

# Part 1 Setting the scene

*Elijah Agevi*  
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**ITDG is committed** to working in partnership with like-minded organizations in pursuit of its principles and in the development and use of practices that benefit the poor. All of ITDG's work is geared towards a singular vision – a world free of poverty in which technology is used equitably for the benefit of all.

This workshop is a timely event on a very important issue, the recognition of and protection of the rights of livestock keepers, which hitherto have been ignored. The Conference of the Parties to the Convention on Biodiversity (COP V) calls upon all humanity to realize that '...we need each other, to protect the world's rich and wonderful life forms'. Livestock breeding is an

important sector in the economy and in the livelihoods of a huge number of people and as such has to be mainstreamed to harness its potential on poverty reduction. Some of the most pressing inadequacies in the sector relate to poor infrastructure, neglect of arid lands management, policy development, and environmental degradation.

Recent developments carry the risk of biodiversity loss and the appropriation of animal genetics by a few parties. The participants should critically examine these issues and develop a comprehensive strategy to deal with them. Special appreciation is due to the EED (Evangelischer Entwicklungsdienst) of Germany, CTA, GTZ, FAO, and Misereor of Germany, for generously supporting the workshop.

# Opening

*Hon. Joseph K Munyao MP*

*Minister for Livestock and Fisheries Development, Kenya*

*(read by Mr Kiptarus)*

**I**t gives me great pleasure to be invited here today to officiate at this international meeting of indigenous livestock breeding communities from the region. May I also take this opportunity to welcome all visitors to Kenya and wish you a pleasant stay here.

I am delighted that facilitators of this workshop, namely, the Intermediate Technology Development Group (ITDG) – East Africa and the League for Pastoral Peoples have selected Kenya as the venue for this crucial meeting. May I take this early opportunity to thank you for your continued support for livestock farmers in the marginalized areas of this country.

Kenya's policy objective for the livestock sector seeks to increase productivity in order to attain self-sufficiency in milk, meat, livestock production and fisheries. Additionally, it is our objective to generate a surplus for the export market. Kenya has a diverse population of animals that are traditionally our resource of food and income, and provide various sociocultural functions. The farm animal genetic resources comprise of indigenous, exotic and crossbred types. The Ministry of Livestock and Fisheries Development continues to encourage the development of emerging livestock.

These are livestock species that have until recently failed to receive adequate attention, most notably, the crocodile, ostrich, guinea fowl, quail, donkey and snakes for venom and skins.

The population of the various livestock species in Kenya constitutes over 9 million zebu cattle, 3.2 grade dairy cattle, 8 million sheep, 10 million goats, 800,000 camels, 330,000 pigs, 400,000 rabbits and over 27 million poultry.

Agriculture is the base for Kenya's economy, contributing directly an estimated 25% of the gross domestic product. An additional 30% is derived indirectly, through linkages with manufacturing and other economic activities.

The livestock sector accounts for approximately 30% of the farm-gate value of our agricultural produce. The livestock sector also contributes 10% of our national export earnings and employs over 50% of the agricultural labour force. I need not therefore underscore the significance of this sector to our pastoral communities as the sector impinges directly on their livelihood.

I am informed that this workshop targets representatives of indigenous livestock breeding communities and non-governmental organizations (NGOs) working with these groups. These communities continue to play a most significant role in the management and conservation of animal genetic resources. Any efforts geared at improving their performance are therefore deeply appreciated.

The indigenous livestock breeds are known to possess many desirable genetic traits such as disease resistance, fertility and

general fitness, which are nonexistent in the genetic make-up of high-performance animals.

In Kenya over 50% of livestock inhabit the arid and semi-arid lands, which have harsh climatic conditions. The government, in liaison with relevant stakeholders, intends to implement programmes designed to address problems relating to the conservation, management and utilization of indigenous livestock species and breeds.

I note that despite a growing global awareness of the importance of animal genetic resources, little attention has been paid to the role of communities in managing these resources. It is in this regard that I commend the organizers of this workshop for bringing all the stakeholders in animal

genetic resources together to provide recommendations which encompass:

- Official recognition of the enormous contribution of indigenous livestock breeding communities for future food security.
- Acknowledgement of the significance of their traditional knowledge for upholding animal genetic diversity.
- Safeguarding their property rights as well as privileges according to the Convention on Biological Diversity in the interest of global justice.

I am certain that by sharing experiences of the different participants at the workshop, you will have fruitful deliberations and that you will be able to meet the specified goals.

# Indigenous livestock breeding communities and farm animal genetic resources in the context of global development trends

*Ilse Köhler-Rollefson, League for Pastoral Peoples  
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**I**ndigenous livestock breeding communities are communities which have a tradition of livestock breeding and for whom their animals have social and cultural meaning. This is reflected in:

- An identity based on the community's association with animals.
- Often a myth of origin linking community to a particular breed or species.
- Animals represent social currency (are given as dowry or bride wealth).
- Often animals are shared within the community, while exchange with outsiders is restricted.
- Animals have a ritual function.

## Types of indigenous livestock breeding communities

**Pastoralists** Pastoralists depend on livestock as the main source of their livelihood. They generally do not own land, but rely on common property resources. Pastoralism is a predominant livelihood strategy in areas unsuitable for crop cultivation (deserts, steppes, high altitude zones, tundra).

**Examples** Raika, Maasai, Mongolian people, Bedouin, Saami.

**People with traditional lifestyles** These are people who lead lifestyles such as shifting cultivation, for whom livestock is significant source of livelihood.

**Examples** Adivasi in India (chicken and goat breeders), Mithan keepers in north-

east India, buffalo-keeping groups in Southeast Asia.

Indigenous livestock breeding communities act as custodians to many unique breeds (farm animal genetic resources), because they have retained traditional lifestyles, adhere to their cultural values, and often have not been integrated into the wider or market economy.

## Global trends in livestock production and research

**The Livestock Revolution** The demand for livestock products in developing countries is predicted to double by 2020. Intensive and industrial livestock production systems are expanding. This will reduce prices for livestock products and push smallholder livestock keepers and pastoralists out of the market.

**Technological advances** After artificial insemination and embryo transfer, scientists now look to genome analysis and genetic engineering in order to create genetically modified animals with novel traits.

Genome analysis enables scientists to correlate parts ('sequences') of the genome with specific genetic traits.

Scientists envision that by means of genetic engineering, animals can be created that combine high productivity with disease resistance. An example is the transfer of worm resistance from Red Maasai sheep into Merino.

Is this realistic?

**No:** 'There are many technical difficulties, and genetically modified animals have defects.'

**Yes:** 'Techniques are well advanced, but companies fear backlash of public opinion.'

In the 21st century, 'sequenced genomes, transgenic livestock and cloned animals will possibly become the norm' (Rothschild, 2002).

With respect to the Fayoumi chicken: 'We can pinpoint traits at the DNA level and use genetic engineering methods to transfer the traits to other chickens without all the bad baggage.'

### Indigenous breeds

Renewed interest in indigenous livestock breeds is due to:

- Rapid extinction of domestic animal diversity/breeds.
- Indigenous breeds have traits which have disappeared from high performance breeds.
- Breeding for disease resistance – a new trend.

A large number of breeds can be found in remote areas: 'When the number of breeds is expressed per million people, it becomes clear that peripheral and remote countries and provinces have disproportionately large numbers of breeds' (Hall and Ruan, p. 820 in *Conservation Biology* 7(4), 1993).

### Intellectual property rights

Genetically engineered animals may be patentable in some countries. The patent also extends to all offspring of patented animals.

Indigenous breeds which have developed over centuries and as a result of in-

digenous knowledge about animal breeding are not protected against biopiracy.

### Convention on Biological Diversity

Article 8j of the Convention on Biodiversity calls for recognition of the vast amount of *in-situ* conservation carried out by traditional communities.

The International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) established the concept of 'Farmers' Rights', which is based on the past, present and future contributions of farmers in conserving crop genetic diversity.

Farmers Rights entitle farmers to:

- Protection of traditional knowledge relevant to plant genetic resources.
- Save, use, exchange and sell farm-saved seed.
- Participate in decision-making and in the fair and equitable sharing of benefits arising from the use of plant genetic resources.

### Key questions

- Should (and can) indigenous livestock breeders protect their breeds against biopiracy?
- What conditions must obtain so that pastoralists can continue to manage their breeds sustainably?
- Do we need an equivalent to Farmers' Rights – 'Livestock Breeders Rights'? What should they entail?
- Is genomics research going to benefit pastoralists and indigenous livestock breeders? Should it be supported with public money?
- Should we develop an alternative vision for livestock development?

### Industrialized animal production

**Positive impacts** Cheap supply of animal products (meat, eggs, milk).

**Negative impacts** Loss of rural employment opportunities, dependence on grain imports, pollution, lack of animal welfare, loss of genetic diversity.

### **Alternative vision**

Endogenous livestock development, building on:

- Local genetic resources.
- Local institutions and knowledge.
- Local feed supplies.

## Comments and discussion

FAO has published a report on diversity in breeds and on conservation, which clearly documents alarming trends in the status of the world's FAnGR.

The new Kenyan government is committed to educating the people on the importance of biodiversity and to collect, analyse, categorize and document indigenous knowledge. It is also committed to redressing the problems facing indigenous breeding communities and realizes the need to stem the loss of local breeds.

# Indigenous knowledge about animal breeding

*Ilse Köhler-Rollefson*  
League for Pastoral Peoples

**M**ore than 7000 farm animal breeds are registered in FAO's global database. The vast majority of these breeds have been developed by rural communities, without any help from animal scientists. How did the communities do it? Or was it only the environment?

## Indigenous knowledge

Indigenous knowledge about animal breeding and breeds refers to the knowledge that traditionally animal breeding communities apply to manipulate the genetic composition of their livestock holdings. It includes knowledge and experience about genetic attributes of livestock and inheritance, as well as conscious strategies and social mechanisms that influence the gene pool. This form of indigenous knowledge includes:

- Cultural identity
- Social mechanisms
- Breeding decisions
- Breeding management
- Cognitive processes.

**Sense of stewardship and identity** Some traditional cultures, especially pastoralists, have an identity based on their relationship with a particular species. They have a feeling of responsibility for the welfare of their animals. Examples include the Raika in India (camels and cattle), and the Fulani and Maasai in Africa (cattle).

**Social breeding mechanisms** Socially embedded customs influencing the gene-pool include:

- Taboos on selling female animals to anybody outside the community.
- Fixed rules for passing on animals from one generation to the next.
- Sharing mechanisms.

**Socio-religious practices** These include:

- Devoting male animals to the memory of an ancestor (for example, the 'Surajka-sant' and Brahmini bull in India).
- Devoting animals to gods.

**Breeding decisions** Breeding decisions include the objective and goal:

- **Breeding objectives** are traits that are necessary for a breed to fulfil its role in the overall production system. They are usually multifaceted.
- **Breeding goals** include the personal preferences of the owner, which do not necessarily relate to the functionality of the animal.

**Selection criteria** These include factors such as the ability to put on fat, good maternal behaviour, walking ability, drought resistance, love of the owner, and manageability.

**Breeding management** Management methods include castration, culling, the testing of offspring, maintenance of a 'community bull, and crossbreeding.

**Cognitive processes** These include the identification of individual animals and the keeping of pedigrees.

### **Documenting indigenous knowledge**

Documenting indigenous knowledge of livestock breeding and breeds has several benefits:

- It acts as a source of information about existing breeds that have escaped attention of scientists.
- It records the intellectual contribution of livestock-breeding communities.
- It is a source of empowerment and pride for those communities.

A documentation method must:

- Be efficient, reliable and practical.
- Serve as foundation for a community-based management of animal genetic resources project.
- Safeguard the breed against possible biopiracy.

### **The LIFE framework**

The LIFE (Local Livestock For Empowerment of Rural People) approach is a way to document this indigenous knowledge.

- It understands breeds as products of social networks.
- It is not a fixed method, but a conceptual framework.
- It uses participatory methods and is flexible rather than being based on predetermined questionnaires.

The LIFE approach covers five aspects:

#### **1 Social and cultural context**

- Is this breed associated with a particular community? What is the nature of the underlying social network?
- Are there any breeding institutions, such as communally kept male animals? Are

animals bought from outside or born in the herd?

- Cultural significance: is there a myth of origin?
- Social meaning: Are animals given as dowry, as bride wealth, or as gifts during life-cycle events?

#### **2 Ecological and production context**

- What is the breeding area?

#### **3 Livelihood significance (types of products)**

- What purposes do animals fulfil in peoples' lives ?

#### **4 Management of the gene pool**

- Social mechanisms: are there taboos on selling female animals? Are animals devoted to gods?
- Breeding goals: what are the selection criteria for male animals? For females?
- Other strategies: what other strategies are used: castration, offspring testing, avoidance of inbreeding?
- Do the livestock breeders keep (mental) records of their animals' pedigrees?

#### **5 Population**

- Size: how many animals are there?
- Trends: are the numbers constant, rising or falling?

### **Comments and discussion**

- The erosion of taboos, such as that on selling of camels in the Borana community, is threatening the conservation of genetic diversity.
- The influence of modern values on traditional communities is threatening animal breeding practices. In India, the low status of the castrator's job has led to a large number of uncastrated bulls. This is limiting the ability of breeders to se-



- lect sires and to trace the pedigree of their animals.
- The sale of female animals to people outside the community is now prevalent among the Maasai and can be used as a channel for biopiracy (Lengisugi).
  - The sale of female animals is a dangerous development as their presence is central to the survival of the herd. This has always been a way of ensuring genetic continuity, and females would never be sold even in the harshest of times.
  - Communities generally sell only the poor pedigree animals (especially females). The finer specimens are closely guarded for the improvement of the herd. Within some communities a person receiving a gift of a heifer must give back the first female offspring to his benefactor to allow him retain the bloodline.
  - The trade in animals such as camels to the Arab world is an emerging avenue by which genes may be appropriated. It is of paramount importance to trace the origin and spread of breeds.
  - Molecular genetic research has made it possible to trace the origin of a certain breed (Köhler-Rollefson).
  - So important is the female that discerning breeders are known to travel up to a hundred kilometres in search of females with a particular trait.
  - Pastoralists have a strong cognitive ability and a keen eye for traits in their animals, so that they can easily identify a specific animal in a big herd, and realize when it is lost. This gives them an edge in selecting the best pedigree and preserving it.
  - Proper documentation of breeds is of no benefit to the communities until the people on the ground are aware of their rights. Until then there is no guarantee that such documentation will play a role in the preservation of the community's rights to the breeds (Mpoke).
  - Communities are not totally ignorant or naive, but there is a problem of information flows. National governments are not allocating resources for information dissemination and as such are unwilling to hold in trust the rights of the communities. Documentation puts information about genetic assets into the public domain. This makes it hard for people to lay exclusive claim over the resources, since they are then regarded as 'prior art' (Ekpere).
  - Moving and sharing desirable sires is not a problem per se, but documentation and dissemination of this information may make its progeny attractive to biopirates and corporations who would want to appropriate genetic resources (Mulvaney).
  - KIPi supports the documentation of breeds but not down to the genome level. A blanket moratorium on patents is best way forward on ensuring free flow (Otswong'o).
  - There is a need to take steps for stemming the erosion of indigenous knowledge and the need to conserve rather than change indigenous knowledge. But access to new technologies is also needed (Njoro).
  - It is necessary to adopt new approaches for conserving local knowledge. As the issue of patents becomes more critical, these new approaches will be needed even more (Vivekanandan).