Sense and nonsense of a fully developed binding treaty on AnGR (from an ABS perspective). A cost-benefit analysis.

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I. Historical background: a discussion on possible treaty on AnGR

Adoption by the FAO Conference in November 2001, after a lengthy negotiation, the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGR) is considered a milestone for addressing conservation, sustainable use and access and benefit-sharing in Plant Genetic Resources (PGR) for food and agriculture. The importance of the treaty in relation to PGR, has stimulated a lively discussion on the possibility of developing a similar instrument for the Animal Genetic Resources Food and Agriculture (AnGR) sector. Opinions on this issue were exchanged during the Ninth Session of the Commission on Genetic Resources for Food and Agriculture (the Commission) in October 2002. Pros and cons were expressed on the possible need for a treaty on AnGR, and the Commission agreed to leave the issue open pending the completion of the, *Report on the State of the World's Animal Genetic Resources* (FAO, 2002).

At the third session of the Intergovernmental Technical Working Group on Animal Genetic Resources for Food and Agriculture (the Working Group) in 2004, a number of countries expressed the view that the Commission, at its Tenth Session, should consider initiating negotiation of an international treaty on AnGR, (FAO, 2004a).

The discussion resumed during the Tenth Session of the Commission, where some Members of the Commission suggested the initiation of a process for preparing an international treaty on animal genetic resources, and noted the need for safeguarding the rights of indigenous livestock keepers. Other Members considered this to be premature, and stated that any discussion of a legal instrument should await the completion of the first *Report on the State of the World's Animal Genetic Resources* (FAO, 2004b).

Some non-governmental organizations, led by the League of Pastoral Peoples, strongly advocated negotiation of the international treaty arguing that "a fair, comprehensive international legal framework on animal genetic resources is possible and that it will contribute to global food security, and also benefit the populations of some of the world's most drought-stricken and food-insecure countries" (Köhler-Rollefson , 2005). The international treaty was seen also as an instrument to recognize Livestock Keepers' Rights, as stated in the "Karen Commitment" developed by pastoral /indigenous communities at their meeting in Kenya (LPP, 2003). In the study conducted by Hiemstra et al. (2006), some stakeholders suggested the development of an international treaty or other legal instrument to govern the cross-border exchange of animal genetic resources, suggesting a treaty parallel to the ITPGR.

II. Current opportunities under the Convention on Biological Diversity (CBD)

The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity (The Nagoya Protocol) adopted at the 10th Conference of the Parties includes, 27 preambular

clauses, 36 operative provisions, and an annex containing an indicative list of monetary and nonmonetary benefits. The preamble draws attention, among others to "the special nature of agricultural biodiversity, its distinctive features and problems needing distinctive solutions", it underlines the interdependence of all countries with regard to genetic resources for food and agriculture, their importance for achieving food security and the fundamental role both of the Commission and the ITPGR, including its Multilateral System. It also acknowledge ongoing work in other international fora relating to access and benefit-sharing (para 17). Another important issue with potential implications on AnGR relates to the "interrelationship between genetic resources and traditional knowledge, their inseparable nature for indigenous and local communities, the importance of the traditional knowledge for the conservation of biological diversity and the sustainable use of its components, and for the sustainable livelihoods of these communities" (para 21). The Protocol and a single objective - the fair and equitable sharing of the benefits arising from the utilization of genetic resources.

From the perspective of a potential treaty on AnGR, one of the most important articles is **Article 3** ***bis,*** which addresses the relationship of Nagoya protocol with international agreements and instruments. The article provides among others that:

- nothing in the Protocol shall prevent parties from developing and implementing other relevant international agreements, including other specialized ABS agreements, provided that they are supportive of, and do not run counter to, the CBD and Protocol objectives;
- the Protocol shall be implemented in a mutually supportive manner with relevant international instruments;
- due regard should be paid to useful and relevant ongoing work or practices under such international instruments and relevant international organizations, provided that they are supportive of, and do not run counter to, the CBD and Protocol objectives; and
- where a specialized international ABS instrument applies, that is consistent with, and does not run counter to, the CBD and Protocol objectives, the Protocol does not apply for the party or parties to the specialized instrument in respect to the specific genetic resource covered by, and for the purpose of, the specialized instrument.

Through Article 3, the Nagoya Protocol provides opportunity to develop a specialized ABS agreement that will address AnGR, should it be determined necessary.
In considering the need for such as instrument, several key question need to be addressed. Are the current arrangements for ABS in livestock sector: adequate and fulfilling the needs of the sector, do they require significantly improved arrangement, or should be substantially broadened? We may start considering what were the key factors and outcomes of the ITPGR. Does the AnGR sector have the same underlining factors and conditions to support proceeding with an international treaty?

III. Rationale for the PGR Treaty – applying this rationale to AnGR

PGR Treaty	Relevance of arguments for AnGR sector
Need to conserve PGR	Very relevant
Need to sustainably use PGR	Very relevant
Need to address ABS	Arrangements for ABS appear adequate
Existence of international/regional gene banks for PGR before the CBD	Lack of international/regional gene banks for AnGR
Ex-situ collections in public domain	No, generally private ownership of AnGR
Need to ensure access to these ex-situ collections	Limited needs so far

Need to support maintenance of gene banks and PGR conservation activities in developing countries	Yes, obligation of developed countries under the CBD so far limited use of genetics from developing countries

A key difference affecting the rationale for the need for treaty in case of plant genetic resources and animal genetic resources results from different breeding practices and methods to achieve genetic progress applied in seed and pedigree sectors and ways to disseminate this progress into commercial production. Additionally, the biological limitations affect possibility to conserve plant and animal genetic material.

In crop sector, the genetic progress and improvement of crops' yields in commercial production is achieved through development and dissemination of new varieties that are originated from a number of already existing varieties, wild relatives and even related species. Multi-variety crossbred material is selected to establish a new variety with a desirable set of characteristics inherited from parental varieties. The nature of reproduction of major crop species allows long-term storage of seeds. This is a biological advantage that facilitated the wide-spread establishment of *ex-situ* plant genebanks, at the national, regional and global levels. Most of these genebanks are in the public domain and many have been established before the Convention on Biological Diversity (CBD) was negotiated. A substantial number of *ex-situ* PGR collections are held by the International Agricultural Research Centres of the Consultative Group on International Agricultural Research and other international institutions.

In livestock sector, genetic progress is achieved through selection in purebred populations, based on sophisticated methods to evaluate breeding values of individuals that are candidate parents of the successive generations. Crossbreeding, leading to the development of synthetic lines or new breeds is also practised, but the scope and impact of this method in livestock breeding is relatively small. Moreover, a process to develop a new breed requires undertaking selection in many consecutive generations, and it takes tenths of years to conclude. On the other hand, directed crossbreeding in commercial meat and egg production is widespread, especially in intensive production systems, which enables taking advantage of the heterosis effect in the progeny of genetically superior purebred parental populations.

Also, technical and operational difficulties in conserving animal reproductive material (semen, embryos, oocytes) has resulted in very low levels of activities in *ex-situ* conservation of livestock species. The latest FAO survey on current arrangements for existing national and multi-country storage systems for the conservation of animal genetic resources indicated that the number of cryoconservation programmes is about half the number of *in-situ* programmes for most livestock species. Fully operational national gene banks were reported in 26 countries out of 90 participating in the survey, 14 of them from Europe and 6 from Africa (FAO, 2010). So at present, the flow of genetic material from in *ex-situ* collection does not appear to warrant the need for legal arrangement to facilitate access and ensure benefit sharing for AnGR. Moreover, multinational back-up storage systems for animal genetic resources are essentially non-existent as only three countries (United States of America, Tunisia and Burkina Faso) reported to host genetic material obtained through multinational storage programmes.

In crop improvement, a source of variation to build on future breeding work is found between varieties and wild relatives, therefore wide access to PGR, especially from centres of origin of crop species is crucial to enable genetic improvement.

In livestock improvement, a genetic variation, which is considered the raw material for breeding, is found between individuals within selected populations. Intense selection directed toward specific utility traits, important in milk, meat, egg and wool production, has resulted in the development of a small number of international highly productive breeds that dominate commercial production. The extensive North-South transfers of AnGR have contributed to increasing the output of animal products in developing countries. However, there have been many cases in which exotic breeds have been introduced into production environments that could not support them adequately, sometimes leading to negative consequences to people's livelihoods, and to genetic diversity (FAO, 2009). In 1990, it was recognized that only in "very exceptional cases" exploitation of variation from low productive breeds to improve mainstream breed may be applicable since most likely this would result in lowering of the mean of a mainstream breed (Dempfle, 1990). Such opinions were later confirmed by Hill and Zhang (2009) and Nicholas (2009): until now little use was made of conserved local populations in mainstream commercial production as it is not profitable to cross back to "far out of date stocks". According to (Gollin et al, 2009), the low volume of South-North AnGR exchange does not ensure that sufficient revenues could be acquired through a "benefit-sharing mechanism"; therefore also such mechanisms might not have any substantial impact on *in- situ* or *ex-situ* conservation efforts, or to generate benefits for poor livestock keepers in developing countries.

This may change with further progress in SNPs technology and the whole genome sequencing that eventually will reveal genotypes resistant to diseases, well adapted to extreme environments or possessing traits that potentially might be beneficial in commercial production systems. The driving forces that have the potential to increase the significance of AnGR from the South to the global livestock sector include climate change, changes to the distribution of livestock diseases, and technological developments to identify and utilize specific genes (FAO, 2009). Indeed, biotechnology and climate challenges may substantially adjust the current needs for exchange and also exchange patterns and practices.

Moreover, enhancement of *ex-situ* conservation activities might be expected as an additional 50% of the countries taking part in FAO survey indicated plans for gene bank development within the next five years (FAO, 2010). However, when developing policy and regulatory options, it should be kept in mind that private ownership of AnGR and associated (contractual) exchange arrangements are predominant in the livestock sector (Hiemstra et al., 2006). Most livestock exchange takes place on the basis of private contracts or informal arrangements between individuals or companies; the price reflects the value of livestock. The owners of the breeding animals (or other genetic material) acquired through such exchanges are permitted to use the genetic resources involved for further breeding as they wish, unless otherwise specified in the contract. Few AnGR are held in the public domain (FAO, 2009).

IV. SWOT analysis for the AnGR treaty

Consideration of the pros and cons of a binding treaty on AnGR might be supported by listing relevant internal and external factors as presented below:

Strengths	• Lessons learnt from PGR process, especially negotiations of the ITPGR and experience gained in its implementation • Adoption of the Global Plan of Action for AnGR and substantial efforts undertaken by countries for its implementation at the national level • Well developed Global Network on AnGR, through continuous interactions via global workshops of NC, DAD-IS and DAD-Net

Weaknesses	• Low demand for access to local AnGR by the livestock breeding sector • Limited uptake of local breeds in modern improvement programmes • Limited *ex-situ* AnGR collections in public domain • Resources and time required for development of fully binding ABS instrument • Level of applicability and unclear scope: all livestock genetic material or only from local breeds
Opportunities	• Enhancement of activities for AnGR conservation and sustainable use at national, regional and global levels • Nagoya Protocol: possibility to develop a specialized ABS agreement for AnGR, although the need for one has not been established • Acknowledgment of the Livestock Keepers Rights • Increased profile and interest in AnGR and the livestock sector • Possible increase of funding to support such activities in developing countries
Threats	• Possible obstacles in commercial trade of livestock that are already well established • Possible difficulties to access material for international research • Lack of sufficient political will to get involved/continue/finalize • Current negative perception of livestock sector • Loss of financial resources for technical work, resources moved to support negotiation process

The possible development of a treaty would certainly benefit from lessons learnt in the PGR sector, especially steps in negotiations of the ITPGR, followed by development of elements of the Treaty System (Governing Body, Multilateral System and Farmer's Rights). The enormous advantage to negotiation process would be adoption of Interlaken Declaration and Global Plan of Action for Animal Genetic Resources (GPA-AnGR) as well as extensive network of AnGR experts established over years though the FAO intergovernmental process.

The weak internal elements include low applicability of such instruments as majority of international exchange of genetic material takes place between commercial breeders around the world, which was concluded from a series of studies (Hiemstra, 2006; Valle Zarate, 2006) and NGOs (Mathias and Mundy, 2005). Currently, in the AnGR sector, most gene flow takes place between Northern countries and between North and South countries with market price reflecting the value of genetic stock, therefore according to Gollin et al. (2009) a treaty-based compensation system is not necessary.

Negotiating of an international agreement would definitely impose financial burdens for FAO member countries and to some extent may redirect resources from technical and policy work. The possible binding instrument will generate additional administrative costs, possibly reducing funds available for AnGR conservation activities. Therefore, it is legitimate to ask what are the costs of developing such an instrument versus potential benefits obtained through its implementation? This question should be carefully considered before engaging into a long-term and resource demanding negotiation process.

It has to be also taken into account that if no action is taken by the livestock community, the possible future application of ABS regime to AnGR may be guided by the Nagoya Protocol

itself. It may mean that future developments under the Protocol will take place outside and with possibly limited contribution from the agriculture sector.

The AnGR treaty could open the possibility to acknowledge Livestock Keepers Rights that were put forward in the Karen Commitment (LPP, 2003). This is an important issue for livestock communities, pastoral peoples, and smallholders who would like to benefit from similar recognition as provided by Framers' Rights under the article 9.2 of the ITPGR:

(a) protection of traditional knowledge relevant to plant genetic resources for food and agriculture;

(b) the right to equitably participate in sharing benefits arising from the utilization of plant genetic resources for food and agriculture; and

(c) the right to participate in making decisions, at the national level, on matters related to the conservation and sustainable use of plant genetic resources for food and agriculture.

The negotiation process of the AnGR treaty will draw media interest, it may create political commitment and public awareness and result in better understanding and appreciation of roles and values of AnGR and overall importance of the livestock sector. In the long-term, when completed the key expected outcome would be further enhancement of activities towards conservation and sustainable use of AnGR and most probably, judging in the development of Funding Strategy under the ITPGR, in enhancement of funding to support AnGR management activities in developing countries. A specialized ABS agreement could provide stimulus for political commitment to followed-up the GPA -AnGR.

But what are we risking initiating process to develop a specialized ABS agreement for AnGR? Among the threats we may consider possible obstacles or disturbances in commercial trade of livestock, but also in exchange of genetic material for international research due to for instance of long time required to establish national authorities to process and decide on access application. We may also experience that due to the growing negative perception of livestock sector related to its contribution to greenhouse gases emission and climate change as presented initially by FAO (2006) and further discussed by other actors (Goodland and Anhang, 2009) political willingness, will not be sufficient to conclude negotiation in the reasonable timeframe. In such a case we will be engaged for a long time in activity that, until concluded, will not result in a single breed being saved from extinction.

The potential AnGR treaty will have to deal with a number of problems, among them:

- How to address: indigenous/local breeds and modern international breeds
- How to take into account: indigenous knowledge and modern knowledge
- How to address possible claims on benefit sharing arrangements regarding native breeds that were exported within trade agreement long time ago (e.g. Awassi sheep,Tulu cattle)
- How to ensure that such agreement will respect the needs of various stakeholders in AnGR? (the primary users of AnGR in agricultural sector: smaller-scale farmers, livestock keepers, specialised breeders and commercial livestock industry but also all other AnGR users in research, conservation, educational, entertainment, health and all other sectors).

V. If not a treaty what else?

Taking into account:

- the impressive efforts to implement the GPA-AnGR at the national level, with significant number of countries that are already implementing , currently developing or

planning to develop their National Strategies and Action Plans for Animal Genetic Resources in the nearest future,

- adoption of the Funding Strategy for the implementation of the Global Plan of Action for Animal Genetic Resources, and
- recently agreed administrative arrangements for the FAO Trust Account

the question arises if some outcomes expected to be achieved through the specialized ABS agreement for AnGR could not be realized within the current GPA-AnGR framework? It will definitely require a lot of efforts to stimulate political commitment and enhance public awareness, that are both crucial in mobilizing additional resources for the Funding Strategy to support developing countries and countries with economies in transition.

However, there are a number of issues that would be difficult to address immediately within already agreed GPA-AnGR framework. Therefore, one possible solution may include development of the voluntary instrument or set of instruments, as already suggested by (Hiemstra, 2006). Such a process may facilitate establishing principles for the responsible use and exchange of animal genetic resources, taking into account all relevant biological, technological, economic, social, environmental and commercial aspects, and in accordance with the relevant rules of international law.

The next step would include amendment of the *Global Plan of Action* after update of the State of the World of Animal Genetic Resources for Food and Agriculture as already envisaged in the MYPOW of the Commission for its 16th Regular Session. Such amendment may accommodate issues that are currently not sufficiently addressed in the GPA-AnGR, like for instance the Livestock Keepers Rights.

VI. Conclusions

It seems that at present the division of opinion on the need for an AnGR treaty for the livestock sector is as strong as in 2003. If legally binding instrument on AnGR under the FAO will help to: advance implementation of the GPA, build profile of the AnGR, support mobilization of resources for the Funding Strategy, contribute to capacity building in developing countries, support policy development and enable to recognize Livestock Keepers Rights it may work well for our sector. The potential AnGR treaty has to have a broad scope of objectives: sustainable use of AnGR, their conservation and only then arrangements for the ABS. The justification for developing strictly specialized ABS agreement is not supported by analysis of the sector and the needs expressed by most stakeholders.

Moreover, the conclusions of the study carried out by Gollin at al. (2009) indicate that a treaty-based compensation system would not create sufficient value for indigenous genetic resources to ensure their conservation. Furthermore, the authors fear that the financial burdens of negotiating an international agreement and supporting a secretariat and administrative superstructure might reduce the funds available for needed conservation efforts.

As reported by Hiemstra et al. (2006), a number of stakeholders are in favour of development of legally binding instrument for AnGR. However, it is also clear now that simple extension of the content and form of the ITPGR would not be an appropriate. A solution might be to develop voluntary instruments to strengthen national policies and implementation of action at national level to address specific issues. Such voluntary instruments may facilitate enhancement of conservation and sustainable use of AnGR, as well as the fair and equitable sharing of benefits derived from their use.

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