Indian J. Plant Genet. Resour. 29(3): 431-433 (2016)
DOI 10.5958/0976-1926.2016.00093.0

Access and Benefit-Sharing of Animal Genetic Resources: About the Need to Think Out of the Box

Ilse Koehler-Rollefson
League for Pastoral Peoples and Endogenous Livestock Development (LPP), Pragelatostr. 20, 64372 Ober-Ramstadt, Germany

When the United Nations Convention on Biological Diversity (CBD) was first conceived in 1992, it put biodiversity under national sovereignty and sought to reward and incentivize conservation of wild biodiversity in the "South" by making the "North" share the benefits from its commercialization. As soon as the focus shifted to plant genetic resources (PGR) for food and agriculture, it was realized that this principle could not be easily transferred to crops and other farmed plants, as there were often multiple places of origin and crops had been developed incrementally by series of actors. In response, the global community created the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) which establishes a multi-lateral system, Farmers' Rights and set up the Seed Vault in Svalberg where seeds are systematically put in long-term storage so as to be available in the future.

Animal genetic resources (AGR) for food and agriculture present yet a third scenario that will require its own tailor-made version of Access and Benefit-Sharing to achieve the goals of the CBD (Koehler-Rollefson and Meyer, 2014). The purpose of this paper is to provide guidance to decision makers about how to achieve the goals of the CBD with specific reference to animal genetic resources as well as the Global Plan of Action on Animal Genetic Resources.

Animal Genetic Resources

For the sake of simplicity, we can classify AGR into two types (although there are many intermediate types as well):

1. A small number of breeds or strains with vast outputs of one specific product, but equally enormous requirements in terms of feed, veterinary care and artificially optimised and stabilised conditions. These breeds have been developed by companies or breeders' associations, with the help of performance recording and statistical programmes.
2. A multitude of breeds with lower output, but that are multi-functional and bred to take advantage of natural environments and, in the case of pastoral breeds, specifically for capitalizing on environmental variability (Kraetli, 2008). They are the products of networks of breeders with a common culture who inhabit the same landscape, who exchange animals amongst each other according to customary rules and who keep no written records of their animals' performance, although they know them and their genealogies intimately.

It is these latter types of animals that humanity will need for adapting to climate change, for a green economy, and for reducing the climate impact of agriculture. Many of them have been created and developed by pastoralists whose cultures revolve around their animals. Others – especially poultry and pig breeds – are the product of indigenous and smallholder communities.

Pastoral Herds: Mobile Banks of Fitness Genes and Knowledge

Because of their adaptation to harsh climates, pastoralist herds are repositories of fitness genes, especially genes for physiological adaptations to extreme weather and "unconventional feed stuffs", i.e. native vegetation with high fibre and mineral content

But they are more than just assemblages of genes. They also represent knowledge, not only the knowledge of their keepers, but also learned behaviour of animals that is passed on from one generation of livestock to the next: how to make use of natural environments, both individually and in group as a socially organized population. Survival and performance under extreme conditions is thus not just a matter of physiological traits and instinct but also of learned behaviour.

*Author for Correspondence: Email- ilse.koehlerroll@googlemail.com

Table 1. Biocultural Protocols prepared by livestock keeping communities, finalized and in preparation

Community	Breeds	Country	Status
Raika	Camel, Nari cattle, Boti sheep, Sirohi goat	India	finalized
Banni Maldhari	Banni buffalo	India	finalized
Rebari and Jatt	Kutchi and Kharai camels	India	finalized
Bargur Hill cattle	Bargur Hill Cattle	India	finalized
Attappady goat breeders	Attapatty goat	India	finalized
Pullikulum cattle breeders	Pullikulum cattle	India	finalized
Pashtoon	Various breeds	Pakistan	finalized
Samburu	Red Maasai sheep	Kenya	finalized
Golla	Ganjam goat	India	In preparation
Kuruba	Kuruba shepherding system, incl. Deccani breed	India	In preparatiom
Kangayam cattle breeders	Kangayam cattle	India	In preparation
Malgaddi	Brela camel	Pakistan	In preparation

Adapted Breeds Need to be Conserved in their Original Environment

Pastoralist herds represent living heritage that cannot be preserved out of context and in a freezer, but can only be conserved for the future in situ by people, by the herding communities that have developed and stewarded them over centuries. Defreezing semen or embryos, even if they have the right constellation of genes, would not result in the herds of livestock that in the presence convert into proteins for human consumption the vast rangelands found in the most climatically volatile regions of the planet.

Implications for an Access and Benefit-sharing Regime

In order for humanity to have continued access to these (genetic) resources at any time in the future, it has to ensure that they are conserved and managed sustainably in their respective ecological and social contexts. And ensuring this must be the central aim and issue of any access and benefit-sharing regime for animal genetic rather than focusing only on the detail of material transfer agreements. We must understand access not from the narrow perspective of contracts between specific providers and commercial users, but in the wider sense of ensuring access to a pool of genes long into the future. If we fail, we will lose one of our most valuable assets for adapting to climate change, as well as for food production in harsh environments and with minimal inputs.

Strengthening the Role of Communities as Keepers of Living Gene Banks

The Nagoya Protocol for Access and Benefit-Sharing, concluded in 2012, includes the provision for countries to support Community Protocols in which communities detail the genetic resources and traditional knowledge that they are the custodians of, as well as the conditions under which they would give prior informed consent and provide access to their genetic resources and traditional knowledge (FAO, 2015). This represents a fantastic opportunity for countries to better understand their animal genetic resources, the social contexts in which they exist, the threats that they are exposed to and thereby laying the foundation for their long-term conservation.

Biocultural Community Protocols

Livestock keeping communities in several countries have already taken the initiative to develop such Biocultural Community Protocols in which they explain their situation and outline the conditions under which they can continue to act as stewards of and will be able to ensure access in the future (Koehler-Rollefson *et al.*, 2012). By and large these correspond to the points already summarised in the Declaration on Livestock Keepers' Rights (www.pastoralpeoples.org/docs/LKRdeclaration.pdf) that was an eventual output of the Interlaken Process that culminated in the Global Plan of Action for Animal Genetic Resources (Koehler-Rollefson *et al*., 2010).

So far this remains a scattered and underfunded effort which urgently needs to be expanded, with the

goal of eventually creating a global *in-vivo* "Community Breed Repository" as the animal equivalent to the Global Seed Vault and whose benefits can be shared by all of humanity.

Acknowledgements

Thanks are due to Saverio Kraetli and Kate Hardy for their editorial inputs.

References

FAO (2015) The Second Report on the State of the World's Animal Genetic Resources for Food and Agriculture. FAO, Rome.

Koehler-Rollefson I, AR Kakar, E Mathias, HS Rathore and J Wanyama (2012) Biocultural Protocols: tool for securing the assets of livestock keepers. In: *Biodiversity and culture: exploring community protocols, rights and consent* (PLA 65), p. 109- 118.

Koehler-Rollefson, I, E Mathias, H Singh, P Vivekanandan and J Wanyama (2010) Livestock Keepers' Rights: The state of the discussion. *Animal Genet. Resour.* **47**: 1-5.

Koehler-Rollefson, I. and H. Meyer (2014) Access and Benefit-sharing of Animal Genetic Resources – Using the Nagoya Protocol as a Framework for the Conservation and Sustainable Use of Locally Adapted Livestock Breeds. LPP and ABS Initiative, GIZ.

Kraetli S (2008) Time to outbreed animal science? A cattle-breeding system exploiting structural variability: the WoDaaaBe herders in Niger. STEPS Working Paper 7, Brighton: STEPS Centre.