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Local breeds, livelihoods and livestock keepers' rights in South Asia

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Abstract In South Asia, and throughout the developing world, the predominant official approach to livestock development has been improvement of production by means of upgrading local breeds via cross-breeding with exotic animals. This strategy has led to the replacement and dilution of locally adapted breeds with non-native one. This has resulted in an alarming loss that has been estimated by the Food and Agriculture Organization of the United Nations to amount to one breed every two weeks. Based on selected case studies this paper argues that development strategies using locally adapted breeds and species are much more likely to benefit livestock keepers whilst also maintaining domestic animal diversity and bearing a smaller ecological footprint. It also analyses the rationale for “Livestock Keepers’ Rights”, a principle that grew out of the struggle of traditional livestock keepers to retain control over their production resources, such as grazing areas and breeding stock, in the face of unfavourable policy environments.

Keywords Animal genetic resources • Global Plan of Action • Livelihoods • Livestock keepers’ rights • Indigenous livestock • Value addition

Introduction

Over a period of more than 60 years the predominant approach to livestock development in developing countries has been production enhancement by cross-breeding or replacing indigenous breeds with exotic animals (Mathias and Mundy 2005, Templeman and Cardellino 2007). This strategy has led to the widespread replacement and dilution of locally adapted breeds with exotic ones. This has resulted in an alarming loss estimated by the Food and Agriculture Organization of the United Nations (FAO) to amount to one breed in every two weeks (Ricschkowsky and Pilling 2007). Concern about the implications of this trend for future food security and human adaptive capacity has prompted the world community to agree on the Global Plan Action for Animal Genetic Resources. This was finalized during the First International Technical Conference on Animal Genetic Resources held in Interlaken (Switzerland) in September 2007 (FAO 2007a).

There are several pressing reasons for the need to conserve animal genetic resources with adaptive capacity. These include the emergence of new and virulent diseases, consumer demand for ecological livestock products without residues, other changes in consumer preferences and climate change (Ricschkowsky and Pilling 2007, Hoffmann 2008). There has, however, been intensive discussion among scientists, policy makers and other stakeholders about the best approaches to the conservation and sustainable management of animal genetic resources (Gibson et al. 2006). There is a stated general agreement that *in situ* conservation -- maintaining the animals in their natural environment -- is the most suitable and comprehensive strategy for conserving domestic animal diversity. In practice, however, scientists tend to embrace *ex situ* cryo-conservation as more feasible and affordable (Seré et al. 2008). A strong movement led by non-government organizations (NGOs) and livestock keepers/pastoralists nonetheless advocates community-based conservation of local breeds. This so-called

LIFE (“Local Livestock For Empowerment”) movement, which originated in India, sees a correlation between the loss of breeds and the loss of traditional rights of livestock keepers to breed, keep and sustain their livestock on common property resources. Based on this rationale LIFE argues for a set of “Livestock Keepers’ Rights” that - if granted - would enable and encourage livestock keepers to continue making a living from their breeds and thereby achieve the combined effect of conserving diversity and improving rural livelihoods.

This article summarizes some of the recent literature about the ecological and economic advantages of locally adapted breeds. It also provides an overview of the process that has led to the development of Livestock Keepers’ Rights and analyses the current status of acceptance in the international discussion around the sustainable management of animal genetic resources.

General advantages of local breeds

A growing number of comparative studies indicate that within their own production systems, and especially environmental conditions are harsh, local breeds are well positioned to compete with “improved” breeds in terms of productivity (Intercooperation 2000, Anderson 2003, Ayalew et al. 2003). Output may be lower but they also require fewer inputs so that they provide better financial returns to the farmer (Anderson 2003, Scarpa et al. 2003). This applies not only at the farm level but also in a macro-economic context at the national level when all costs required to set up breeding programmes for exotic breeds are factored into the equation (Rege and Gibson 2003).

Ability to forage and digest roughages

Unlike stall-fed high performance breeds the animals kept by pastoralists have undergone selection for their foraging ability. As has been shown by field studies in Niger, groups, such as the WoodDaaBe, systematically select for certain behavioural traits of ranging widely and making use of a large variety of vegetation (Krätli 2006). In Rajasthan (India) local buffaloes forage on their own initiative: for example they climb up mountains in the Aravalli range or swim into the Chillikula Lake in Orissa. When (well-meaning) NGOs replaced these local strains with high-performance Murrah buffalo the latter were unable to use these environments. This not only increased the workload of farmers but also in the case of the Chillikula Lake led to the collapse of the ecosystem (Sahu, pers. comm.)

Local breeds are not only able to exploit the natural vegetation of their environment but also make use of low grade crop by-products that are high in roughage. They are therefore largely independent of expensive concentrate feeds. As grain prices escalate and competition for arable land increases (both in part due to biofuel production) this is likely to turn into a major advantage over high yielding (but expensive to feed) breeds of beef cattle and pigs that have been selected for high killing out percentage, i.e. against the large intestines that enable them to digest roughage (Ørskov 2008).

There is also the issue of “feed miles”. Commercially produced animal feeds are usually transported over long distances, sometimes from other continents, and are often ecologically destructive in the place where they are cultivated. Soya beans -- a staple ingredient of livestock feed – are grown in the Amazon at the expense of the tropical rain forest and then shipped to China, Europe and many other countries. As efforts continue within the Global Climate Change framework to curb carbon emissions these practices will come under increasing scrutiny (Steinfeld et al. 2006).

Ecological value of locally adapted breeds

Local breeds are part of their local agroecosystems. They are important links in the web of wild and domestic biodiversity. Some ecosystems may depend on the continued presence of these breeds, and collapse if they are removed. In the Bharatpur Bird Sanctuary in eastern Rajasthan, for example,

eviction of local buffalo resulted in the disappearance of Siberian cranes that previously were regular visitors (Lewis 2003). In Gujarat's Gir sanctuary the Asiatic lion left the sanctuary after the sheep and goats upon which they preyed were banned. In the Kumbalgarh Sanctuary in Rajasthan for the conservation of leopards and wolves these predators have been shown to depend almost exclusively on sheep and goats for their sustenance (Köhler-Rollefson et al. 2007).

Thermoregulation

The ability to deal with thermal stress will provide a competitive advantage in the event of climate change and scarcity of fossil fuels. Locally adapted breeds are much more heat-resistant than high performance breeds from the temperate zones. This has been shown in comparative studies between *Bos indicus*, native *Bos taurus* and imported *Bos taurus* in Brazil (Carvalho et al. 1995). Proponents of *Camelus dromedarius* argue that this animal is much better suited to milk production under the climatic conditions of the Arabian peninsula than cattle (Wernery pers.comm.). In times when reduction of carbon emissions is in demand these traits are of enormous significance.

Disease resistance

Breeds vary in their ability to cope with diseases. Some traditional breeds are resistant to or tolerant of specific infections which are harmful to exotic ones. These include the N'Dama cattle breed from Africa that is tolerant to trypanosomes, the East African Short-horned Zebu that has moderate to high levels of brucellosis resistance and the Sahiwal and other *Bos indicus* breeds that are tolerant of ticks and various blood parasites (Perry et al. 2002, Hoffmann 2008). The native Grey Steppe cattle of Hungary have proven to be much less susceptible to foot and mouth disease than imported Simmental dairy cattle (Alderson 2001).

As policies in the developed countries are changing to support environmentally and biologically sustainable systems of agriculture interest in locally adapted breeds is also increasing as these require fewer veterinary inputs in order to remain healthy and productive. There is growing emphasis on "breeding for disease resistance" and systematic genome analysis is being undertaken to screen indigenous breeds for disease resistance and disease tolerance. The aim is to identify the part of the genome where these traits are located (Gibson and Bishop 2005). One of the best known examples is represented by the Red Masai sheep that is more resistant to endoparasite infections than other breeds. As gastrointestinal parasites are becoming increasingly resistant to anthelmintics this trait is considered of great commercial value. It has been the subject of research over a long time in Kenya (Preston and Allonby 1978, Baker et al. 1999).

Potential for added value

The products of local breeds are often more popular with consumers than those of industrial livestock because of their better taste. Examples from India include the eggs of indigenous chicken and the milk of indigenous cows and buffalo for which customers are prepared to pay much higher prices although marketing is entirely informal. The same applies to the meat of scavenging chicken (Ørskov 2008).

There is no doubt that the potential of local breeds for producing specialty and niche-market products (such as cheeses, sausages, meat) that is manifesting itself in many European countries – especially in the Mediterranean region -- could also be exploited in some of the transition countries with a rapidly expanding middle class, such as India and China. In order to differentiate from mass produce the meat, milk, and fibre from indigenous breeds could be marketed under various kinds of special labels such as social ("fair-trade"), cultural (meat from Red Masai sheep), ecological (from desert or mountain pastures), associated with a specific region (Thar Desert) or even connected with animal welfare. The opportunities are endless. Livestock keepers would not usually, however, be able to set up a market chain by themselves but would require a supporting NGO, technical expertise and probably access to credit and financial assistance.

An interesting case is provided by the efforts of the Indian NGO Lokhit Pashu-Palak Sansthan (LPPS). This attempts to save the rapidly diminishing camel population of Rajasthan from further decline by creating markets for innovative products. In Rajasthan camels traditionally represented the lifeline of the rural population and especially in the arid western districts. Because they signified wealth and increased the odds of surviving droughts these animals were once held in high esteem. Customarily they were used as means of transport and their food potential was not realized. Use of camels for meat was culturally banned and the milk was only consumed by the camel breeders themselves. Because of dwindling grazing land and shrinking demand for work animals the number of camels halved between 1995 and 2005 to less than 500 000 and continues to fall. In order to conserve this important component of Rajasthan's biological diversity and cultural heritage LPPS has embarked on activities that include organizational strengthening of camel breeders (so that they can lobby for supportive policies) and the exploration of new marketing options with the purpose of increasing economic returns per camel (Köhler-Rollefson et al. 2007). By extensive highlighting of the fact that camel milk contains an insulin-like substance that lowers blood sugar levels it has been possible to create a local market among diabetics. Camel milk ice cream (or rather frozen dessert) is another product that is proving extremely popular with both domestic and foreign tourists. Media attention about these efforts to capitalize on Rajasthan's heritage has even kindled interest among government agencies to revive camel keeping. The earlier prohibition against the sale of camel milk (once declared as "unfit for human consumption" by the Rajasthan High Court) has given way to marketing of camel milk by the government cooperative dairy system.

Another example from India for this approach of using creative marketing to save a breed is a project by the NGO Shramik to manufacture of stylish and high quality bags from the coarse wool of Deccani sheep which is a threatened breed from India's Deccan plateau. Hundreds of previously unemployed women have managed to obtain jobs through this project (Anthra et al. 2007). There are also examples for the successful marketing of livestock products from indigenous breeds from many other developing countries including the Chivito goat from Patagonia in Argentina (Lanari et al. 2007), skins from Nguni cattle and Karoo lamb from South Africa (Ramsay 2003).

While it may be too early to come to a judgement, evidence is accumulating that helping livestock keepers add value to their breeds is a more sustainable strategy for supporting rural livelihoods than just equipping them with "enhanced breeds" which often disappeared after the project ends.

The movement for Livestock Keepers' Rights

An international workshop "Local Livestock Breeds for Sustainable Rural Livelihoods - Towards Community-based Approaches for Animal Genetic Resource Conservation" was held in November 2000 in India. This was the first event ever to focus on the role of farmers and pastoralists in animal genetic resources conservation and to investigate how sustainable livelihoods and breed conservation could be mutually supportive. Until then farmers and pastoralists were not even recognized as stakeholders in breed conservation which was projected as the domain of governments and scientists. The workshop, attended by about 80 people, mostly representing NGOs from India, but also from Kenya, Cambodia, the Philippines, and Europe, put together the "Sadri-Declaration" (Lokhit Pashu-Palak et al. 2002) which is a statement about the importance of local livestock breeds for rural livelihoods. It was widely circulated and marked the beginning of the movement for Livestock Keepers' Rights and led to the foundation of the LIFE Network, a group of NGOs devoted to helping local communities continue making a living from their livestock.

To reach this goal, this network developed a participatory method for documenting breeds based on the indigenous knowledge of the associated communities, made evident the role of livestock keepers

and their indigenous knowledge in stewarding farm animal diversity. Previous methods of breed characterisation had focussed only on phenotypical characteristics of breeds. The method developed by the LIFE Network demonstrated, however, that livestock breeds are products of communities and their indigenous knowledge thereby putting to rest the frequently quoted belief that breeds in developing countries are the product of natural selection alone (Lokhit Pashu-Palak Sansthan and Köhler-Rollefson 2005).

In order to emphasize that breeds are socially embedded and the products of active efforts by communities and breeders associations, the term “Livestock Keepers’ Rights” was born during the World Food Summit held at FAO in June 2002. The term was originally coined in allusion to the “Farmers’ Rights”. These are enshrined in Article 9 of the International Treaty on Plant Genetic Resources for Food and Agriculture and recognize the role of farmers in developing and sustaining crop biodiversity (FAO 2001). This much-discussed treaty assures farmers of their right to save, use, exchange and sell farm-saved seeds. In view of intensifying animal genome research, advances in genetic engineering and the increasing importance of Intellectual Property Rights (IPR) in the livestock sector it was considered essential to flag the role of livestock keepers as owners of their respective animal genetic resources.

At this stage the term Livestock Keepers’ Rights was still vague but it was concretized in a series of meetings with livestock keepers and pastoralists and other key stakeholders in community-based breed conservation that took place in Karen (Kenya) in 2003, Bellagio (Italy) in (2006), Yabello (Ethiopia) in 2006, Sadri (India) in 2007 and Addis Ababa (Ethiopia) also in 2007. During these meetings which were attended by hundreds of livestock keepers representing more than 20 countries threats to the ability of pastoralists and small-scale livestock keepers to continue acting as stewards of domestic animal diversity were identified. These included:

- ! customary **grazing and watering rights** of many pastoralists being abolished by the establishment of protected areas, agrofuel cultivation, land banks, land-grabbing, etc;
- ! the **right to keep animals** being jeopardized in the wake of pandemics and especially avian influenza (in many countries small-scale poultry keepers are losing the right to keep their traditional poultry in the vicinity of industrial complexes and biosecurity requirements may eliminate small farmers from livestock production;
- ! the **rights to sell** animals and their products across national boundaries being seriously undermined due to sometimes inappropriate animal hygiene regulations;
- ! the **rights to breed** animals being threatened by patents, trade secrets, commercial contracts and regulations;
- ! not having (nor ever having had) the **right to be consulted** and heard when livestock policies are being designed;
- ! the **right to be asked for prior informed consent** (PIC), under the provisions of the UN Convention on Biological Diversity (CBD), whenever research is undertaken on their breeds or samples taken from them (these requirements tend to be systematically ignored by researchers and much research is of no practical relevance to livestock keepers); and
- ! the **lack of help** for livestock keepers to increase the economic returns from their local breeds through value-addition and niche-marketing or to achieve stronger political influence by organizing into associations.

In the course of these discussions, seven key elements or cornerstones of Livestock Keepers’ Rights were identified that would enable livestock producers to continue maintaining their breeds.

Cornerstones of Livestock Keepers’ Rights and their rationale

1: Recognition of livestock keepers as creators of breeds and custodians of animal genetic resources

for food and agriculture. This cornerstone was articulated to express the active contribution of livestock keepers in the evolution of breeds and to highlight the fact that diversity is linked to the conservation of a variety of production systems and can not be maintained in any significant manner by relying on *ex situ* conservation. Many scientists have assumed over a long period that breeds that had no herdbooks were the product of natural selection alone and farmers and pastoralists were not even regarded as stakeholders in the conservation of domestic animal diversity.

2: Recognition of the dependency of the sustainable use of traditional breeds on the conservation of their ecosystems. This cornerstone accentuates that breeds are embedded into and have been moulded by specific natural environments and these therefore also need to be conserved in the same contexts so as not to lose their unique adaptive characteristics. This demand links the issue of conservation and sustainable use of animal genetic resources to access to land and other common property resources.

3: Recognition of traditional breeds as collective property, products of indigenous knowledge and cultural expression. This cornerstone claims community ownership over breeds and highlights the fact that they are not a free-for-all that can be mined at will for interesting genetic traits. Instead, certain procedures should be followed in line with the provisions of the CBD that in article 8j commits its signatories to respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity. In principle this cornerstone is also supported by the Convention on the Protection and Promotion of the Diversity of Cultural Expressions that was approved by UNESCO on 20 October 2005. This defines cultural expressions as those that result from the creativity of individuals, groups and societies and that have cultural content. Breeds fulfil this criterion.

4: Right of livestock keepers to breed and make breeding decisions. This is perhaps the most pertinent and crucial cornerstone but is not addressed in any existing international agreements. It requires urgent attention since the increasing exertion of intellectual property rights by scientists and industrial breeding companies threatens to interfere with the continued freedom of livestock keepers to use and develop their own breeding stock and breeding practices. The basic processes that have generated and sustained livestock genetic diversity in the past are thus undermined. With respect to poultry and pigs especially, but also cattle, breeding has already become highly centralized and breeding companies seek to protect their investment through licensing agreements, trade secrets and by means of patents. Designs to patent breeding practices and genome sequences may well lead to a situation in which livestock keepers who have kept a breed for centuries would need to seek permission from the patent holder to use their own animals for breeding (Tvedt et al. 2007). Such trends will have negative impacts for both breed and intra-breed diversity as well as on the livelihoods of poor livestock keepers. There is also an inherent injustice in the fact that the traditional knowledge that has gone into the development of many local and indigenous breeds and often forms the foundation and prerequisite for the scientific improvement of breeds remains unrecognized and unprotected. There is thus a need for formal protection of the right of livestock keepers to continue to use their breeds and their breeding practices without having to pay royalties. This issue could be tackled either at national levels or in a multi-lateral agreement. The breeding of livestock should be recognized as an inalienable right and as an important component of the Right to Food.

5: Right of livestock keepers to participate in policy making processes on animal genetic resources issues. Since livestock breeding communities are crucial actors and key stakeholders in the sustainable management of animal genetic resources their representatives should be systematically involved in all fora dealing with the issue at international, regional, national and field levels.

6: Support for training and capacity building of livestock keepers and provision of services along the food chain. Herders and small-scale livestock keepers especially in marginal areas often lack access to veterinary and other services appropriate to their management systems. Veterinary curricula are

geared towards intensive production and “high-tech” environments and incentive systems for service providers do not honour the promotion of low-tech and locally adapted solutions.

7: Right of livestock keepers to participate in the identification of research needs and research design with respect to their genetic resources so as to ensure compliance with the principle of Prior Informed Consent. Much research fulfils the needs of scientists only and is of little practical relevance to livestock keepers. On the other hand there is often a need for research to solve the problems that livestock keepers perceive as important.

The CBD in its article 15.5 stipulates that “access to genetic resources is to be granted on mutually agreed terms, and subject to **prior informed consent** of the contracting party and fair and equitable sharing of the research and development results and commercial benefits”. This is a legally binding requirement that is not adhered to by most researchers.

Livestock Keepers’ Rights in the Global Plan of Action for Animal Genetic Resources

At the First International Technical Conference on Animal Genetic Resources that was attended by government representatives of 109 countries “Livestock Keepers’ Rights” was – along with financing and trade-distorting incentives -- one of the three most divisive issues. African countries were strongly in favour of including Livestock Keepers’ Rights in the official documents and obtained the support of most of the G77 countries. The proposal was, however, vehemently opposed by the European Union, the USA, Canada, and Australia. The “rights of livestock keepers”, as a result, are referred to in the Global Plan of Action for Animal Genetic Resources six times but in a rather oblique manner and without spelling out their content. Some of the components or cornerstones of Livestock Keepers Rights are nevertheless addressed in the Global Plan of Action and the Interlaken Declaration (FAO 2007a).

Cornerstone 1: Both the Interlaken Declaration (paragraph 11) and the Global Plan of Action for Animal Genetic Resources (preamble) recognize the role of livestock keepers in creating and maintaining breeds (FAO 2007a).

A practical step to implement this cornerstone would be to educate and raise the awareness of animal scientists in government departments and in research institutes about the existence and value of traditional knowledge and to sensitize them about the social contexts of animal genetic resources, as well as the political dimensions of ownership.

Cornerstone 2: The relationship between breeds and access to land or their role in maintaining landscapes is referred to in the GPA 18 times (it is alluded to in the Interlaken documents although not very strongly since land rights are an extremely sensitive issue). The document recognizes that the erosion of breeds is linked to loss of access to land in paragraph 5 and in paragraph 15 the Global Plan of Action states “... productive links between breeds and landscapes need to be maintained and better managed, through appropriate land use policies and strategies. “Resolving land tenure issues” is mentioned as a means of support for indigenous and local livestock production systems of importance to animal genetic resources in Strategic Priority 6.

Cornerstone 3: There are numerous references to the cultural significance of breeds, for example in the paragraph 9 of the Preamble of the Global Plan of Action and in Strategic Priority 3, paragraph 33 where the loss of animal genetic resources “may have negative social and cultural impacts, given the long history of domestication and the resulting incorporation of domestic animals into community culture”. Paragraph 46 states that: “Cultural identity in developing countries, often expressed in food preferences, can... underwrite long-term economic development, including for small farmers and currently marginal communities.”

Cornerstone 4: At the Interlaken Conference, the subject of Intellectual Property Rights on animal genetic resources was not discussed but instead was referred to the World Intellectual Property Organization (WIPO). Paragraph 39 of the Global Plan of Action, however, reads “Policy development should take into account the increasing role of intellectual property rights in the sector, and the need to fair and equitable benefit-sharing, the rights of indigenous and local communities, particularly pastoralists, and the role of their knowledge systems.”

Cornerstone 5: Such a change in approach is mentioned as a recommended activity in Strategic Priority 6 of the Global Plan of Action.

Cornerstone 6: This cornerstone is addressed in Strategic Priority No. 6 of the Global Plan of Action for Animal Genetic Resources which focuses on support to “indigenous and local production systems and associated knowledge systems, of importance to the maintenance and sustainable use of animal genetic resources”. The recommended actions are:

- ! support indigenous and local livestock systems of importance to animal genetic resources, including through the removal of factors contributing to erosion. Support may include provision of veterinary and extension services, delivery of microcredit for women in rural areas, appropriate access to natural resources and to the market, resolving land tenure issues, the recognition of cultural practices and values and adding value to specialist products;
- ! promote the development of niche markets for products derived from indigenous and local species and breeds and strengthen associated knowledge systems of importance to animal genetic resources.

Cornerstone 7: This final cornerstone is also covered to some extent by Strategic Priority No. 6 which includes action to:

- ! promote and enable relevant exchange, interaction and dialogue among indigenous and rural communities and scientists and government officials and other stakeholders in order to integrate traditional knowledge with scientific approaches.

Subsequently, at the 34th session of the FAO Conference, Brazil raised the issue of Livestock Keepers’ Rights, remarking that it had not received sufficient attention during the Interlaken Conference. It requested FAO to investigate and provide a report for the next meeting of the Commission on Animal Genetic Resources for Food and Agriculture. This request was vetoed by Canada and Brazil’s suggested wording of “livestock keepers’ rights” was replaced by requesting FAO to look into the “important role of small-scale livestock keepers, particularly in developing countries, as custodians of most of the world’s animal genetic resources for food and agriculture in the use, development and conservation of livestock resources”. The Commission for Genetic Resources for Food and Agriculture was tasked with addressing this issue in its report to the 35th session of the FAO Conference in 2009 (FAO 2007b).

Discussion

“Livestock Keepers’ Rights” were originally modelled on Farmers’ Rights as articulated in the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA). Much of the similarity ends here. Firstly, in terms of the process there seems to be little scope and interest in negotiating a corresponding treaty on animal genetic resources in which livestock keepers’ rights could be embedded. Secondly, Farmers’ Rights are now looked upon very critically, including by CSOs who had originally advocated them as they have had little positive practical effect on farmers. Thirdly, Livestock Keepers’ Rights have evolved into a much more comprehensive concept than Farmers’ Rights by not being restricted in scope to the right to breed, save and exchange genetic

material but by encompassing other approaches that would strengthen small-scale livestock keepers.

As analysed in this paper some cornerstones are reflected in existing international agreements, including the Interlaken Declaration, the Global Plan of Action on Animal Genetic Resources, in the UN Convention on Biological Diversity, and in the UNESCO Convention on the Protection and Promotion of the Diversity of Cultural Experiences. The one exception is cornerstone No. 4 -- the right to breed and make breeding decisions. It is urgent to tackle this issue.

The “rights of livestock keepers” are referred to in the Interlaken documents but without further specification. The logical next step for nudging them towards international acceptance would be to investigate the nature and extent of the customary rights of livestock keepers in individual countries and then analyse their potential for official codification, possibly starting with national legislation.

Possibly more important than turning Livestock Keepers’ Rights into law would be to recognize them as guiding principles for livestock development by both national governments and major international agencies. If the same donors that promoted crossbreeding and replacement of indigenous with exotic breeds – often by investing enormous sums of money – were to support livestock keepers in developing local breeds, in organizing themselves and in niche and added value product marketing they would make a major contribution to saving biodiversity and to creating rural income opportunities. Since no financial resources have yet been allotted or raised for the implementation of the strategic priorities it is of prime importance to convince international agencies and governments of the economic potential of local breeds and raise their awareness of the positive ecological effects.

Finally, it may well be the case that local breeds should not just be saved for the sake of conserving biodiversity *per se* but instead form a much better basis for livestock development than introduced or cross-bred animals.

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