

# Introduction

In the course of 12 millennia, livestock keepers have diversified a handful of species into more than 7600 reported breeds. They achieved this by introducing livestock into new ecological zones and by subjecting them to both natural and culturally defined selection pressures. These biocultural processes have always been dynamic: new breeds emerged and old ones disappeared as the needs of society changed. However, currently there is an alarming trend towards uniformity in the world's production systems – driven by the globalization of livestock production inputs and livestock markets. As a result, breeds are disappearing rapidly – 20 percent of known breeds are now classified as being at risk, and 9 percent are reported to be extinct (FAO, 2007a). The world's commercial supply of animal products has become dependent on an ever narrower range of breeds and strains, limited to those that are profitably utilized in high external input production systems.

Simultaneously, the production systems that have supported livestock diversity in the past are disintegrating. Pastoralists are especially affected by loss of access to natural resources, particularly grazing land and water. Small-scale livestock keepers are driven into market economies on unfavourable terms or pushed out of existing local markets. Mechanization of farm activities and transportation threatens draught breeds and species (although rising fuel prices in some countries are already reversing this trend). Inappropriate policies and management practices, including subsidies favouring large-scale production and indiscriminate cross-breeding, significantly contribute to genetic erosion.

These developments are of great concern for the future of humanity, because without a broad portfolio of animal genetic resources we will limit the options available for adapting the livestock production systems of the future to challenges such as climate change and emerging diseases. Breeds that are of little practical use today may prove very valuable under future conditions. The value of animal genetic diversity thus goes beyond benefits derived from its current use: so-called "option values" are also important.

Animal health is one field in which the importance of breed diversity for future production is already recognized, as new diseases keep emerging and the sustainability of current disease management strategies is threatened by the spread of resistance to drugs and pesticides among pathogens and disease vectors. Studies have shown that particular breeds show high levels of resistance or tolerance to economically important diseases and parasites, including trypanosomosis, gastro-intestinal nematodes, tick burden and various tick-borne diseases. Such traits are prevalent among breeds kept by small-scale livestock keepers, which tend to have been continuously exposed to diseases and parasites and have over time become adapted to these challenges. In the case of emerging diseases, it can be expected that in many cases natural selection will over time give rise to adapted, genetically resistant or tolerant, populations; natural selection, however, requires genetic diversity to work upon.



There is an urgent need to ensure that production systems which conserve biodiversity survive. Clearly, however, not all small-scale livestock production systems should be preserved in static form. Traditional livelihoods should not be destroyed, but new opportunities are also needed. Conserving breeds and other types of biodiversity has to go hand in hand with securing and improving the livelihoods of rural people. Policies favouring diverse livestock production systems can, if carefully formulated and applied, also enhance poverty alleviation. Promoting niche market development for products derived from local breeds and adding value to their primary products offer important opportunities to promote these objectives.

Because breeds are shaped by the environment and reflect community values and goals, conservation can best be achieved in these specific contexts. Sometimes, traditional livestock keepers may continue to keep their breeds out of a sense of moral obligation and because the animals are considered sacred or because they provide certain ritual functions that cannot easily be transferred to exotic animals. Economic incentives are, however, essential for ensuring breed survival *in situ*. The existence of livestock breeds with specific grazing habits and the ability to thrive in specific environments is also essential to achieve broader biodiversity conservation goals.

Despite numerous pressures, many small-scale livestock keepers continue to manage animal genetic resources in their ecosystems of origin and thereby conserve their adaptive traits and option values. The importance of their role in the use, development and conservation of livestock diversity is underlined by the fact that while about two-thirds of the breeds reported to the Domestic Animal Diversity Information System ([www.fao.org/dad-is](http://www.fao.org/dad-is)) are raised in developing countries, 60 percent of these countries have reported no structured breeding programmes in any of the five major livestock species (cattle, sheep, goats, pigs and chickens) (data from FAO, 2007a).

There are several international agreements and processes which seek to support this important role of small-scale livestock keepers.

The *Global Plan of Action* (FAO, 2007b) adopted by the International Technical Conference on Animal Genetic Resources for Food and Agriculture, acknowledges the contribution of livestock keepers in indigenous and local production systems to the domestication, development, maintenance and conservation of animal genetic diversity. Strategic Priority 5 and Strategic Priority 6 of the *Global Plan of Action* make particular reference to indigenous and local production systems and smallholder farmers and pastoralists.

The *United Nations Permanent Forum on Indigenous Issues*, at its seventh session, requested FAO to give priority to Strategic Priority 6, and to further develop approaches to implementing it, including rights-based approaches and payment for services that support the custodianship of local breeds by indigenous peoples (UNPFII, 2008). The Forum also recommended the provision of technical and financial support to protect and nurture indigenous peoples' natural-resource management, environmentally friendly technologies, biodiversity and cultural diversity, and low-carbon traditional livelihoods (e.g. pastoralism). It further recommended that discussions and negotiations on strengthening the links between climate change, biodiversity and cultural diversity under the Convention on Biological Diversity or the United Nations Framework Convention on Climate Change ensure the



effective participation of indigenous peoples.

The *United Nations Convention on Biological Diversity* recognizes the important role of indigenous and local communities in achieving the three objectives of the Convention. At its Ninth Meeting, the Conference of the Parties to the Convention specifically acknowledged the many important contributions of indigenous and local communities, including farmers and livestock keepers, to the conservation and sustainable use of agricultural biodiversity, in particular in centres of origin of agricultural biodiversity.<sup>1</sup>

Finally, the *FAO Conference* specifically requested the Commission on Genetic Resources for Food and Agriculture to address the role of small-scale livestock keepers in the management of animal genetic resources in its report to the 2009 Session of the Conference.

The purpose of this booklet is to provide an overview of the role of small-scale livestock keepers in the sustainable management of animal genetic resources and provide suggestions on how this role could be strengthened for the benefit of livestock biodiversity and poverty alleviation.

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<sup>1</sup> Conference of the Parties to the CBD Decision IX/1: *In-depth review of the programme of work on agricultural biodiversity* (available at <http://www.cbd.int/decision/cop/?id=11644>).

