalizes that rural women traditionally are in control of the whole poultry process from feeding to marketing, Kitalyi (1996) notes that the three main modes of poultry ownership (family, individual and shared) depend on the mode of acquisition of the chicken (purchase, inherit or gift). Therefore general statements on ownership may be misleading. Industrial or vertically integrated poultry production is still unusual in Africa. In Nigeria family poultry represents 83 percent of the estimated 82 million adult chickens, and in Ethiopia, rural poultry accounts for 99 percent of the national total production of poultry meat and eggs (Tadelle 2000). In sub-Saharan Africa, 85 percent of all households keep poultry, with women owning 70 percent of the poultry (Guéye 1998). Family poultry production is defined as units of less than 100 birds and no paid labor. In practice, most flocks are 5-20 birds scavenging for most of their feed, and not all provided with shelter. Limiting time or spending on inputs is more important than maximizing outputs or production (Sonaiya 2004).

Income generation is usually the primary goal of family poultry keeping rather than home consumption. Eggs can provide a regular, albeit small, income while the sale of live birds provides a more flexible source of cash as required (Sonaiya 2004). Home consumption of eggs is generally not high, due to the greater value they bring at market, which can purchase cheaper grains. There are many taboos limiting women's egg consumption among ethnic groups, especially during pregnancy when their protein requirements are highest (Kitalyi 1996).

In a study in the region of Niamey, Niger smallholders with less than 20 layers which were situated beyond 2.5 km from a main paved road, could supply eggs and meat to the city market at a competitive price [with imports]. Eggs are not an important food item at the village level, as it is a relatively high-priced protein

food but the market is good in town. Marketing requires cooperative efforts by producers to transport eggs to larger towns. Live birds were easier to transport over longer distances (Kobling 1989).

When women do enter commercial poultry production, they often lose control to men once the enterprise become profitable, due to less knowledge of markets, finance and negotiations. As the number of birds increases, so does male control (Sonaiya 2004).

Training in management, including feeding, genetic improvements, marketing, predator protection, access to production inputs, infrastructure and capital, farmer organization, and, foremost, conducive institutions and governmental policies are all sorely needed to make family poultry more productive (Mack 2005).

The greatest risks to backyard or family poultry are infectious disease, primarily Newcastle disease (ND) and then predation. Unfortunately, most poultry vaccination campaigns in the past focused exclusively on disease control, so improvements were negated by inadequate housing, with predators taking up to 70% of surviving chicks (Bourzat and Saunders 1987). Generally, the costs of an isolated vaccination campaign cannot be justified unless actions to improve housing and feeding are also taken (Sonaiya 2004). Since building shelters or sheds is usually a man's job on the farm, poultry projects for women can overlook the fact that women do not have the skills, materials or permission to build a shelter on their own. Men may not prioritize building a shelter if they are not the project participant (Kitalyi 1996).

The Malawi Department of Animal Health and Industry implemented a modified version of the Bangladesh semi-scavenging poultry production model. They simplified the elements to accommodate the decreased population density, and the relatively undeveloped state of the grassroots NGO's, which mobilized poor farmers, mainly women, and provided training and microcredit. The hens, inputs and services were all available in the village (Chinombo 2001).

During the participatory assessment, the poorest farmers all identified poultry keeping as their top preference for an income generating activity, followed by goat raising, pigs, cattle and finally sheep (Chinombo 2001).

Among successful women's poultry projects in Africa, scaling up traditional scavenging systems using indigenous breeds have been most successful, compared to South Asia, where more intensive systems with purchased feeds and improved breeds were working. The most likely reason is the broad coverage of good quality extension, supply and marketing chains provided by NGO's or cooperatives in Asia, which are not yet established in Africa (IFAD 2004).

4.5 **Microlivestock**

Small and non-traditional animals like rabbits, snails, grasscutters and cuyes are often easy for women to manage, and require only a small amount of capital to get started. Profit is smaller but so is the risk (Miller 2001). There are few infectious diseases of these species, although proper feeding and sanitation is essential. In West African countries like Cameroon and Liberia, women can market them freely and keep the income.

4.6 **Equids**

Like women, donkeys are simultaneously ubiquitous, invisible and overworked. Donkeys and horses share few infectious or parasitic diseases with ruminants, so their health care needs are rarely on the agenda. This resistance means they can be used for work in tsetse infested areas without the danger of trypanosomiasis.

Since poor women's livestock assets are heavily dominated by small ruminants and poultry vaccines against infectious diseases of these species will have the greatest impact against poverty

(Perry 2009)

The donkey is a key transport animal across Africa, and when used for plowing, can immediately increase crop production. Donkeys are especially important for women, since they save time and labor for transporting water and fuel to the home, and goods to market. Owners rarely spend time or money caring for donkeys, although many suffer from skin infections, lameness and harsh beatings, which limit their work potential.



5 Constraints to women's access to animal health services

It is well established that women have less access to public and private livestock services than men (World Bank 2009). Animal health providers include veterinarians, veterinary assistants or technicians, livestock extension agents, owners of agrovet shops, Community Animal Health Workers (CAHW's or paravets), traditional healers, and neighbors.

5.1 Women's "deficits"

The most common reasons given for the gender gap in access to animal health care are women's long workdays, which preclude them from engaging with, or searching out, extension officers, or participating in most training activities. Widespread female illiteracy limits the value of written materials, and may prevent women from being confident enough to seek out information on their own (Waters-Bayer 2010).

5.2 Institutional culture and policies

Illiteracy and lack of time are excuses which focus attention on women's deficits, but the underlying problem is lack of institutional will and capacity to reach women livestock keepers, even in the face of decades of research on the benefits of training and empowerment for women. Public and private institutions are slow to change and chronically short of funding, so structural changes often require a push from the outside.

Human health clients are mainly women who arrange both preventative and curative treatment for their children. Although there is room for improvement and greater expansion at the community level, the human model shows it is possible to reach illiterate and time-constrained women. Therefore, animal health outreach for women can use successful elements of human health provision as one model.

Existing extension and training services do not serve poor women well when they are multiple days, in a distant location, given in the national (rather than local) language, and women are not explicitly invited. Livestock professionals often use technical language that is useless and intimidating to uneducated women and men (Stewart 1998).

In addition, lack of mobility and lack of awareness that services even exist further decrease women's opportunity to learn about animal health and disease prevention. Many are unaware of the presence of either government or private health care offices, even when they are close by (Rota 2007).

5.3 Government policies and priorities

Technical issues dominate national policies in the livestock sector, and gender or other social issues are rarely raised. Production, infrastructure and marketing were reported by agricultural ministries as the most important, while broader issues such as environmental effects, poverty alleviation and international issues were rarely mentioned. These responses suggest a policy focus on short-term issues with an emphasis on the potential for immediate effects rather than an appreciation of longer-term more complex issues (Riethmuller 2002).

Most of the governments of African countries are signatories to the Convention on the Elimination of all Forms of Discrimination against Women (CEDAW), the Beijing Platform for Action, the Millennium Development Goals and the United Nations Security Council Resolution 1325 (2000) on women, peace and security. The principle of equality and non-discrimination between men and women is enshrined in the founding legal instrument of the African Union (AU). The AU Heads of State and Government have specifically addressed gender issues through The Protocol to the African Charter on Human and Peoples' Rights on the Rights of Women in Africa adopted in 2003 in Maputo; and the Solemn Declaration on Gender Equality in Africa adopted in Addis Ababa in July 2004, which require States to respect normative standards on women's human rights. However, effective implementation especially in the rural areas is not occurring in any systemic fashion (African Women's Decade 2011). Typically, responsibility for implementing or monitoring national commitments to women's equality is delegated to poorly funded Ministries of Women (or gender or welfare), which have little authority or influence over the more powerful and male dominated ministries of agriculture or livestock (Balakrishnan 2005).

5.4 Animal Health Delivery

In Tanzania, 40% of women farmers preferred to work with female extension agents although less than 5% of livestock officers are women. For Muslim women, contact with unrelated men precludes any training since nearly all agents are men. Most women can attend demonstrations and training courses only if these were conducted in their villages yet this is often not as convenient for the trainer who arranges the schedule (Kristjanson 2010).

Animal health trainings are usually “gender blind,” in that they don’t deliberately exclude women, but choice of language, time, location and duration effectively prohibit women from participation.

Often women do not know that they are invited, since publicity is rarely through women’s networks, such as parent associations at schools, religious institutions or human health clinics. Both women and men tend to assume that livestock training is for men only.

(Stewart 1998)

Many animal health technicians or veterinarians do not regard women as farmers or producers, and if the husband is not home, will not speak to the wife, even if she is the main manager of the animals (Amuguni 1999).

Livestock information is usually disseminated through producer organizations or dip tank committees, whose membership is usually limited to legal owners of animals or land, usually the men. The EADD automatically made both husband and wife members of dairy committees, but noted that women did not participate in meetings (EADD 2010). This is probably due to inexperience with speaking in public, and being raised to defer to men, as well as men dismissing women’s ideas. Even when women are permitted to join marketing coops,

meeting times may be inconvenient for them, such as 5 pm, when they are home preparing dinner (Kirui 1994).

In Sudan village livestock meetings, many women report that while men are praised for asserting themselves, when women rise to speak, they are ignored or belittled. Other women witnessing this behavior become convinced that their opinions are not wanted, and do not waste their time at such meetings (Amuguni 2002).

Animal health information can be disseminated by radio or TV, but even in households that own them, men use them more than women. After dinner, women report that men listen to radio programs while they clean up and prepare the children for bed (Kirui 1994).

Utilizing private veterinarians or animal health technicians can be a greater burden for women, who have fewer productive assets and less access to cash than men (Hill 2009). In addition, both men and women cited unavailability of staff rather than cost as the main barrier to use of veterinary services (Heffernan 2003).

In Kariobangi, Kenya, those with the least amount of knowledge regarding appropriate animal husbandry and management techniques tended to buy the largest amount of human drugs to treat their animals. Human drugs were readily available and inexpensive, yet least effective for most animal disease. (Heffernan 2003).

Although Community Animal Health Workers (CAHWs) have been trained and deployed in many African countries, surveys in Kenya showed that many were not active, due to multiple donors contributing short duration training with little follow up. Most training programs did not make the effort to recruit, train and retain female CAHW’s, although this is one of the best ways to increase women farmers’ access to livestock services (Heffernan 2003).



6 Constraints to women's access to and benefits from livestock markets

Women participate in market activities, despite constraints in mobility, information, contacts, experience and financial training. As distances to market increase, male relatives tend to take over marketing of livestock or products, appropriating some or all of the income. Women may have little financial experience, which can decrease their profits. They may have less experience negotiating with buyers or middlemen, resulting in lower prices. Husbands can become interested in women's livestock enterprises when they become profitable and take them over, and take the income.

6.1 Credit and financial services

Female dairy operators in Kiambu, Kenya, reported that their enterprises would have been more productive had they had access to financial resources to purchase more feed and feed supplements and more land on which to grow forage (Tangka 1999). Formal credit is limited to those with land for collateral, nearly always men in Africa. Microcredit, or non-collateral loans made to small groups of neighbors rather than individuals, is one way to provide credit to poor women, but does not reach the majority of poor rural women. Although women tend to repay their loans more quickly than men, and providers of microcredit can realize a healthy profit, the private sector rarely offers these services, so NGO's are the main providers. Quality can vary widely. Other financial services that poor women would like to use are savings and mobile banking.

Non-governmental organizations have offered poor women an additional option of receiving an animal like a goat or cow on credit, which is repaid by "passing on," an offspring to another poor woman in the group. Generally women must join or form a self help group, and attend training on feeding, breeding and health care, and have access to land to plant fodder. These schemes have the added benefit of building social capital in addition to valuable livestock assets. These living loans are administered by NGO's such as Heifer International, Send A Cow, Bothar, FARM Africa and Irish Aid.

6.2 Commercialization and male appropriation

In dairy markets, women's greatest challenge is keeping the income they have traditionally enjoyed, since more formal and commercial markets tend to shift income to men. Women traditionally sold milk and dairy products on the informal market for cash at the time of sale, which they kept and used for household purchases. However, in East Africa, milk sold to chilling plants is paid for by weekly check to the head of household, usually the husband, even when the woman is the main operator of the enterprise. A study in Kenya, Rwanda and Uganda showed that women received dairy income in only 16% of households that sold milk to collection centres (EADD Report 6 2009). Although women were more likely to have access to evening milk, they tend to use it for home use rather than sale.

Some women divert milk to the informal market to regain cash, which limits the plant's economic viability (EADD 2010), or they simply take less good care of the cows, since they receive no benefit from increased production (Maarse 1999). In a recent case in Kenya, a cow in a Land O'Lakes project died because the woman stopped feeding her when the husband started to receive dairy payments (Quisumbing, personal communication).

Studies conducted among the Fulani in northern Nigeria (Waters-Bayer 1985, 1988) demonstrated how the industrialization of milk processing has eroded women's traditional control over milk products, thereby decreasing their power within the household.

Commercial dairy processors in Kenya said they preferred to purchase milk directly from women because they felt that the product was cleaner and higher quality. They understand that women do the work, and cash incentives matter (Rubin 2008). However, male dominated producer groups can negotiate a better price with processors because they can guarantee a larger quantity of milk.

Poultry sales show a similar shift of income from women to men as commercialization and profits increase, unless deliberate steps are taken to prevent this, such as income going into group savings for the women, along with gender training for men.

In addition to production declines in quality and quantity, the shift in income is harmful to family nutrition, since men tend to sell more of the milk rather than keep it for home use. Since men are not feeding the children, or even allowed in the kitchen area, they do not know how much food is needed, or what is optimal for children. Since men are fed before children, and encouraged to eat all they wish, they may not know that the children are hungry, or that wives are limiting their own intake.

African women are raised to defer to husbands' decisions, and may be ashamed to ask for money for food that they used to produce. Challenges to a husband's decision can result in violence.

(Kirui 1994)

Public health officials concerned about disease control fear the informal markets (Canet and N'Diaye 1996).

Regulations on street food can be seen as gender insensitive because poor women dominate the informal sector and often cannot comply with expensive phytosanitary requirements (Kristjanson 2010). They are rarely included in policy making, although their livelihoods are at stake. Hill (2009) cautions that legitimate health concerns as well as industrial fears of competition have generated regulations that favor large scale food producers rather than small scale women producers and vendors. In East Africa, restrictive regulations on the informal milk trade are in place, but the Kenya Dairy Board (KDB) finally embraced the informal sector as legitimate participants in shaping policy and regulations, after much NGO pressure. Ugandan and Tanzanian policy makers remain hostile to the informal milk market, affecting the livelihoods of the many women active there (Kurwijila 2011).

6.3 Market Information

All small scale producers are disadvantaged regarding market information such as current prices and pending policy shifts. Women tend to have less time to listen to news on the radio or read newspapers, and are more isolated on their farms compared to their menfolk. Cell phones are now essential tools for market information, but women and WHH are less likely to have them than men (EADD 2009).

6.4 Live animal and Meat sales

In Southern Nigeria, although women were not excluded from marketing or processing meat, they earn less and are excluded from abattoirs (Ajala 2005).

Ndungu (2004) found that Kenyan women pastoralists pay more as individuals than do men for information – whether for livestock extension materials, for animal-disease warnings or for livestock market updates. Women also received lower prices for live animals at the market.

6.5 Government Regulations

In Africa, most street-food processors and vendors are women. As much as 60% of the milk sold in Dar es Salaam, Tanzania, is produced in and around the city, and peri-urban dairy production has increased as cities have grown. Women are frequently seen buying and selling live poultry in all African cities.

6.6 The Private Sector

An examination of contracts with international food companies shows that fewer women than men are members of contract farming schemes. However, companies note that women smallholders produce better quality products, and would prefer to deal with them, but they are not organized into formal producer groups which negotiate the actual contracts (Chan 2011).

Njuki (2010) notes that men and women have different preferences in livestock commodity value chains, which can inform project development. Generally women prefer to sell to neighbors whom they know while men prefer brokers or shops.

7 Solutions and strategies to increase women's access to animal health services

7.1 Institutional Issues

7.1.1 Commitment

Meaningful improvement in women's access to animal health services is the result of institutional political will and commitment to resources, staff training and accountability explicitly designated to monitor impact on women's income, decision-making and workload. Otherwise, the pattern of rhetoric to satisfy donors but producing no real change continues.

CARE Ethiopia made a public commitment to women's empowerment as a goal in itself, rather than simply a means of overcoming poverty (CARE Ethiopia). A commitment to women does not take away resources from men, it just assures that the extra effort to reach women is maintained. Efforts to increase and safeguard women's livestock resources have spillover benefit in improving access to animal health services for poor men, AAHH and wealthier families.

7.1.2 Gender Policy

A written gender policy affirms an institution's commitment to gender equality and women's empowerment and provides an action plan and budget to accomplish it (Hammerschlag 1998). A zero tolerance sexual harassment policy, and follow through on enforcement is essential (EADD 2010). Sometimes it necessary to designate a senior female manager to hear complaints, since many women hesitate to bring harassment issues to their male supervisors, since they may be ignored, ridiculed or fired. Measures to increase recruitment, hiring and retention of women in senior management positions can demonstrate internal commitment to gender equality.

A gender audit is used by both private and public institutions to review existing practices, and generate staff input into a gender policy, which covers both internal and external policies, and project planning, approval, monitoring, evaluation and funding (Hammerschlag 1998).

7.1.3 Staff training

Staff will differ in their attitudes and behavior regarding gender relations, so training in gender sensitization ("what is gender?") and analysis ("how do we close gender gaps?") is essential for a common understanding and implementation of organizational goals. Annual staff evaluations should include gender and reward positive attention to women's issues. Ongoing training and discussions are necessary to help staff deal with the expected frustrations from real life attitudes and behaviors detrimental to women's status in the field.

The word "gender," has been used to mean so many different types of interventions in the last few decades that much confusion exists.

The EADD learned that it could not assume that everyone understood its gender strategy automatically. Lessons learned:

- > **Train people first, before starting activities. People need to understand the project approach before implementing it.**
- > **Provide guidelines, or steps, to simplify approach as laid out in the project plan.**
- > **If existing staff from other institutions are used, pay special attention to training and change of mindset.**

(EADD 2010)

In a 2008 workshop on gender in Tanzania for agricultural development workers, including dairy staff from NGO's and government, participants expressed relief at finally having tools to analyze and communicate about gender to farmers. They requested more such training, since they were "aware that women were inhibited from effective participation in many facets of agriculture, and knew they were expected to increase women's benefits, but had no idea where to begin." (Rubin 2009).

7.2 Partner institutions

Partner institutions will affect the outcome of any project, and vary widely in capacity, commitment and size. Committed partners with either experience or willingness to train their staff and hold them accountable for outreach to women are best, and often include small NGO's, such as FARM Africa, VSF-Belguim, CARE and Heifer International. Government partners often have severe constraints of all types, and need training, follow up and incentives, but may have the biggest impact.

7.2.1 Government

7.2.1.1 National Promotion of Gender Equality

Despite official commitments to international resolutions on women's equality, implementation has been sparse and sporadic. A new initiative called the African Women's Decade was launched in 2010 to focus on progress made in the implementation of national programmes of African Union (AU) member states [to promote gender equality and highlight the] achievements, gaps and challenges. It is designed to provide direction, especially where actions and initiatives are in need of acceleration (AWD 2010). This kind of public monitoring can be helpful to enhance accountability from government.

In addition to commitments and the establishment of women's ministries and programs, some African governments have implemented political quotas to increase the number of women in government. Rwanda, South Africa and Uganda are prominent examples. By 2003, approximately 19 AU member countries had adopted some form of legislative quotas for women (Tripp 2004).

Despite difficulties in implementation, applying and maintaining quotas, they help establish the necessary critical mass to get gender on the agenda, and to bring about policy and institutional changes. They normalize women's active participation and provide role models to other levels of society (IFAD 2010).

Quotas for women in government bodies are often a necessary but not sufficient step to promote women's equality across the country. Other strategies include increased lobbying and organizational capacity so existing national women's groups can become a political force, and mainstreaming gender concerns into other national groups such as producers' union (Hassim 2005).

Women politicians in Rwanda have attempted to give voice to all women through a national network of women's committees based in every village, to provide a link with women in government (Hassim 2005).

Mozambique and South Africa impose gender quotas on the political parties, but women Members of Parliament (MPs) have found challenges in balancing the commitment to the political party against the commitment to gender equality. Women are after all elected to represent the party and not women as a constituency (Hassim 2005).

Local government has been expected to be the level at which political party commitments to gender equality and parity in decision-making would produce positive results yet the obstacles may be greater. For example, traditional authorities in South Africa have significant powers over resource allocation at the local level because of political accommodations made with the ruling ANC. As a result, the features of good governance that are promoted at the national level are not always present locally (Hassim 2005).

Uganda was one of the first African countries to reserve 30% of the positions on local councils for women. Yet this has not necessarily translated into an appreciation of women's role in decision-making. The election of women councilors is an add-on to the electoral system, so voter turn-out has been poor, and voters demonstrate ambivalence about the legitimacy of women councilors, and confusion about the constituencies they represent (Hassim 2005).

There has been little systematic study of the impact of national leadership, laws and policies on rural women's daily experience and the gap between pronouncements at the capital and implementation in the village. National policies promoting gender equality would benefit from a budget and strategy for outreach into rural areas, building consensus and capacity among traditional leaders to protect women's rights and livelihoods, and training women how to exercise legal rights (Kabeer 1993).

Traditional leaders still provide the majority of judicial decisions on marriage, property and domestic law which impact rural women's lives. As local leaders are increasingly concerned with national politics, and may even be selected by national parties and not by the local people, their interest and ability to protect and uphold women's basic rights, both traditional and modern, declines (Kirui 1994).



7.2.1.2 Agricultural Ministries

Ministries of Agriculture and especially livestock departments rarely receive had any training on gender and are not held accountable on outreach to women unless a donor demands it for a specific program. Therefore, orientation for government partners is key for any gender responsive livestock intervention.

7.2.1.3 National policies affecting women and livestock

Infrastructure and services to combat livestock diseases is a public good, which needs a government component to ensure coordination and consistent standards (Otte 2004) in addition to NGO and private sector participation.

East African governments recently used a participatory process to develop more fair dairy regulations, but women were conspicuously absent. Producer groups were blamed for not representing their constituents (Kurwijila 2011). Due to NGO lobbying in Kenya, accommodation of the female dominated informal market was accomplished.

The National Dairy Development Program in Kenya, operating from 1980–1995, was funded by the Dutch government, and provided funding, training and research to the Ministry of Agriculture Dairy Extension program. They quickly realized that the quality of women’s participation was a key determinant in the success of zero grazing enterprises. After a series of gender investigations and workshops, they started referring to the “Black Box of Mr. Gender,” to remind field officers of the importance of gender in their work and their home life. This playful but consistent attention to gender was one of the most significant outcomes of the project.

(Maarse 1998)

Other national policies that particularly impact women livestock producers are expansion and enforcement of their property and inheritance rights, prevention of domestic violence, education for girls, and assistance to AIDS Affected Households. Surveys on economic activity that will inform policy must recognize women's roles as important economic actors, even when their production is within the household or informal markets (Hill 2009).

National statistics are rarely gender disaggregated, so that women's economic contributions and gender constraints remain hidden. Attention and budgets only accrue to issues that get measured. When data collection uses the household as the unit of impact, women are invisible. Therefore, the unitary household research model must be replaced in both assessment systems and mindset (Hill 2003).

Hill (2003) developed a Gender Disaggregated Data (GDD) module for Agriculture and Rural Development for "engendering statistics," after finding that not all data specialists are experienced using, interpreting or presenting gender data.

7.2.2 Universities and Research Institutions

Livestock professionals like veterinarians and animal health technicians are often poorly prepared for the social context of animal health delivery to poor people, especially women. They need explicit training to become the agents of change that developing countries require. Training in sociology and gender is particularly important for Veterinary Public Health (VPH) programs, historically very weak in Sub Saharan Africa, but essential since animal disease patterns are related to human behavior as much as biology and climate (Robinson 2003).

Useful policy changes affecting higher education include strengthening of curricula to include gender sensitive participatory methods in disease diagnosis, treatment and bio-containment. Makerere University in Uganda has pioneered a gender training curriculum for veterinary and other agricultural students (Hill 2009).

In many developing countries, only commercial intensive chicken and large scale cattle production are part of the agriculture curriculum in schools. Small scale production is not considered at any level.

Since the majority of rural people depend on small scale agriculture for livelihoods, and the majority of livestock products consumed comes from small scale producers, it will be important that this subject be included in the regular education and training schemes of agricultural generalists, as well as livestock and poultry specialists (Sonaiya 2004).

It is necessary for continued, deliberate and detailed efforts within agricultural research and development (R&D) institutions to focus attention on women through their policies. It is also necessary to translate policies into their day-to-day practices, so that women can make a greater contribution to livestock R&D and can derive more benefits from it. The quality of epidemiological data will improve when women livestock managers as well as men are included in routine disease surveillance and outbreak investigations (Waters-Bayer 2010).

7.2.3 Producer organizations

Group membership and collective action enhances the ability of both poor men and poor women livestock keepers to access resources and influence decision-making, but men and women often belong to different groups (Peterson 2010).

7.2.3.1 Women's groups

Village based women's groups are popular across Africa. They provide information and capacity building as well as a safe place to meet and learn. They often pool small amounts of money as informal credit. It is easier to organize training for groups rather than for individuals. (DeHaan 2002).

Women's existing organizations are a good starting place for new livestock activities, especially when they have had developed leadership skills, literacy, and confidence. Most women prefer to belong to women-only groups until they have become confident enough to speak in front of men (Miller 2001).

Groups of women producers are better able to access information and services, because they can bargain more effectively than they could alone (Kristjanson 2010). However, they often need some training to help develop their skills.

7.2.3.2 Livestock producer groups and cooperatives

These groups are mostly male, and need training and incentives to become more inclusive and more effective. If their objective is to represent producers, women's voices must be heard, since their concerns may be different from their menfolk. IFAD (2010) identified the following steps to increase women's voice in producer groups.

- 1 Training for all members in identifying gender based constraints and developing solutions and gender accountability.
- 2 Change membership criteria from formal land ownership to animal ownership, or animal usage.
- 3 Establish quotas for women in leadership, to increase visibility, and establish the necessary critical mass to bring about policy and institutional change. Add women subcommittees to build women's capacity and identify concerns.
- 4 Form networks of producer groups to share information and strategies on gender and other issues.
- 5 Lend assistance to legalize women's community based producer groups, which tend to be informal

If producer groups are not amenable to representing their female constituents accurately, women may form their own organizations.

Promoting gender equality strengthens producer organizations by increasing transparent and democratic decision making, and also benefits poor men and other marginalized groups. Pro-poor policies are also needed since inclusion of wealthy women does not necessarily benefit poor women (IFAD 2010).

A dairy cooperative in Kenya changed its membership requirements from land ownership to cow ownership, which increased the number of female members, in response to a single gender training workshop.

The men were not hostile to the idea, but no one had challenged the status quo until the workshop created the opportunity to examine gender dynamics.

(Rubin 2009)

7.2.4 The Private Sector

Since the era of Structural Adjustment Programs (SAPs) in the in the 1980's and the privatization of animal health services, most livestock producers use the private sector for animal health services, inputs and products. Although some women have opened their own agrovet stores or animal pharmacies, the majority of providers are men, since they are more likely to have the required financial capital, education and business contacts.

The private sector may not think of women as livestock producers, but when they start to target women and especially women's groups, it should be profitable for them. Even if women spend less than men on animal health products, they are still willing and able to spend cash to protect livestock health (EADD 2009).

Shop owners could benefit from training in targeting women customers, making their shops comfortable for women by hiring women clerks, and providing verbal as well as written instructions to illiterate patrons. Selling animal medications in single doses is appealing to women producers who cannot afford the multiple dose packages from manufacturers (Chan 2011).

7.2.5 Non Governmental Organizations

There are thousands of non-governmental organizations across Africa, constituting "civil society," and providing information, services and discussion space for change. They can be categorized as community based, intermediate and national level, and promote all types of issues from religion to literacy to gender equality. Some have funding from national or international sources, and some are completely self sponsored. Men and women in Africa belong to the same number of organizations, but men's are more commercial and provide productive resources while women's tend to focus on family welfare (Peterman 2010).

NGO's will be key partners in grassroots campaigns to vaccinate livestock, but many will need capacity building in leadership, record keeping and overall group development.

7.3 Program level strategies

7.3.1 Project planning

Project planning is strongest when local people have input. However background research means that each project does not have to start from scratch and repeat past errors. There is often a wealth of data from government, the UN, the literature and other development projects to inform gender responsive planning.

EADD waited for the completion of an expensive baseline survey in 2009 to learn that commercialization of dairy collection leads to shifts in income from women to men. This has been documented across Africa since the 1980's (Waters-Bayer, 1986, Oboler, 1985, Mullins, 1992). This background research could have informed use of family bank accounts, women's group savings or specific training for men on women's need for cash to care for the family.

(EADD 2009, Report 6)

7.3.2 Training programs that benefit women

Use of GALVmed's new vaccines must be integrated with animal health training so men and women will know how, when and why to get their animals vaccinated, and to ensure adequate nutrition and management to safeguard their investment in their animals.

Curry (1996) noted that by "knowing who does what, one can discover who is in the best position to observe clinical signs of animal health problems. This makes women's role in livestock visible and their training essential."

Interventions focused on areas where women are responsible (e.g. milking, tending young stock, poultry feeding) need to be targeted to women if they are to have impact on how animals are managed, whether or not women are the owners. This implies that women need to be more involved in technology design and testing, and in dissemination processes. (Kristjanson 2010).

It will take extra effort to design and deliver animal health training to women, since "just adding women," to the existing model will not be enough. Training that reaches primarily men should also include gender topics, so that men can learn about the workload and cash needs of their own wives.

To reach women livestock keepers, work with women's groups, use the local language, hold the training in the village, avoid technical jargon and include a gender component at every meeting.

(Stewart 1998)

Men's support is essential for women's participation because they not only must give permission, they must also help out with both livestock and domestic chores so that women have the time to attend. Group workshops are the easiest place to raise the issue of women participating in training programs, since an individual woman might be afraid on her own. Respected leaders can engage reluctant husbands individually by persuading them of the benefits of their wives' improved productivity.

Working with preexisting women's groups that address literacy, human health, and leadership are also helpful. Women's networks such as schools, parent teacher associations, human health clinics, mosques and churches, and NGO's working on welfare issues are typical networks that reach individual women. The latter can also help identify AAHH and other vulnerable groups that could benefit from special outreach (Peterman 2010).

Often the wives of traditional leaders can help organize women in a community. In West Africa, women often belong to all women societies which can get the word out about vaccination campaigns or health trainings.

Stewart (1998) reminds us that technical training programs are never value neutral. They can either maintain the status quo or challenge harmful or unjust practices, such as ignoring women and their work.

The introduction of participatory methods for direct farmer training, as well as organizational and policy development is associated with greater impact and sustainability. However, the basic assumption that experts can learn from farmers rather than tell them what to do is still antithetical to most government and university structures, and requires deep institutional commitment to change, and consistent rewards and backstopping (Hill 2003).



Meaningful livestock extension for women can also be enhanced by cross-training existing female extension agents, usually in home economics units, so they can help improve livestock management (Colverson 1995). Women need cash as well as food supplies, so training for women should not be limited to subsistence activities but involve market components as well (Mehra 2008).

Livestock extension needs to offer training based on the actual roles of men and women, while also recognizing that no community is homogenous. In addition, the opportunity for women to learn male skills can increase their livelihoods. Bundling of training for the same groups may involve different institutions or ministries, so careful coordination and sensitivity to rivalries is important.

Heifer Zambia introduced draft cattle for women into Southern and Central provinces in Zambia after East Coast Fever devastated cattle numbers, and men migrated for work. Everyone learned that gender roles are dynamic, and women could plow and care for oxen as well as men. Partnerships included both Ministry of Agriculture and Cooperatives for veterinary care, and Ministry of Community Development and Social Services for training in gender issues and leadership development. Government ministries often face difficulty coordinating and fear stepping on each other's toes. The project succeeded because the veterinarians and sociologists learned to respect each other, and to reinforce each other's messages.

(Heifer Zambia 2010)

7.3.3 Accountability and assessment

The goal of women's empowerment can only be achieved if it is included in the accountability process, and both method and indicators must be chosen carefully.

For formal surveys, Njuki et al (2011) defined indicators for monitoring project impacts on women's livestock livelihoods, to encourage greater uniformity in research to gain meaningful comparison, and as a necessary component of any livestock project or intervention.

In addition, the most important gender indicators are workload and control over decision making and assets occurs within the household, and this cannot be monitored with formal surveys. Therefore, informal annual participatory assessments should be conducted among target groups as part of the accountability process. With proper analysis, they can yield quantitative data that is just as strong as surveys, and much more meaningful.

Cost benefit analysis must include women's time as a cost, and benefits must include family impact such as child nutrition, schooling and medical care in addition to raw income or production. Improved child nutrition is an indicator of women's control over household income, but can be expensive and laborious to measure. However, women's dairy groups in Kenya developed a quick daily test to see if husbands were selling all of the milk rather than leaving some for the wife to use as family food. Individual members would ask each other's children if they had drunk milk that morning, and if not, group members would mobilize at the farm to confront the husband, and threaten to remove the cow. Fear of public exposure persuaded husbands to share milk with wives, which the wife could not accomplish on her own (Kirui 1994).

Data is only as useful as its interpretation and use, and the purpose of assessment is to see if adjustments are needed in the plan to accomplish the goals. Interpretation and use of data should not be limited to the headquarters or donor report, but intentionally shared with the people impacted (Stewart 1998).

7.3.4 Hire and retain more women as veterinarians, technicians and CAHW's

It is easier for women to interact with other women to access animal health care services and supplies. Although the numbers of trained women specialists are small they are growing. Some organizations claim that it is more difficult to retain women professionals than to recruit them. Women need to have protection from sexual harassment, and to feel safe while traveling. Flexible work hours help women balance work and home life since they do not have "wives," to cook and care for their children (Amuguni 1999).

Some countries such as Ghana have hired many female extension agents in response to demand (World Bank, 2009). However, livestock specialists still tend to be male. This suggests greater effort at recruitment of rural girls for advanced training, since they will be more likely to return to rural areas.

Female CAHW's can dramatically increase women livestock raisers use of livestock inputs. Organizations like FARM Africa and VSF-B have had good success training and retaining women CAHW's but it takes additional commitment and resources. Since most CAHW programs dissolve after donor funding is withdrawn, the success of these NGO's, and especially their combination of technical and social development is a good model for the future (Heffernan 2003). The most important predictors of CAHW activity after initial training is keeping written records, and attending three or more refresher courses. CAHW's benefit from business training in addition to technical training (Mugunieri 2002).

Regulations regarding acceptable CAHW procedures vary widely across Africa. In some places, there are restrictions on using needles or doing surgery. Development of vaccinations without needles given by informally trained women can improve impact.

Women auxiliaries and the I2 ocular vaccine for Newcastle's Disease

VSF-Belguim in Niger successfully piloted a vaccination campaign against Newcastle Disease (NCD). Women had been trained as poultry and small ruminant auxiliaries (AVA/PR) but were not authorized to give injections, yet NCD was the main constraint for poultry development.

Luckily the new ocular vaccine called I2 was available in 2007. A mass vaccination campaign was launched in Dakoro, preceded by a mass sensitization campaign including posters, drama, and radio programs. The vaccine was subsidized at half of its price, the vaccination campaign lasted 3 months and at the end, around 30.000 poultry were vaccinated versus an average of 4.000 for the previous years. The women vaccinators had a huge impact. The vaccine campaign was also re-launched in 2010 in the regions of Maradi and Tahoua and 57.657 poultry were vaccinated.

(VSF-B 2010)

7.4 Link to human health: One Health

The fields of human and veterinary medicine are increasingly working together on public health issues, a process now dubbed "One Health." This is especially valuable for reaching women in remote areas who are responsible for the health of both their children and their livestock. The potential is most clear when zoonotic disease can be controlled by sanitation, which is usually the responsibility of women. VPH infrastructure is extremely weak in African countries, so joining forces with human medical experts brings many advantages like human and physical resources and new models.

Between 2000 and 2005, Schelling et al. (2007) demonstrated the feasibility of combining human and animal vaccination programs for nomadic pastoralists and their livestock in Chad.

By sharing transport and equipment costs, medical doctors and veterinarians reduced their total costs. Joint delivery of human and animal health services is highly valued by hard-to-reach pastoralists. In intervention zones, for the first time, about 10% of nomadic children were fully immunized annually and more children and women were vaccinated daily in joint human-livestock vaccination rounds than in vaccination campaigns targeting only people. By optimizing use of limited logistical and human resources, public health and veterinary services both became more effective, especially at the district level.



Since 2003, AVSF (Agronomists and Veterinarians Without Borders–France) have implemented human and animal health projects with pastoral communities in Niger and Mali. Due to lack of nearly all services, the women have little knowledge of hygiene, nutrition, and prevention of pre and postpartum disease. The proximity of human/animal living increases the incidence of zoonotic disease, especially anthrax, parasitic diseases, tuberculosis, and brucellosis (AVSF 2010).

Infant and maternal mortalities are highest in West Africa, where populations are poorly vaccinated. Cattle also are not vaccinated or too lightly for an efficient protection. Moreover, extremely contagious diseases are often seen such as Contagious Bovine Pleuropneumonia (CBPP),

Contagious Nodular Dermatitis and cattle pox for animals; and in humans, measles, tuberculosis, and meningitis. Proper vaccination can have a huge impact on mortality and morbidity of the human and livestock populations, and significantly improve quality of life of the people who depend on their animals (AVSF 2010).

Although cost recovery was instituted through membership fees and vaccination charges per head, these models will need supplemental funding before they become established. Drought conditions can interrupt the planned monthly visits. However cost savings and increased coverage show the advantages of inter-sectoral cooperation of human and veterinary personnel to reach pastoralists (AVSF 2010).

8 Strategies to improve women's access to markets

8.1 Local Groups

Women prioritize keeping livestock to provide for family food, and use milk, meat and eggs to feed the famAmong both mobile pastoralists, and settled agropastoraists, from a very young age, children are involved in herding, with girls herding small stock with boys, and young men responsible for cattle (Bekure 1991).

8.2 Technology

Cell phones are now an essential tool to access market information, especially in live animal markets, to get the best price. Women's groups need to have at least one member with a cell phone (Rubin 2010).

8.3 Integrated services

Women can thrive in livestock markets when they have the necessary skills, assets and environment. Livestock remains the investment of choice for women in southern Ethiopia. Desha (2006) describes community based interventions with pastoralists (primarily Boran) in Ethiopia that linked market training, literacy, arithmetic skills and group development. They used pastoral women's groups from Northern Kenya as their model, and found that Ethiopian women have commonly emerged as the most innovative leaders.

Data from Global Livestock Collaborative Research Support Program (GL-CRSP) found that women's top investment choice was livestock, which they traded or fattened then sold on the market, or processed products to sell as street food. Microcredit was bundled with other necessary training, such as field trips to livestock markets, group development and training in marketing and financial skills. (Rubin 2010).

Women in the Mendera Triangle managed to transform their saving and credit groups into legally recognized livestock marketing cooperatives, and then to further consolidate them into cooperative unions despite numerous challenges. Efforts to provide some basic education and better information, as well as help to forge new relationships among buyers and sellers, have been beneficial to jump-start formation of this marketing chain (AFD 2004).

8.4 Credit and financial services

Credit is an essential asset for any business. Microcredit or non-collateral loans have been targeted to women across Africa with mixed results. The money often can help a woman start or expand a livestock enterprise, but organizations vary in their capacity to extend and monitor loans.

Group based credit, larger amounts for capital, training in numeracy, bank accounts in group name or individual name to prevent appropriation, and support to resist appropriation are all necessary for expansion of women's market opportunities. The most successful microcredit organizations follow up on use of the loan, to ensure it has not been appropriated by menfolk (Kristjanson 2010).

The private financial sector in many countries still does not view women as a profitable group. Project design should include special procedures for illiterate women, and flexible terms of repayment for larger animals with a slower rate of reproduction. Other innovations are mobile or cell phone banking, convenient opening hours to accommodate women's busy schedules, and appropriate and innovative savings schemes (Kristjanson 2010).

Extended credit provision, which characterizes most Muslim societies, is of particular relevance in the Somali context (Nori 2008), the Sahel and the Northern belts of Eastern and Central Africa. The system largely draws from traditional mechanisms regulating livestock trade, where herders give their animals on a credit basis and often wait months to receive their payments. In the livestock trade the role of the broker (*dulaal*) effectively lowers the transaction costs associated with this form of trading (Baumann 1993).

Livestock insurance is increasingly available to protect poor farmers' most important asset. It is used widely in Asia, but is not yet commonplace in Africa. Women, who tend to be more risk averse than men, seem more interested in this product when available (Rubin 2010), although there are some concerns that the increased cost can exclude the poorest women. Working and paying in groups is one solution (Hill 2009).

8.5 Formal or legal ownership

Formalizing women's ownership of animals can help women make faster and better decisions regarding sales and purchases. Ownership rights must be upheld by local courts as well as national ones, and be supported by men. Formalizing women's claim on land to use for fodder can also increase the productivity of women's livestock.

8.6 New Products

Another strategy for women's success is to market an entirely new product so they are not in competition with men in existing markets. Such enterprises require excellent planning and management.

Case study: Women entering livestock markets: The case of camel milk marketing in NE Somalia

The evolution of camel milk marketing in NE Somalia provides an interesting case study of women increasingly playing a new role in markets. Camel milk represents the main source of protein and vitamins to the Somali population, especially to children. Camel milk marketing is an entirely private system operating through a network of agents coordinated by women, and organized through complex relationships. Primary milk collectors are women located in mobile camps which follow seasonal pastoral transhumance in order to collect fresh milk from surrounding herders on a daily basis. Collected milk is then sent to female secondary milk collectors in towns who distribute it to market retailers. Transport companies – managed by men – are hired by women collectors to carry milk and related information and goods. The commercialization of camel milk in NE Somalia is expanding its outreach as well as improving its efficiency

(Nori et al. 2006)

8.7 The Private Sector

Private companies prefer to purchase from women smallholder producers because the quality is better, but need for women to organize into producer groups to make contracts. In addition, there is positive branding potential from supporting poor women

producers (Chan 2011). This may become a huge issue for specialty products such as camel or goat cheese, for export or the tourist industry.

Some private companies are proactively pursuing women producers by requiring that producer groups increase women members and leaders before new contracts will be negotiated. Some provide incentives for men to give their wives productive resources like cows so they can join in their own right. Also, private companies may have the influence to encourage improvements in basic services and infrastructure such as piped water to free up women's time for income generating activities (Chan 2011).

An encouraging innovation in the private sector is "double bottom line," business initiatives that explicitly seek to provide social and economic benefits to women smallholders, as well as generate a commercially viable revenue stream for the company. "Social entrepreneurship" or "agi-preneurs," are seen in the dairy and poultry sector in Bangladesh, but in sub Saharan Africa, are found mostly in the coffee, tea and cocoa industries, rather than the livestock sector (Chan 2011).

8.8 Focus on women

Although gender analysis must involve both men and women, and men are gatekeepers to women's participation, the International Livestock Research Institute (ILRI) found that interventions with positive impact on women were those that focused on women – rather than simply adding women into existing project activities. Projects already designed around men's priorities are often inappropriate for women, so investment in institutional capacity for redesign, along with new activities, is often necessary. In addition, ILRI found that the most evidence in the literature for empowering women dealt with dairy production, building women's livestock management skills, and improving women's access to livestock marketing, health services and information (Tipilda and Kristjanson, 2008).

9 Trends for the future

9.1 Globalization

9.1.1 Religion

Globalization isn't just the movement of goods and labour, it is also the cultural sharing of religious, political, social and philosophical ideas. Secular Western ideas influenced urban and educated Africans in the 20th century, but now religious debates predominate.

The impact of religion can be helpful or harmful to women, depending on the circumstances. Islamic law can protect women's property rights and a husband's obligation for maintenance, but it is up to local leaders to interpret texts and traditions. In Nigeria where some commentators describe increasingly strict interpretations of Islam as "Sharianization," there are concerns that new offences are being created around women's sexuality, which has a negative effect on women's human rights and mobility.

Christianity likewise can have a beneficial effect when religious leaders use their authority to condemn wife beating and encourage men to treat women as equals. One result can be an expansion of women's economic opportunities as husbands allow them to travel further and work more independently than before. This has also increased their economic responsibility and time spent on livestock and crop duties (Wangui 2003). Other leaders use Biblical texts to demand the subordination of women.

GALVmed and its partners need to work closely with local religious and traditional leaders to ensure their support and cooperation in enhancing women's opportunities.

9.2 Sedentarization and livestock confinement

Other trends are the increasing confinement of animals, which tends to increase women's workload. When there is pressure on pastoralist groups to settle permanently, and without herding cattle, men may encroach on women's traditional income generating activities, like dairy. Alternately, as pastoralist men migrate to cities for paid work, women are left with all of the livestock chores, and may require special training and outreach. There is increasing economic competition from industrial livestock producers, who can often influence policies to their benefit.

9.3 Population pressure

Increasing population pressure is closely tied to the status of women, since educated women with their own income tend to have fewer but healthier children. Every year of education typically decreases by one the total number of children each women will bear (World Bank).

9.4 Climate Change

The effects of climate change are already seen across Africa, with increasing droughts and changing rainfall pattern, which impact livestock raising. Environmental changes can impact men and women differently, and women again find their household duties increasing as they search longer and farther for fuel and water, and deal with more household disease from polluted water (FAO 2000).

10 Lessons Learned

10.1

Invest in institutions and people in addition to technology, with appropriate budget and monitoring.

10.2

Market incentives are essential for sustainability, but only after investments are made to upgrade the skills, contacts, capital and confidence of women and other marginalized people. Bundling of technical and social services provides the most impact.

10.3

Social attitudes and behaviors change over time. Market incentives are one tool, but publicity campaigns, role models, and community based discussions are also necessary (WFC 2000).

11 Recommendations to GALVmed

11.1 Gender Strategy – Institutional

11.1.1 Gender Audit

The Gender Audit is a widely used tool to help institutionalize an organization's commitment to gender equity. Hammerschlag (1998) identifies the following steps:

- > Review of the organization's current practices, strategies and results
- > Survey staff about the organization's
 - Political Will
 - Technical Capacity
 - Accountability
 - Organizational Culture
- > Discuss and analyze the survey results
- > Create an action plan, which usually includes a formal Gender Policy.

11.1.2 Gender Policy

Develop a written gender policy, confirming a commitment to gender equality through animal health initiatives, partnerships and accountability. Prohibit sexual harassment of staff and provide written procedures for staff grievances.

11.1.3 Staff Issues

To ensure a common understanding of gender equality goals and policies, hold a workshop or training session for executives and senior staff. Develop training for all staff and partners in gender analysis, so they have the proper skills to do their jobs. Provide training in gender analysis and participatory techniques for field staff that include visits to project sites to use new tools with trainers. Ensure that annual staff reviews reward positive attention to gender issues.

11.1.4 Central Coordination

Designate one person to coordinate and harmonize gender related programming, training and assessment, with adequate authority, time and budget, although responsibility for gender integration must be shared by all staff and programs.

11.1.5 Gender Board of Advisors

This could increase the recognition and credibility of GALVmed's gender strategy, and their experience could inform GALVmed's decision-making. A "Gender Learning Community," composed of staff and management, including partner organizations, to share experience and enhance analytical skills, can improve impact and permit "scaling up," successful strategies.

11.2 Gender Strategy – Project Level

11.2.1 Goals and objectives

Make outreach and benefits to women an explicit goal of all GALVmed initiatives, with adequate budget, backstopping and assessment. All local work should begin with participatory gender analysis with both men and women. Benefits to men must be very clear since they are the gatekeepers to women's participation.

11.2.2 Monitoring and assessment

In addition to formal surveys disaggregated into male and female headed households, and AIDS affected households, use informal methods to monitor intra-household division of labor and decision-making, and child nutrition. Train and monitor producer organizations for women's leadership, inclusion of women's concerns and participation in national decision-making.

11.2.3 Advocacy

At the national level, advocate for revised statistical collection, to capture women's involvement in livestock keeping and economic contributions, to justify continued outreach for technical and market training. Help strengthen advocacy efforts for policies that favor poor women including maintenance of informal markets, property rights and girls' education.

11.2.4 Integration of vaccines into training

Bundle vaccine interventions into packages that include animal health training, marketing and credit targeting women.

11.2.5 Species focus

Prioritize vaccines for small ruminants and poultry which represent a greater share of women's assets and livelihoods.

Bibliography

- Action for Development (AFD). 2004. *Livestock Marketing for Pastoral Community Groups*. Annual Report. Addis Ababa, Ethiopia.
- African Women's Decade (AWD). 2010. *Launch Of The African Women's Decade (2010 – 2020)*. http://www.africanwomendecade.org/index.php?option=com_content&view=article&id=64&Itemid=63 Accessed 26 February 2011.
- Ajala, 2005. *Meat trading in Oyo State*, Southern Nigeria Journal of Tropical Agriculture
- Ayoade, H I Ibrahim, and H Y Ibrahim. 2009. *Analysis of women involvement in livestock production in Lafia area of Nasarawa State*, Nigeria, Livestock Research for Rural Development 21 (12) <http://www.lrrd.org/lrrd21/12/ayoa21220.htm>
- Amuguni, H. 2002. *Assessing the Gender Impact of the Community based Animal Health Programme in Southern Sudan*, VSB-B, Belguim. <http://www.bridge.ids.ac.uk/go/home&id=53075&type=Document>
- Amuguni, H. 1999. *Looking at Livestock Training and Extension for Women Farmers in Kenya: A Framework for Gender Analysis and Training*. Master's Thesis at Clark University, Worcester, Massachusetts.
- AVSF (Agronomes et Veterinaires Sans Frontiers) 2010. *Mixed service of human and animal health in pastoral zones: An innovative and promising experience*. http://www.cop-ppld.net/fileadmin/user_upload/cop-ppld/items/Mixed_service_of_human_and_animal_health_AVSF_innovative_experience.pdf accessed 1 March 2011.
- Balakrishnan 2005. *Rural women and food security in Asia and the Pacific: Prospects and paradoxes*. FAO/RAP. Bangkok. <ftp://ftp.fao.org/docrep/fao/008/af348e/af348e00.pdf>
- Bechir, M. et al. 2004. *An innovative approach combining human and animal vaccination campaigns in nomadic settings of Chad: experiences and costs*. Med Trop (Mars). 2004;64(5):497-502. French. PubMed PMID: 15771021. <http://www.ncbi.nlm.nih.gov/pubmed/15771021?dopt=Abstract>
- Bekure, S., de Leeuw P N., Grandin B E and Neate P J H (eds.). 1991. *Maasai herding: An analysis of the livestock production system of Maasai pastoralists in eastern Kajiado District, Kenya*. ILCA Systems Study 4. ILCA (International Livestock Centre for-Africa) Addis Ababa, Ethiopia.
- Bill and Melinda Gates Foundation, 2008. *Gender Impact Strategy for Agricultural Development, Agricultural Development Program*. Seattle <http://www.gatesfoundation.org/learning/Documents/gender-impact-strategy.pdf>
- Buhl, S., Homewood, K. 2000. *Milk Selling among Fulani Women in Northern Burkina Faso*, in D Hodgson (eds) Rethinking Pastoralism in Africa. James Curry, Oxford, UK.
- Canet, C., N'Diaye C. 1996. *Street food in Africa*. FAO/Food, Nutrition and Agriculture No. 17/18. <http://www.fao.org/aa/agr/publications/fna>
- Chinombo, D., Jere, J., Kapelemer-Phiri, G. & Schleiss, K. 2001. *The Malawi smallholder poultry production model (MSPPM): A Poverty reduction strategy*. Livestock, Community and Environment. Proceedings 10th Conference of the Association of Institutions for Tropical Veterinary Medicine, Copenhagen.
- CIRAD. 2005. *Monitoring production, health and marketing of indigenous Tswana pigs in Ramotswa village of Botswana*. Gaborone. <http://pigtrop.cirad.fr/content/pdf/1085>
- CIRAD. 2011. *Characteristics of the smallholder free-range pig production system in western Kenya*. Tropical Animal Health and Production, Vol. 42, Issue 5. <http://pigtrop.cirad.fr/content/pdf/6189>
- Chan, M. 2011. *Improving Opportunities for Women in Smallholder-based Supply Chains: Business case and practical guidance for international food companies*. Bill and Melinda Gates Foundation.
- Colverson, K. 1995. *Rural Women's Access to Agricultural Information: A Participatory Study of Two Honduran Communities*. Journal of International Agricultural and Extension Education, Volume 2 Number 2. http://www.aiaee.org/attachments/424_Vol-2.2.pdf

Connolly M, Nunn P. 1996, *Women and Tuberculosis* World Health Stat Q.49(2):115-9. World Health Organization, Geneva.

Curry, J, Huss-Ashmore, R, Perry, B, and Mukheb, A. 1996. *A Framework for the Analysis of Gender, Intra-Household Dynamics and Livestock Disease Control with Examples from Uasin Gishu District, Kenya*. Human Ecology 24 (2).

Desta, S., G. Gebru, S. Tezera, and D.L. Coppock. 2006. *Linking pastoralists and exporters in a livestock marketing chain: Recent experiences from Ethiopia*. In J. McPeak and P. Little (eds.) *Pastoral Livestock Marketing in Eastern Africa: Research and Policy Challenges*. Warwickshire: ITDG Publishing, Rugby, UK.

Due JF, Magayane AA, Temu A. 1997. *Gender again: views of female agricultural extension officers by smallholder farmers in Tanzania*. World Development 25(5).

Emerging Infectious Diseases, Centre for Disease Control. Vol. 13, No. 3. <http://www.cdc.gov/ncidod/EID/index.htm>

EADD. 2009. East Africa Dairy Development Project. Baseline Report No 6. *Gender, dairy production and marketing*. ILRI, Nairobi Kenya.

EADD. 2009. Baseline Surveys, Report 1. ILRI, Nairobi.

EADD. 2009. Strategy for Integrating Gender in EADD. ILRI, Nairobi.

EADD. 2010. *Some lessons learned*. ILRI, Nairobi.

FAO. 2000. *Participatory epidemiology and women's farming activities*. Rome.

<http://www.fao.org/docrep/003/x8833e/x8833e03.htm#b9-Participatory%20Epidemiology%20and%20Women&146;s%20Farming%20Activities>

FAO. 2005. *SEAGA Livestock Guide: Planning with a Gender and HIV/AIDS Lens Developed for the Socio-economic and Gender Analysis (SEAGA) Programme*, Gender and Development Service. http://www.fao.org/sd/dim_pe1/docs/pe1_050901d1_en.pdf

Flintan, F. et al. *Study on Women's property rights in Afar & Oromiya regions, Ethiopia*, 2008, USAID/CARE Ethiopia <http://www.elmt-relpa.org/FCKeditor/UserFiles/File/elmt/200904/Final%20Report%20Womens%20Property%20Rights.pdf>

Flintan, F. 2008. *Women's Empowerment in Pastoral Societies*. WISP, GEF, IUCN, UNDP.

Gerber, Pierre, Harold A. Mooney, Jeroen Dijkman and Shirley Tarawali. 2010 *Livestock in a Changing Landscape, Volume 2: Experiences and Regional Perspectives*, Island press, Washington DC.

Grace, D. 2007. *Women's reliance on livestock in developing-country cities*. ILRI Working Paper. International Livestock Research Institute, Nairobi, Kenya.

de Haan, N. 2001. *Of goats and groups: a study on social capital in development projects*. Agriculture and Human Values 18(1):27-39.

Hammerschlag, K, and Reerink, A. 1998. *Best Practices for Gender Integration in Organizations and Programs*. InterAction. Washington, DC.

Hassim, S, and Meintjes, S. 2005. *Overview Paper from expert group meeting on democratic governance in Africa: strategies for greater participation of women*. United Nations, Office of the Special Adviser on Africa. ARUSHA.

Heffernan C, Misturelli F. 2002. *The delivery of veterinary services to the poor: preliminary findings from Kenya*. Veterinary Epidemiology and Economics Research Unit Department of Agriculture, University of Reading, Reading. <http://www.livestockdevelopment.org/adobedocs/vetpoor.PDF>

Heffernan C, Misturelli F, Pilling D. 2003. *Livestock and the Poor: Findings from Kenya, India and Bolivia*. Animal Health Programme, Department for International Development, London <http://www.livestockdevelopment.org/adobedocs/livestockservicesandthepoor.pdf>

Heifer International 2001. Project Profiles, Women's Samburu Camel Project in Kenya.

http://www.heifer.org/atf/cf/%7BE384D2DB-8638-47F3-A6DB-68BE45A16EDC%7D/asset_upload_file76_1791.pdf

Heifer Zambia, 2010. *Women Farmers Building Community Resilience Through Harnessing Crops and Livestock*, in InterAction's Best Practices & Innovations (BPI) Initiative Agriculture & Rural Livelihoods, Washington DC. <http://www.interaction.org/sites/default/files/BPI%20Round%201%20-%20Heifer%20-%20FINAL.pdf>

- Hill, C. et al. 2009. Gender and Livestock in Gender and Agriculture Sourcebook. World Bank/FAO/IFAD. Washington, DC. <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTARD/EXTGENAGRLIVSOUBOOK/0,,menuPK:3817510~pagePK:64168427~piPK:64168435~theSitePK:3817359,00.html>
- Hill, C. 2003. *Gender Disaggregated Data for Agriculture and Rural Development: a guide for facilitators*. FAO/SEAGA. Rome. <http://www.fao.org/sd/seaga/downloads/En/GDDEn.pdf>
- IFAD. 2010. *Promoting women's leadership in farmers' and rural producers' organizations report*. Rome. http://www.ifad.org/farmer/2010/agenda/e/report_women.pdf
- IFAD. 2004. *Livestock services and the poor: A global initiative collecting, coordinating and sharing experiences*. Rome. <http://www.ifad.org/lrkm/book/english.pdf>
- IFAD/FAO/Government of Japan. 1998. *Agricultural Implements Used by Women Farmers in Africa. The Case for the Donkey*. Rome. <http://www.ifad.org/gender/learning/sector/agriculture/73.htm>
- Kabeer, N. 2003. *Gender Mainstreaming in Poverty Eradication and the Millennium Development Goals: A Handbook for Policy-makers and Other Stakeholders*. IDRC. Ottawa <http://www.idrc.ca/openebooks/067-5/#page>
- Kemp, J. et al. 2005. *Can Malawi's poor afford free tuberculosis services? Patient and household costs associated with a tuberculosis diagnosis in Lilongwe*. World Health Organization Bulletin, WHO. Geneva. <http://www.who.int/bulletin/volumes/85/8/06-033167/en>
- Kirui, A. 1994. *Proceedings of the Women in Livestock Development (WiLD) East Africa Workshop*. Heifer Project International. Mombassa, Kenya.
- Kitalyi, A. 1996. *Socio-economic aspects of village chicken production in africa : the role of women, children and non-governmental organisations*, presented at the XX World's Poultry Congress, New Delhi, INDIA. <http://www.fao.org/DOCREP/004/AC150E/AC150E05.htm>
- Kobling, S. 1989. Abschlussbericht, Station Avicole Dosso, Niger. GTZ
- Köhler-Rollefson, I. 2000. *Management of Animal Genetic Diversity at Community Level* GTZ. Eschborn. http://www.pastoralpeoples.org/docs/mgmt_animal_genetic_diversity.pdf
- Kristjanson, P., Waters-Bayer, A., Johnson, N., Tipilda, A., Njuki, J., Baltenweck, I., Grace, D., and MacMillan, S. 2010. *Livestock and Women's Livelihoods: A Review of the Recent Evidence*. Discussion Paper No. 20. ILRI, Nairobi http://mahider.ilri.org/bitstream/10568/3017/2/Discussion_Paper20.pdf
- Kurwijila, L., Bennett, A. 2011. *Dairy development and Institutions in East Africa: Lessons learned and options*. Food and Agriculture Organization of the United Nations, Rome <http://www.fao.org/docrep/013/k9649e/k9649e00.pdf>
- Latigo, A., Ironmonger, D. 2004. *The Missing Link in Growth and Sustainable Development: Closing the Gender Gap*, An Issues Paper. ADB/ECA SYMPOSIUM ON GENDER, GROWTH AND SUSTAINABLE DEVELOPMENT, Kampala. <http://www.uneca.org/cfm/2004/documents/Gender%20doc.pdf>
- Maarse, L., Wentholt, W., and Chibudu, A. 1998. *Making Change Strategies Work: gender sensitive, client oriented livestock extension in Coast Province, Kenya*. KIT, Amsterdam.
- Kachani, M. 2011. *Management of the dog population for the control of zoonotic diseases*. http://www.fao.org/fileadmin/user_upload/animalwelfare/Malika_Kachani_Echinococcus.pdf
- Mack, S. et al. 2005. *The contribution of poultry to rural development*, in World's Poultry Science Association, Vol. 61. <http://www.hpai-research.net/docs/resources/WPSJ%20%28Mack%20%202005%29%20Contribution%20of%20poultry%20to%20rural%20development.pdf>
- Mehra, R., Rojas, M. 2008. *A Significant Shift: Food Security and Agriculture in a Global Marketplace*. ICRW. Washington, DC <http://www.icrw.org/publications/women-food-security-and-agriculture-global-marketplace>
- Meinzen-Dick, R., R. Pradhan and M. Di Gregorio 2005. *Understanding Property Rights* in CAPRI Research Brief, Collective Action and Property Rights for Sustainable Rangeland Management. Washington: CGIAR. <http://www.icrw.org/files/publications/A-Significant-Shift-Women-Food%20Security-and-Agriculture-in-a-Global-Marketplace.pdf>
- Miller, B. 2001. *Rights to Livestock: Empowering women to achieve food security, a 20/20 Vision of Food, Agriculture and the Environment*. IFPRI. Washington, DC. http://www.ifpri.org/sites/default/files/publications/focus06_04.pdf

- Miller, B. 2000. *Increasing benefits to women through livestock projects*. Heifer Zimbabwe Gender Workshop Report. Gweru.
- Miller, B. 2002. *Trip report for Zambia*. Heifer International. Lusaka.
- Misterseed.com. 2011. *1,000 Kikuyu Proverbs*. <http://www.misterseed.com/link%20pages/PROVERBS2.htm>
- Mugunieri, L. et al. 2002. *Animal Health Service Delivery Systems in Kenya's Marginal Areas under Market Liberalization: A Case for Community-Based Animal health Workers*. IFPRI. Washington
- Niamir-Fuller, M. 1994. *Women Livestock Managers in the Third World: A focus on technical issues related to gender roles in livestock production*. IFAD, Rome. http://www.ifad.org/gender/thematic/livestock/live_toc.htm
- Mullins, G., L. Wahome, P. Tsangari and L. Maarse (1996). *Impact of Intensive Dairy Production on Smallholder Farm Women in Coastal Kenya*. Human Ecology, 24, 2.
- Ndungu LW, Randolph TF, Coetzee G, Krecek RC, Perry BD. 2004. *An economic assessment of current delivery pathways for the control of tick-borne diseases in Kenya*. International Livestock Research Institute: Nairobi, Kenya.
- Njuki, J and Puskur, R. 2010. *Gender and Livestock Research in ILRI, Nairobi*.
- Njuki, J, Poole, Johnson, Baltenweck, Pali, Lokman and Mburu. 2011. *Gender, Livestock and Livelihood Indicators*, ILRI, Nairobi. <http://mahider.ilri.org/bitstream/10568/3036/1/Gender%20Livestock%20and%20Livelihood%20Indicators.pdf>
- Nori, M. 2008. *Milking Drylands: Gender networks, pastoral markets and food security in stateless Somalia*. Thesis, Wageningen University, Wageningen, NL. (Available from <http://library.wur.nl/WebQuery/wda/lang/1929205>)
- Nori, M, Kenyanjui, M, Yusuf, M, and Hussein, F. Mohammed.(2006): *Milking drylands:: the emergence of camel milk markets in stateless Somali areas*. Nomadic Peoples 10(1):9–28.
- Oboler, R. *Women, Power and Economic Change: The Nandi of Kenya*. Stanford University Press, Stanford, CA. 1985.
- Okumba, M.2010. Community Animal Health Network (CAHNET) *Experience sharing workshop for stakeholders and members, Uganda*. http://www.cahnetfrica.net/pages/public/docs/pdf/rpt_stakeholders_workshop_uganda%282010%29.pdf
- Oladele, O. and Monkhei, M. 2008. *Gender ownership patterns of livestock in Botswana*. Livestock Research for Rural Development 20 (10). <http://www.lrrd.org/lrrd20/10/olad20156.htm>
- Otte, Joachim, Rachel Nugent and Anni McLeod, 2004. *Transboundary animal Diseases: assessment of socio-economic impacts and institutional response*. Livestock Policy Discussion Paper No. 9, FAO, Rome.
- Peacock, C. 1996. *Improving Goat Production in the Tropics*. Oxfam (UK and Ireland), Oxford.
- Peterman, A. Behrman, J. Quisumbing, A. 2010. *A Review of Empirical Evidence on Gender Differences in Nonland Agricultural Inputs, Technology, and Services in Developing Countries*. IFPRI. Washington, DC. <http://www.ifpri.org/publication/review-empirical-evidence-gender-differences>
- PigTrop: The Information Center about Pig Production in Developing Countries, Cirad. Accessed 23 February 2011. http://pigtrop.cirad.fr/subjects/socio_economy_in_pig_production_sector
- Quisumbing, A., Pandolfelli L. 2010. *Promising approaches to address the needs of poor female farmers: Resources, constraints and interventions*. World Development 38(4):581–592. <http://www.ifpri.org/publication/promising-approaches-address-needs-poor-female-farmers-0>
- Rasmussen, S. 2000. *Gender, Aging and Post- childbearing experience in a Tuareg Community*, in Hodgson, D. (ed), *Rethinking Pastoralism in Africa*. James Curry Oxford
- Riethmuller, P. 2002. *Some issues associated with the livestock industries of the Asia-Pacific Region*. RAP publication no.2002/06. Food and Agriculture Organization of the United Nations, Regional Office for Asia and the Pacific Bangkok www.aphca.org/publication/book.html
- Riise, JC. Permin, A. Kryger, KN. 2008. *Strategies for developing family poultry production at village level: experiences from West Africa and Asia*. Network for Smallholder Poultry Development (NESPOD), Dyr-laegevej 2, 1870 Frederiksberg, Denmark.
- Robinson, A. 2003. *Veterinary public health and control of zoonoses in developing countries*, Summary from the FAO/WHO/OIE electronic conference, Rome. <ftp://ftp.fao.org/docrep/fao/006/Y4962T/Y4962T00.PDF>

- Rota, A. Sperandini, S, and Hartl, M. 2007. *Gender and Livestock: tools for design*. IFAD Thematic Paper. Rome. <http://www.ifad.org/lrkm/events/cops/papers/gender.pdf>
- Rubin, D. 2009. *Integrating Gender In Agricultural Value Chains (Ingia-Vc) In Tanzania*. Greater Access to Trade (GATE) TRIP REPORT, USAID, Washington, DC.
- Rubin, D, Missokia, E. 2006. Gender Audit for USAID/Tanzania, Washington DC. http://pdf.usaid.gov/pdf_docs/Pnadh239.pdf
- Rubin D, Tezera S, Caldwell L. 2010. *A calf, a house, a business of one's own: Microcredit, asset accumulation, and economic empowerment in GL CRSP projects in Ethiopia and Ghana*, Global Livestock Collaborative Research Support Program.
- Schelling, E. 2007. *Human and Animal Vaccination Delivery to Remote Nomadic Families, Chad*. In Emerging Infectious Diseases Vol. 13, No. 3. www.cdc.gov/eid
- Smith-Oboler, R. 1996. *Whose Cows are They Anyway?: Ideology and Behaviour in Nandi Cattle Ownership and Control*. Human Ecology, 24, 2
- Sonaiya, EB, and Swan, SEJ. 2004. *Small-scale poultry production: a technical guide*. 2004. FAO, Rome. <ftp://ftp.fao.org/docrep/fao/008/y5169e/y5169e00.pdf>
- Staal, S., Poole, J., Baltenweck, I., Mwachero, J., Notenbaert, A., Thorpe, W., Nzuma, J., Herrero, M. 2009. *Targeting strategic investment in livestock as a vehicle for rural livelihoods*. ILRI working document. International Livestock Research Institute. Nairobi
- Stewart, Susan. 1998. *Learning Together: the agricultural worker's participatory sourcebook*. Heifer International. Little Rock.
- Swanepoel, F. et al. 2010. *The Role of Livestock in Developing Communities: Enhancing Multifunctionality*. South Africa. <http://mahider.ilri.org/bitstream/10568/3003/1/roleLivestockFarming.pdf>
- Tadelle, D., Alemu, Y. & Peters, K.J. 2000. *Indigenous chickens in Ethiopia: genetic potential and attempts at improvement*. World Poultry Science Journal, 56(1): 45- 54.
- Talle, A. 1988. *Women at Loss: Changes in Maasai Pastoralism and Their Effects on Gender Relations*. Department of Social Anthropology, University of Stockholm.
- Tangka, F, Ouma, E, Staal, S. 1999. *Women and the Sustainable Development of Market-Oriented Dairying: Evidence from the Highlands of East Africa*, ILRI. Addis Ababa. <http://www.smallholderdairy.org/publications/Conference/Tangka%20et%20al-1999-Women%20&%20dev%20of%20market%20oriented%20dairy-ISDRC.pdf>
- Tipilda, A., Kristjanson, P. 2008. *Women and Livestock Development: A Review of the Literature*, ILRI Innovation Works Discussion Paper. Nairobi.
- Thornton, PK. et al. 2003. *Locating poor livestock keepers at the global level for research and development targeting*. Land Use Policy 20(4):311–322.
- Valdivia, C. 2001. *Gender, livestock assets, resource management, and food security: lessons from the SR-CRSP*. Agriculture and Human Values 18(1):27–39.
- Tripp, Aili Mari. 2004. *The Changing Face of Africa's Legislatures: Women and Quotas*, in Ballington, Julie (ed). *The Implementation of Quotas: African Experiences*, Stockholm: International IDEA.
- United Nations Development Programme (UNDP). 2000. *Learning and Information Pack for Gender Mainstreaming*. <http://www.undp.org/women/mainstream/docs/Mainstreaming1.pdf>
- Wabekbon Development Consultants. 2009. *Women's Milk and Small Ruminant Marketing in Mandera Triangles (Kenya, Ethiopia and Somalia)*, CARE-Ethiopia. <http://www.elmt-relpa.org/FCKeditor/UserFiles/File/elmt/200910/Final%20Women%20milk%20and%20Shoat%20tradings%20final%201%5B1%5D-edited.pdf>
- Waters-Bayer, A. 1985. *Dairying by settled Fulani women in Central Nigeria and some implications for dairy development*. ODI Pastoral Development Network Paper, Overseas Development Institute, London.
- Waters-Bayer, A, Letty, B. 2010. Chapter 3. *Promoting Gender Equality and Empowering Women through Livestock in The Role of Livestock in Developing Communities: Enhancing Multifunctionality*. South Africa. <http://mahider.ilri.org/bitstream/10568/3003/1/roleLivestockFarming.pdf>

Waters-Bayer, A. 1985. *Dairying by settled Fulani women in Central Nigeria and some implications for dairy development*. ODI Pastoral Development Network Paper, Overseas Development Institute, London.

Waters-Bayer, A, Letty, B. 2010. Chapter 3. *Promoting Gender Equality and Empowering Women through Livestock in The Role of Livestock in Developing Communities: Enhancing Multifunctionality*. South Africa.
<http://mahider.ilri.org/bitstream/10568/3003/1/roleLivestockFarming.pdf>

Yisehak, K. 2008. *Gender responsibility in smallholder mixed crop–livestock production systems of Jimma zone, South West Ethiopia*. Livestock Research for Rural Development. 20:11. <http://www.lrrd.org/lrrd20/1/yise20011.html>

World Bank/FAO/IFAD, 2009. *The Gender and Agriculture Sourcebook*. Washington
<http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTARD/EXTGENAGRLIVSOUBOOK/0,,menuPK:3817510~pagePK:64168427~piPK:64168435~theSitePK:3817359,00.html>

WHO. 2006. *The control of neglected zoonotic diseases: a route to poverty alleviation*, Report of a Joint WHO/DFID-AHP Meeting with the participation of FAO and OIE Geneva http://www.who.int/zoonoses/Report_Sept06.pdf

WHO/HTM/NTD/2009. *Neglected tropical diseases, hidden successes, emerging opportunities*.
http://whqlibdoc.who.int/publications/2009/9789241598705_eng.pdf

WHO. 2009. *Integrated Control of Neglected Zoonotic Diseases in Africa*, Zoonoses and Veterinary Public Health, Department of Food Safety, Zoonoses, and Foodborne Diseases, Sustainable Development and Healthy Environments. Geneva
http://www.who.int/neglected_diseases/zoonoses/en/

Women for Change (WFC), 2000. *Gender Training Manual*. Lusaka.



Contact GALVmed:

UK Office:

Doherty Building, Pentlands Science Park, Bush Loan, Edinburgh EH26 0PZ, UK

Tel: **+44 (0)131 445 6264**

Fax: **+44 (0)131 445 6222**

Email: **info@galvmed.org**



Africa Office:

**1st Floor West Wing, A.K.D. House II, Fairgrounds, Plot 54478, Gaborone – Botswana
P.O. Box 45108, Gaborone**

Tel: **+267 3121 202/203/209**

Email: **info@galvmed.org**

www.galvmed.org

Currently funded by:

BILL & MELINDA
GATES foundation



GALVmed is a registered charity and not-for-profit global alliance of public, private and government partners.

Registered Charity in Scotland: SC039197 Registered Charity in England and Wales: 1115606

Registered Name: Global Alliance for Livestock Veterinary Medicines.

Registered in England and Wales No. 5393391, limited by guarantee

Registered Office: Maclay Murray & Spens, One London Wall, London EC2Y 5AB, UK



Protecting Livestock – Saving Human Life