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FOR ANIMAL RESOURCES**

Into animal genetic resources development in Africa

Challenges and Opportunities for the Nagoya Protocol



Into animal genetic resources development in Africa Challenges and Opportunities for the Nagoya Protocol

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List of Acronyms

ABS	Access and Benefit-sharing
AIR	Animal identification and recording
AMCEN	African Ministerial Conference on the Environment
AnGR	Animal genetic resources
aTK	Associated traditional knowledge
AU	African Union
AU-IBAR	African Union – Interafrican Bureau for Animal Resource
BABS	Bioprospecting, Access and Benefit Sharing
BCP	Biocultural Community Protocols
BR	Biological resources
CAIS	Central Artificial Insemination Station
CBD	Convention on Biological Diversity
CGRFA	Commission on Genetic Resources for Food and Agriculture
COP	Conference of parties
DNA	Deoxyribonucleic acid
EICV	Enquête Intégrale sur les Conditions de Vie des ménages
EU	European Union
FAnGR	Farm animal genetic resources
FAO	Food and Agriculture Organization
GDP	Gross Domestic Production
GPA	Global Plan of Action for Animal Genetic Resources
GR	Genetic resources
GRFA	Genetic Resources for Food and Agriculture
IBC	Institute of Biodiversity Conservation
ICAR	International Committee for Animal Recording
ILCs	Indigenous and local communities
IPR	Intellectual property rights
ITPGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture
KAGRC	Kenya Animal Genetic Resources Centre
MAT	Mutually Agreed Terms
MREE	Ministry of Environment
NBSAP	National biodiversity strategy and action plan
NEMA	National Environmental Management Act
NEMBA	National Environmental Management: Biodiversity Act
NP	Nagoya Protocol
OIE	World Organisation for Animal Health
PGR	Plant Genetic Resources
PIC	Prior Informed Consent
PS	Production systems
SDGs	Sustainable Development Goals
SoW2	2nd report on the State of the World’s Animal Genetic Resources
TTLE	Team of Technical and Legal Experts
UNBS	Uganda National Bureau of Standards

UN-Comtrade	United Nations Commodity Trade
UNCST	Uganda National Council for Science and Technology
UNEP	United Nations Environment Programme
WIPO	World Intellectual Property Organization

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Executive Summary

This report examines the implementation of access and benefit sharing (ABS) measures for Animal genetic resources (AnGR) in Africa, in particular as it relates to the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (Nagoya Protocol).

AnGR make globally important social, cultural and economic contributions to food and agriculture, sustaining rural production systems and community livelihoods. For many African communities their distinctive livestock breeds are an integral part of their collective identity and their biocultural relationship with their land and environment. Genetic resources from Africa have to be protected and valorised to ensure that benefits arising from their utilisation will flow to local communities who are the custodians of these resources and the associated traditional knowledge.

The report starts by briefly describing how human-induced environmental changes have led to current crises such as climate change, land degradation, desertification, stressed water supplies and biodiversity loss, which are also impacting exchange patterns of AnGR and associated trends in their conservation and utilisation.

The report then details relevant international policy responses that could impact future trends in relation to the conservation and utilisation of AnGR, particularly the ABS provisions under the Convention on Biological Diversity, the provisions and obligations set out in the Nagoya Protocol on ABS, ongoing international processes under the FAO Commission on Genetic Resources for Food and Agriculture, and the African Union Guidelines for the Coordinated Implementation of the Nagoya Protocol in Africa.

The implementation of ABS measures at the national level, which incorporates all aspects involved in the management of genetic resources and associated traditional knowledge, including capacity development, technology transfer, contractual model clauses and codes of conduct, is directly relevant to conservation and utilization of AnGR, including facilitated access to a wider variety of these resources, particularly for research and development (including breeding).

The livestock industry has for decades used genetic resources from Africa. Today, development and use of biotechnology accelerates generation intervals and selection intensities; although different between species and breeds the general trend is to increase gene flow. Zoosanitary regulation, animal welfare considerations, freight costs, and exchange and inflation rates have become major restrictions on gene flow, affecting importing and exporting parties differently.

Given the predominant North-South gene flow in Africa, benefits potentially arising from the use of genetic resources accessed from the South may not be sufficient to encourage breed conservation in the South. Other measures may need to be explored to encourage the conservation of these breeds. As intensive production based on a few global and trans-boundary breeds continues to supply the bulk of global production, and the threat of extinction for local breeds increases particularly in regions of fast structural change, defensive measures to reduce gene flow related threats to genetic diversity may be more appropriate. The usefulness and applicability of market-based tools such as a levy on international movement of animal genetic material to support developing-country communities,

breeding associations, and breeding and conservation programmes could be investigated.

An assessment of the legal environment for exchange and movement of AnGR in Africa reveals that there is little recognition in terms of Intellectual Property Rights (IPRs) of those livestock breeders who have dedicated so much of their time and energies to the development of these breeds. Issues related to ownership and free choice, such as livestock keepers' rights to land and producers' choice of genetic stock for use in vertically integrated production systems, are also of great importance. Furthermore, the trans-boundary nature of AnGR makes it imperative to have workable systems for ABS as well as IPR where applicable. This is particularly important where transhumance and trade in AnGR are practiced with animals moving back and forth across national borders as well as globally. Additionally, relevant codes of conduct are needed to guarantee sound gene flows between different production environments.

A large number of African countries have ratified or acceded to the Nagoya Protocol. The Nagoya Protocol, to be operational, requires effective implementation at the national level. Parties to the Protocol need to:

- a. Revise legislative, administrative or policy measures on access and benefit-sharing (ABS) already in place or develop new measures in order to meet the obligations set out under the Protocol;
- b. Establish relevant institutional structures, including the designation of a national focal point on access and benefit-sharing, one or more competent national authorities, and one or more checkpoints; and
- c. Make relevant information available to the ABS clearing house.

A number of African countries have now embarked on the process of developing new or amending existing legislative, administrative and policy measures to meet the obligations set out in the Nagoya Protocol. However, the majority of African countries still face a number of challenges in relation to ratification and implementation of the Protocol. Some challenges identified include:

- Lengthy legal procedures and requirements for ratification, as well as complexity associated with stakeholder consultations, have delayed ratification/accession processes in some countries
- Lack of inventory of genetic resources and lack of knowledge about their potential economic/commercial value
- Limited capacity in the area of negotiation of mutually agreed terms
- Limited capacity to implement systems for monitoring the utilization of genetic resources.

In countries where national ABS legal frameworks exist, the specific needs of the AnGR sector – as they differ from those of other genetic resource sectors such as crops and wildlife – are not on the whole well accounted for. The implementation of the Nagoya Protocol nonetheless provides an opportunity for countries to further examine how AnGR related standards and protocols could be taken into account as part of broader ABS measures.

Finally, reports from several African countries also indicate that no country has to date put in place national legal framework for regulating access to AnGR. Some list the development of such frameworks among their priority actions for the future. Most African countries still lack the legal, institutional and policy frameworks to manage the characterization, inventory and monitoring mechanisms needed to adequately regulate inflow and outflow of AnGR. The challenges faced by countries in this regard also include:

- Lack of priority given to issues related to AnGR
- Indigenous knowledge on AnGR is fast disappearing yet there are no systems for capturing, transmitting and verifying such knowledge
- Actors involved in the management of AnGR generally have low awareness of ABS
- There are few comprehensive inventories of AnGR
- Valuation (better utilization) of AnGR is required
- Identification, recording and traceability systems for AnGR are needed to prove production values and enable effective ABS



I. Introduction

Animal genetic resources (AnGR) – in this report primarily but not exclusively understood to refer to domesticated livestock species – make important global contributions to food and agriculture, sustaining rural production systems and community livelihoods. Their value encompasses social, cultural and economic aspects. For many African communities their AnGR (i.e. their distinctive livestock breeds) are an integral part of their collective identity and their biocultural relationship with their land and environment.

Better management of AnGR is crucial for meeting rising demand for animal-derived foods and for enabling future generations to respond to the challenges of new diseases, climate change and other threats. Increases in demand for animal products are driven largely by increasing disposable incomes in developing countries and it is therefore predicted that demand will keep rising in the short to medium terms. On the other side of the equation there are also growing concerns about the climate change impacts of livestock farming, which already exceed total greenhouse emissions from all means of transport. In developed countries several initiatives and consumer movements aimed at reducing the consumption of animal products, or at least reducing their carbon footprint, have started to emerge. Most African AnGR originate in low-external-input production systems with much lower greenhouse gas emissions than more intensive farming systems, which might give AnGR from Africa a competitive advantage as concerns mount over climate change.

The AU-IBAR Genetics Project, financially supported by the European Union, aims “to strengthen the capacity of African countries and Regional Economic Communities to sustainably use and conserve AnGR through institutionalizing national and regional policy, legal and technical instruments and implementing actions that will result in judicious exploitation of AnGR in Africa”. A key result area of the project is “developing policy frameworks for the sustainable use of AnGR”.

Within this larger context the current report is intended as a contribution to developing technical standards and protocols (including on property rights and benefit sharing) for the exchange and use of AnGR in and from Africa. More specifically, the report attempts to document lessons learnt and best practices relevant to the management of AnGR in Africa, so as to inform implementation of the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization – a subsidiary agreement on access and benefit sharing (ABS) that was adopted under the Convention on Biological Diversity in 2010 and entered into force in 2014.

II. Background

2.1. Human dominion, environmental crises, biodiversity loss

The ancestors of *Homo sapiens* co-evolved with a myriad of animal species in Africa for millions of years before some hominids left the continent and successfully colonised the rest of the planet. During these prehistoric times the interactions between proto-humans and other animals remained largely in balance and reflected a full set of ecological relationships: predators, prey, parasites and pathogens.

For reasons that are still not fully understood (but definitely included at least control of fire, tool-making, spatial mobility, environmental adaptability and the capacity to communicate abstract concepts through language and art) humans largely overcame the constraints of the biotic environment(s) in which they had co-evolved. Hunting became more efficient as technology and social organisation improved, leading to a wave of mega-fauna extinctions as humanity spread around the globe.

A relatively small number of animal and plant species were domesticated, separately and in different parts of the world, becoming livestock and crops respectively. The development of agriculture increased food supplies, which allowed human populations to grow exponentially. Farming started replacing hunter-gatherer lifestyles in many parts of the world and as it became increasingly sophisticated, domesticated species spread to more and more areas, where centuries of selective breeding of crops and livestock led to the emergence of a wide variety of locally adapted landraces, breeds and varieties. More recently this rich heritage of agricultural biodiversity has come under threat from the rapid spread of a much smaller but much more productive set of globalised agricultural genetic resources that has been pushing out older breeds and varieties – this is discussed in more detail below.

The development of farming and the growing availability of food surpluses also gave rise to permanent settlements and eventually city states, which in turn led to the emergence of class differences in ancient societies. A specialised urban elite of craftsmen, artists, traders, administrators, rulers and priests emerged, who appropriated food from the surrounding countryside through various taxes, allowing the development of ever more sophisticated technologies within organised states, often with a focus on boosting military power. Conquest, colonisation and more efficient forms of economic organisation vastly increased the power of successful groups and allowed them to spread their influence to all corners of the earth. Over the course of the past few centuries, boosted by industrialisation based on fossil fuels, human dominance over other living things has become so complete that some scientists say we have entered a new geological age – the Anthropocene.

Humans, along with our crops and livestock, now consume most of the primary productivity of the planet, leaving less and less ecological space for other forms of life. It is generally agreed that our ecological footprint has already exceeded the carrying capacity of natural ecosystem services. Our population is predicted to grow from 7 billion now to more than 9 billion by 2050, and maybe as many as 10.5 billion by 2100. Most people now live in cities, where they are increasingly alienated from nature and rural life – a trend that is predicted to continue. We are clearly on course for multiple environmental crises – in climate change, land degradation, desertification, water supplies and biodiversity loss, among others – unless we change our unsustainable lifestyles. The future of

biodiversity, including agricultural biodiversity, now clearly depends on what action humanity takes, or fails to take, in the near future.

2.2. *International multilateral responses and national implementation*

Humanity's ability to fully comprehend our negative impacts on the planet only emerged very recently. In less than a century we have not only developed the scientific capacity to understand our collective impacts, but we have started to respond and – albeit very slowly – to change our ways. Most notably, in the past 40-odd years we have collectively developed a variety of international legal and institutional responses to looming ecological crises, culminating in the adoption earlier this year of a comprehensive set of global Sustainable Development Goals (SDGs) representing “the future we want” (and even more recently, a new, more comprehensive global deal to combat climate change and help countries adapt to its negative effects).

Among the much larger set of global concerns, one aspect is particularly relevant for present purposes: loss of biological diversity, and the concomitant policies and actions intended to reverse this trend. As will be detailed below, these policies and actions indirectly and directly influence global efforts to conserve agro-biodiversity, and more particularly still to halt and reverse loss of animal genetic diversity relevant for food and agriculture. But it is also worth bearing in mind that work on AnGR, or biodiversity more generally, does not take place in isolation – it is instead inextricably linked to, for example, efforts on climate change adaptation, land degradation/desertification, water provision, preservation of biocultural diversity and even such apparently distant processes as international arrangements around intellectual property, trade, health, consumer protection and finance.

Regardless of the sometimes dizzying array of international legal and policy instruments, one point cannot be stressed too much: all international agreements must be implemented nationally and at the local level before they can have an impact. Regional coordination can often be helpful, but regional arrangements must still be translated into national and local action to have an effect. Even the most global of environmental problems – climate change, which affects everyone because the earth's atmosphere does not respect national borders – can only be tackled by national and local measures to reduce greenhouse emissions and adapt to unavoidable impacts.

2.3. *AnGR utilization, exchange patterns and trends: key ABS issues for Africa*

According to The Second Report on the State of the World's Animal Genetic Resources for Food and Agriculture (SoW2):

AnGR are here taken to include those animal species that are used, or may be used, for food production and agriculture, and the populations within each. Distinct populations within species are usually referred to as breeds. The United Nations Food and Agriculture Organization (FAO) defines breed as:

“either a sub specific group of domestic livestock with definable and identifiable external characteristics that enable it to be separated by visual appraisal from other similarly defined groups within the same species, or a group for which geographical and/or cultural separation from phenotypically similar groups has led to acceptance of its separate identity.” (Emphasis added.)

a. Africa is currently a relatively insignificant player in the global supply of AnGR

On AnGR gene flows, SoW2 provides the following:

The third phase, which began in the mid-twentieth century, has seen an acceleration of gene flows as a result of the globalization of trade, the standardization of livestock production systems, and new technologies such as artificial insemination, embryo transplantation and genomics. Major gene flows occur between the countries of the developed “North” and from the North to the developing “South”. These flows have been dominated by a limited number of breeds, originating from temperate regions of the world. Some gene flows also occur between the countries of the South. South to North gene flows are limited. In addition to technological developments and demand from breeders and livestock keepers for high-output animals, gene flows during this phase have been influenced by government policies in both importing and in exporting countries, and by zoosanitary regulations.

It goes on:

UN-Comtrade figures indicate that between 2000 and 2012, Europe and the Caucasus, North America and the Southwest Pacific (approximately representing the North) accounted for between 91 and 99 percent of the total value of global exports, and between 61 and 99 percent of the value of imports, in the various categories of breeding animals and genetic material for which data are available.

From the above it should be clear that there is currently limited demand for African AnGR in the mainstream international market. This is largely so because the production value and advantages of African AnGR have not been adequately recorded and validated.

b. Measuring and recording production values are key to creating interest

Conversely, the few examples of African AnGR that have spread internationally have all done so on the basis of well-documented production advantages or genetic features of specialized interest, e.g.:

- Red Maasai sheep for genetic resistance to internal parasites
- Boer goats for high fertility under harsh conditions
- Ostriches for high reproduction rates and low-fat meat
- Naked-neck chickens for breeding broilers with fewer feathers

It is likely that international users would take a far stronger interest in African AnGR if they were presented with hard statistical evidence of actual or potential value. Animal identification and recording systems are key to securing this evidence. Once such systems are in place there is a lot of potential value in scientists collaborating with local communities to link phenotypes to genotypes, also for potential gene mining.



Local pig breed, Burkina Faso

c. Local and regional gene flows are important, also culturally

There is a much higher level of geneflow between African countries, with South Africa a significant exporter of AnGR (also of exotic breeds) into Africa. There are also significant but hard to quantify local and transboundary gene flows based on informal and customary mechanisms such as transhumance, production loans to extended family, bride price exchanges, initiation ceremonies that include livestock raiding, reciprocal stud services, usufruct arrangements and systems of royal patronage. These practices should be preserved and encouraged, to the extent that they make a positive contribution.

d. Imported AnGR are important for commercial farming but threaten local breeds

The most important gene flow current in Africa is however importation of commercial germplasm from developed countries and to a lesser extent from more advanced developing countries like Brazil and India. This inflow of genetic resources is important for two reasons:

- On the upside it plays an important role in improving the productivity of exotic breeds used in African livestock farming, especially in the dairy, pig and poultry sectors, but also for sheep, goats, rabbits and other species
- On the downside it leads to indiscriminate crossbreeding, thus causing genetic pollution of local breeds and populations

Any system of control over the flow of AnGR should seek to address both of these considerations and to maximize the positive effects while minimizing the negative. One option could be to tax imports of exotic breed germplasm and use the proceeds to fund conservation of local breeds. In some cases it might also be feasible to require importers of germplasm to contribute to the transfer of breeding technologies, for example by teaching artificial insemination to local breeders or AnGR technicians.

e. Some users are interested in access that goes beyond classic AnGR exchanges

In addition to African AnGR of established livestock species or breeds, which are sometimes

distinguished by the term Farm AnGR (or FAnGR) there are many other categories of animal resources in Africa that are of potential interest for food and agriculture, or for other forms of utilization, albeit at this stage mainly for research purposes. Considering the technology explosion currently happening in gene sequencing, gene mining, genomics (and other –omics), gene editing and synthetic biology, to name but a few of the key techniques, this research interest can be expected to continue. Potential examples of such access targets include:

- The huge variety of cichlid fish species in Lake Malawi and Lake Tanganyika, for genetics that can help to improve farmed cichlids
- Edible insect species that could be domesticated, for the renewed global interest in entomophagy as a low-energy, low-carbon source of animal protein
- Gene sequences from African wildlife species that could be used to improve desirable traits in farm animals
- Gene sequences that code for resistance to parasites and diseases
- Snakes, tortoises and lizards for the exotic pet trade
- Poisonous organisms and their venoms for use in medical research
- Pollinator species for use in crops (in response to the honeybee crisis)
- Classical biological pest control organisms for use in crop protection
- Silk producing caterpillars and spiders, for both production and genetic engineering
- Ornamental aquatic species for the aquarium hobby trade

While it is not impossible that some of these examples of potential ABS cases might eventually yield monetary benefits, such benefits are likely to take a fairly long time to materialize and to be relatively low when they do. On the other hand, many of these cases involve research and innovation and can therefore yield considerable non-monetary benefits in the short to medium term, particularly in the form of training, knowledge sharing and technology transfer.

III. **Relevant legal instruments, policy frameworks and property rights**

A comprehensive review of all international measures relevant to AnGR is far beyond the scope of the current assignment. The purpose of this section is therefore only to situate the work within its appropriate legal context and draw the reader's attention to the most pertinent aspects.

3.1. **The Convention on Biological Diversity**

The Convention on Biological Diversity (CBD) is an almost universal¹ legally binding instrument which was negotiated from 1988 under the auspices of UNEP, opened for signature at the 1992 Rio Earth Summit and entered into force on 29 December 1993. One of the main provisions of the CBD is its confirmation of the sovereign right of States over natural resources, including biological and genetic resources:

States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction (CBD Article 3: Principle).

The three objectives of the CBD as set out in Article 1 are:

- the conservation of biological diversity
- the sustainable use of components of biological diversity, and
- the fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding.

Under the CBD, "genetic resources" are defined as genetic material of actual or potential value. "Genetic material" is in turn defined as any material of plant, animal, microbial or other origin containing functional units of heredity. This means the CBD applies to all types of genetic resources, including AnGR.

Article 15 of the CBD, which deals more specifically with ABS, stipulates that:

1. Recognizing the sovereign rights of States over their natural resources, the authority to determine access to genetic resources rests with the national governments and is subject to national legislation.
2. Each Contracting Party shall endeavour to create conditions to facilitate access to genetic resources for environmentally sound uses by other Contracting Parties and not to impose restrictions that run counter to the objectives of this Convention.
3. For the purpose of this Convention, the genetic resources being provided by a Contracting Party, as referred to in this Article and Articles 16 and 19, are only those that are provided by Contracting Parties that are countries of origin of such resources or by the Parties that have acquired the genetic resources in accordance with this Convention.

¹Only the USA, Andorra and The Holy See are not Parties; the US is however a signatory.

4. Access, where granted, shall be on mutually agreed terms and subject to the provisions of this Article.
5. Access to genetic resources shall be subject to prior informed consent of the Contracting Party providing such resources, unless otherwise determined by that Party.
6. Each Contracting Party shall endeavour to develop and carry out scientific research based on genetic resources provided by other Contracting Parties with the full participation of, and where possible in, such Contracting Parties.
7. Each Contracting Party shall take legislative, administrative or policy measures, as appropriate, and in accordance with Articles 16 and 19 and, where necessary, through the financial mechanism established by Articles 20 and 21 with the aim of sharing in a fair and equitable way the results of research and development and the benefits arising from the commercial and other utilization of genetic resources with the Contracting Party providing such resources. Such sharing shall be upon mutually agreed terms.

In addition to its ABS provisions regarding genetic resources, the CBD furthermore established international legal provisions about ABS in so far as it concerns associated traditional knowledge (aTK), as follows:

Article 8(j): Subject to its national legislation, [each Contracting Party shall] 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 and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices.

Article 10(c): Protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements.

The CBD is very relevant for present purposes because all African countries are CBD Parties – even those that have not yet joined the Nagoya Protocol.

The special nature of agricultural biodiversity, its distinctive features and problems needing distinctive solutions were acknowledged by the Conference of the Parties to the CBD at its fifth meeting in 2000² and considered to include the following:

- a. Agricultural biodiversity is essential to satisfy basic human needs for food and livelihood security;
- b. Agricultural biodiversity is managed by farmers; many components of agricultural biodiversity depend on this human influence; indigenous knowledge and culture are integral parts of the management of agricultural biodiversity;
- c. There is a great interdependence between countries for the genetic resources for food and agriculture;
- d. For crops and domestic animals, diversity within species is at least as important as diversity between species and has been greatly expanded through agriculture;
- e. Because of the degree of human management of agricultural biodiversity, its conservation in production systems is inherently linked to sustainable use;

²COP 5 Decision V/5, Appendix, paragraph 2

- f. Nonetheless, much biological diversity is now conserved ex situ in gene banks or breeders' materials;
- g. The interaction between the environment, genetic resources and management practices that occurs in situ within agro-ecosystems often contributes to maintaining a dynamic portfolio of agricultural biodiversity.

3.2. *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 (Nagoya Protocol)*

The CBD played a ground-breaking role in establishing ABS as an international legal principle, but it did not provide much guidance on how it could or should be implemented. To address this gap the CBD Parties negotiated the legally non-binding Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization, which were adopted in April 2002.

In response to a call for action by the World Summit on Sustainable Development in 2002, the CBD then mandated its Working Group on ABS to elaborate and negotiate an international regime on access to genetic resources and benefit-sharing with the aim of adopting an instrument or instruments to effectively implement the provisions in Article 15 and 8(j) of the Convention and the three objectives of the Convention. The Working Group met eleven times from 2005 to 2010 to negotiate this international regime on ABS and the Nagoya Protocol was adopted on 29 October 2010 in Nagoya, Japan. The Protocol entered into force on 12 October 2014.

The Nagoya Protocol provides an international framework for implementing and advancing the third objective of the CBD, which is “the fair and equitable sharing of benefits arising from the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding”.

The Nagoya Protocol provides a certain degree of flexibility to Parties to take domestic legislative, administrative or policy measures to implement its various articles, but nonetheless also imposes a number of obligations on Parties, geared towards ensuring that benefits arising out of the utilization of genetic resources and associated traditional knowledge are shared fairly and equitably between users and providers, taking into account all rights over resources and technologies.

At the core of the Protocol are obligations related to access to genetic resources, to the fair and equitable sharing of benefits arising out of utilization, as well as to compliance with prior informed consent (PIC) and mutually agreed terms (MAT) provisions. To support compliance, Parties are obliged to take measures to monitor the utilization of genetic resources, including through the designation of checkpoints and reporting requirements. As evidence that genetic resources have been accessed in accordance with PIC and that MAT have been established, a permit or its equivalent has to be granted by the provider country at the time of access. Once this permit or its equivalent is made available to the Access and Benefit-sharing Clearing House of the Protocol, it becomes an “internationally recognized certificate of compliance” which can be used to prove legal access.

Nagoya Protocol Parties also have a set of additional obligations towards indigenous and local communities (ILCs) regarding ILC rights over traditional knowledge associated with genetic

resources and, in certain instances, over genetic resources held by these communities. These include obligations to take measures to ensure that genetic resources and associated traditional knowledge held by ILCs are accessed with their prior informed consent or approval and involvement, and that MAT have been established. In implementing their obligations under the Protocol, Parties are further required, in accordance with domestic law, to take into consideration ILCs' customary laws, community protocols and procedures and, as far as possible, not to restrict the customary use and exchange of genetic resources and associated knowledge within and amongst ILCs.

The Nagoya Protocol applies to genetic resources that are covered by the CBD, and to the benefits arising from their utilization. It also covers traditional knowledge associated with genetic resources that are covered by the CBD and the benefits arising from its utilization. The Protocol covers genetic resources when these are “utilized” within the definition of Article 2(c) of the Protocol, meaning “to conduct research and development on the genetic and/or biochemical composition of genetic resources, including through the application of biotechnology”. It does not cover genetic resources that are accessed and used purely as commodities, although it would apply to situations where commodities are subsequently utilized as genetic resources.

Under the Nagoya Protocol “utilization of genetic resources” means research and development conducted on the genetic or biochemical composition of genetic resources. Subsequent development and commercialization of related products, including bioactive compounds as ingredients, are not subject to PIC (unless so specified in national ABS rules) but are subject to benefit sharing and compliance provisions.

The implementation of the Nagoya Protocol, which incorporates all aspects involved in the management of genetic resources and associated traditional knowledge, including capacity development, technology transfer, contractual model clauses and codes of conduct, is therefore directly relevant to conservation and utilization of AnGR, including facilitated access to a wider variety of these resources, particularly for research and development (including breeding).

Although the Protocol does not prescribe special provisions for agricultural biodiversity in general, or AnGR in particular, it does recognize their importance in some paragraphs of its Preamble:

- Recognizing the importance of genetic resources to food security, public health, biodiversity conservation, and the mitigation of and adaptation to climate change,
- Recognizing the special nature of agricultural biodiversity, its distinctive features and problems needing distinctive solutions,
- Recognizing the interdependence of all countries with regard to genetic resources for food and agriculture as well as their special nature and importance for achieving food security worldwide and for sustainable development of agriculture in the context of poverty alleviation and climate change and acknowledging the fundamental role of the International Treaty on Plant Genetic Resources for Food and Agriculture and the FAO Commission on Genetic Resources for Food and Agriculture in this regard,

In Article 8, “Special Considerations” the Protocol further provides that:

In the development and implementation of its access and benefit-sharing legislation or regulatory requirements, each Party shall:

- a. Create conditions to promote and encourage research which contributes to the conservation and sustainable use of biological diversity, particularly in developing countries, including through simplified measures on access for non-commercial research purposes, taking into account the need to address a change of intent for such research;
- b. Pay due regard to cases of present or imminent emergencies that threaten or damage human, animal or plant health, as determined nationally or internationally. Parties may take into consideration the need for expeditious access to genetic resources and expeditious fair and equitable sharing of benefits arising out of the use of such genetic resources, including access to affordable treatments by those in need, especially in developing countries;
- c. Consider the importance of genetic resources for food and agriculture and their special role for food security.

Finally it is also important to note Article 4, “Relationship with International Agreements and Instruments” which provides in sub-paragraphs 4.2 and 4.4 that:

...

2. Nothing in this Protocol shall prevent the Parties from developing and implementing other relevant international agreements, including other specialized access and benefit-sharing agreements, provided that they are supportive of and do not run counter to the objectives of the [CBD] and this Protocol.

...

4. This Protocol is the instrument for the implementation of the access and benefit-sharing provisions of the [CBD]. Where a specialized international access and benefit-sharing instrument applies that is consistent with, and does not run counter to the objectives of the [CBD] and this Protocol, this Protocol does not apply for the Party or Parties to the specialized instrument in respect of the specific genetic resources covered by and for the purpose of the specialized instrument.

During the Nagoya Protocol negotiations the issue of whether and to what extent the Protocol should be applied to genetic resources for food and agriculture (GRFA) was highly contentious. The clear position of the African Group was that the Protocol should apply to all genetic resources, except for Parties to the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)³ and then only for crop and fodder species included in its Annex 1. The African Region has subsequently resisted efforts at the FAO Commission on Genetic Resources for Food and Agriculture (CGRFA) to start developing a specialized instrument for ABS as it relates to food and agriculture (discussed in more detail in 3.4 below), partly because it would trigger the provisions of Nagoya Article 4.4 and exclude such resources from Nagoya, at least for Parties to the new instrument, and partly because it will give rise to a multiplication of ABS instruments, placing substantial additional burdens on national ABS implementation.

3.3. African Union Guidelines for the Coordinated Implementation of the Nagoya Protocol in Africa

It is important to bear in mind that the final Nagoya Protocol text – a compromise proposed by the Japanese Presidency of COP 10 on the last day – does not include everything the African Group had wanted and negotiated for. The African Environment Ministers who were present in Nagoya were

³The CBD decision adopting the Nagoya Protocol recognized that “the international regime on ABS” includes the CBD, the Nagoya Protocol, the Bonn Guidelines and the ITPGRFA.

the last group to agree to the compromise text and eventually did so because they believed the national flexibilities in the Protocol could be used in a coordinated manner by African countries to safeguard their interests. To make this into a reality, a process was initiated under the auspices of the African Union Commission to develop appropriate guidance, starting with a gap analysis of the African Model Law for the Protection of the Rights of Local Communities, Farmers and Breeders, and for the Regulation of Access to Biological Resources, which was adopted in 2000. The gap analysis concluded that the African Model Law remained a valid and valuable expression of African aspirations about ABS, but that it had been overtaken by the adoption of the Nagoya Protocol and the ITPGRFA and therefore needed to be supplemented by new guidance.

In 2015 this process culminated in the adoption by the African Ministerial Conference on the Environment (AMCEN) and the AU Summit of the African Union Guidelines for the Coordinated Implementation of the Nagoya Protocol in Africa. These Guidelines provide practical and strategic guidance to African countries in their national implementation of the Nagoya Protocol.

The AU Guidelines consists of two separate but inter-related parts. The first part, the AU Strategic Guidelines on ABS, provides policy and strategic guidance for a coordinated approach to the implementation of the Nagoya Protocol in Africa. The second part, the AU Practical Guidelines on ABS, is a step-by-step guide providing detailed technical guidance and background considerations to assist the development and implementation of ABS systems at national and local levels. The Guidelines aim to facilitate coordination and cooperation between African countries and African stakeholders around ABS implementation and provide practical guidance on how national ABS systems can be implemented in a regionally coordinated manner. The approach to Nagoya Protocol implementation in Africa outlined in the documents is intended to make coordinated use of national flexibilities in the Nagoya Protocol in order to avoid a situation where African countries end up being played off against one another in a race to the bottom.

While the Guidelines are not legally binding on AU Member States they do represent a political consensus on how to implement the Nagoya Protocol. In particular they commit Member States to strive for compatible access procedures, to cooperate on developing benefit sharing standards and to give strong expression to the rights of ILCs.

The Guidelines make no specific reference to AnGR, because they are assumed to be included in the wider ABS system based on Nagoya. If further work is undertaken in Africa to develop specific ABS measures for AnGR it would be highly strategic to ensure that it is also done in a coordinated manner, and in harmony with the Guidelines.

3.4. The FAO Commission on Genetic Resources for Food and Agriculture (CGRFA) and its Elements to Facilitate Domestic Implementation of Access and Benefit-Sharing for Different Subsectors of Genetic Resources for Food and Agriculture (ABS Elements)

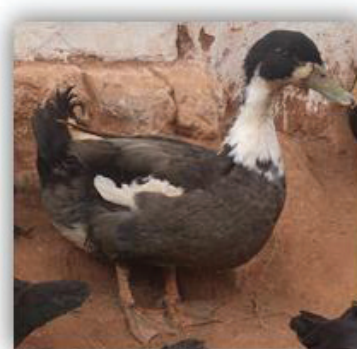
The CGRFA in its original manifestation was established in 1983 to deal with issues related to plant genetic resources. In 1995, the FAO Conference broadened the Commission's mandate to cover all components of biodiversity of relevance to food and agriculture, including animal, forestry, aquatic, invertebrate and microbial genetic resources. In 1997 the Commission established the Intergovernmental Technical Working Group on Animal Genetic Resources for Food and Agriculture (and a separate working group on plant genetic resources; in 2009 it added the Intergovernmental

Technical Working Group on Forest Genetic Resources and in 2015 the Ad Hoc Intergovernmental Technical Working Group on Aquatic Genetic Resources for Food and Agriculture).

In 2007 FAO launched The State of the World's Animal Genetic Resources for Food and Agriculture report (<http://www.fao.org/docrep/010/a1250e/a1250e00.htm>) developed through a participatory, country-driven process under the guidance of the Commission. The International Technical Conference on Animal Genetic Resources for Food and Agriculture, held in Interlaken, Switzerland, welcomed the report and adopted the Global Plan of Action for Animal Genetic Resources (<http://www.fao.org/docrep/010/a1404e/a1404e00.htm>) and the Interlaken Declaration (<http://www.fao.org/docrep/010/a1404e/a1404e00.htm>).

To deal more specifically with ABS issues, the Commission in 2011 established an Ad Hoc Technical Working Group on Access and Benefit-sharing for Genetic Resources for Food and Agriculture, which met only once and was replaced in 2013 by the Team of Technical and Legal Experts on Access and Benefit-Sharing (TTLE). The TTLE developed Elements to Facilitate Domestic Implementation of Access and Benefit-Sharing for different Subsectors of Genetic Resources for Food and Agriculture (<http://www.fao.org/3/a-mm521e.pdf>) – the ABS Elements – which the Commission welcomed at its 15th Session in 2015.

In essence the ABS Elements – and the CGRFA, by welcoming the document – accepts that Parties to the Nagoya Protocol will, at least for the foreseeable future, regulate most GRFA, including AnGR, under the Nagoya Protocol system. CGRFA 15 also reaffirmed that there are no plans to negotiate specialized ABS instruments for GRFA in general, or specific subsectors of GRFA. Nevertheless, the distinctive nature of GRFA, as summarized in Box 1, remains an important issue to bear in mind when implementing national ABS measures on AnGR.



Local poultry breeds, Madagascar (Annie Parson 2016)

BOX 1

DISTINCTIVE FEATURES OF GENETIC RESOURCES FOR FOOD AND AGRICULTURE (and their relevance for AnGR)

The distinctive features of GRFA requiring distinctive solutions for ABS are presented below in seven clusters. They aim to reflect an equilibrium between all subsectors of food and agriculture. Not every feature is necessarily applicable to each and every GRFA and the various subsectors often have different features. Further detailing of subsector-specific features may still be developed. The features are distinctive, but not necessarily unique to GRFA. While other genetic resources may share with GRFA some of the features listed below, the specific combination of these features distinguishes GRFA from most other genetic resources.

[Note: The Intergovernmental Technical Working Group on Animal Genetic Resources, in reviewing the distinctive features identified by the Ad Hoc Technical Working Group on ABS for GRFA, highlighted features particularly relevant to AnGR (marked below by plus signs [+]) or less (or not) relevant (marked below by minus signs [-]).]

A. The role of GRFA for food security

A.1 GRFA are an integral part of agricultural and food production systems and play an essential role for achieving food security and the sustainable development of the food and agriculture sector.

A.2 Plant, animal, invertebrate and micro-organism GRFA form an interdependent network of genetic diversity in agricultural ecosystems.

B. The role of human management

B.1 The existence of most GRFA is closely linked to human activity and many GRFA can be regarded as human-modified forms of genetic resources. [+]

B.2 The maintenance and evolution of many GRFA depend on continued human intervention, and their sustainable utilization in research, development and production is an important instrument to ensure conservation.

C. International exchange and interdependence

C.1 Historically, GRFA have been widely exchanged across communities, countries and regions over often long periods of time, and a relevant part of the genetic diversity used in food and agriculture today is of exotic origin. [+]

C.2 Countries are interdependent with regard to GRFA and act both as providers of some GRFA and as recipients of others.

C.3 The international exchange of GRFA is essential to the functioning of the sector, and its importance is likely to increase in future. [+]

D. The nature of the innovation process

D.1 The innovation process for GRFA is usually of incremental nature and the result of contributions made by many different people, including indigenous and local communities, farmers, researchers and breeders, in different places and at different points in time. [+]

D.2 Many GRFA products are not developed out of an individual genetic resource, but with the contributions of several GRFA at different stages in the innovation process.

D.3 Most products developed with the use of GRFA can in turn be used as genetic resources for further research and development, which makes it difficult to draw a clear line between providers and recipients of GRFA.

D.4 Many agricultural products reach the market place in a form in which they may be used both as biological resources and as genetic resources. [-]

E. Holders and users of GRFA

E.1 GRFA are held and used by a broad range of very diverse stakeholders. There are distinct communities of providers and users with respect to the different subsectors of GRFA. [+]

E.2 The different stakeholders managing and using GRFA are interdependent.

E.3 A significant amount of GRFA is privately held. [+]

E.4 An important part of GRFA is held and can be accessed ex situ. [-]

E.5 An important part of GRFA is conserved in situ and on farm under different financial, technical and legal conditions. [+]

F. GRFA exchange practices

F.1 The exchange of GRFA takes place in the context of customary practices and existing communities of providers and users. [+]

F.2 An extensive transfer of genetic material between different stakeholders along the value chain occurs in research and development. [+]

G. Benefits generated with the use of GRFA

G.1 While the overall benefits of GRFA are very high, it is difficult to estimate at the time of the transaction the expected benefits of an individual sample of GRFA.

G.2 The use of GRFA may also generate important non-monetary benefits.

G.3 The use of GRFA may lead to external effects going far beyond the individual provider and recipient.

[Adapted from Appendix to CGRFA ABS Elements]

3.5. Pretoria Declaration on Animal Identification and Recording Systems for Traceability and Livestock Development in Sub-Saharan Africa

An international Symposium on Animal Identification and Recording systems for Traceability and Livestock Development in Sub-Saharan Africa took place in Pretoria, South Africa from 14-16 April 2015. Because it is relative short and highly relevant for present purposes, the outcome of this meeting (the Pretoria Declaration) is reproduced here in full:

Around 130 participants from 30 countries met in Pretoria, South Africa, on 14-16 April 2015, at the occasion of the international Symposium on 'Animal Identification and Recording Systems for Traceability and Livestock Development in Sub-Saharan Africa'. The Symposium was jointly organized by the Food and Agriculture Organization of the United Nations (FAO), the International Committee for Animal Recording (ICAR), the South African Department of Agriculture, Forestry and Fisheries, the Stud Book and Animal Improvement Association and the Agricultural Research Council of South Africa, the African Union Inter-African Bureau for Animal Resources, and their public and private sector partners from Africa and beyond. The high-level delegates included permanent secretaries of ministries of agriculture, heads of animal production departments and chief veterinary officers, representatives of the African Union Inter-African Bureau for Animal Resources, the World Animal Health Organization, the International Livestock Research Institute and regional research centers, from farmers associations, development agencies, service providers and breed societies. The Symposium was opened by the Minister of the South African Department of Agriculture, Forestry and Fisheries, Mr. Senzeni Zokwana.

This Symposium, the first one ever of this kind to take place in Africa, was very timely and offered a unique opportunity for all partners and stakeholders to share and openly discuss experiences on past and ongoing animal identification and recording programmes.

Taking into account

- that the Minister had highlighted in his opening speech the fact that animal identification and recording plays a critical role in the achievement of food security and safety in Sub-Saharan Africa;
- the Comprehensive Africa Agriculture Development Programme's 4.2 percent annual growth rate target for the livestock sector by enhancing the role of livestock in agricultural intensification and promotion of market-based livestock development;

- the commitments by African governments to the Malabo Declaration of 2014;

Noting the contributions by key stakeholders and country representatives in the symposium on the importance and contributions of animal identification and recording to

- Animal and public health and disease control;
- Stock theft mitigation;
- Food safety and quality;
- Market access, trade and economic growth;
- Genetic improvement and productivity gains;

Noting also the role of various institutions in the improvement of animal identification and recording technology, and acknowledging the importance of partnerships between international, regional and national organizations, as well as between public and private sector;

The Symposium hereby observes and recommends the following:

1. The participants recognised animal identification and recording (AIR) as both public and private goods, whereby:
 - a. AIR should be regarded as public goods, delivering benefits to farmers, consumers, and the nation as a whole through control of infectious diseases, animal traceability, promotion of food safety, and improved livestock data quality and use. AIR can be delivered through public or private sector initiatives.
 - b. AIR are also private goods as they contribute to improved breeding and farm management, increases in animal production and productivity, enhanced market access and competitiveness. Therefore, public-private partnerships are critical elements in the development and operation of AIR systems.
2. The public and private nature of AIR systems calls for participatory and inclusive approaches. The identification of stakeholders benefits derives from participation in the system and requires intensive participatory stakeholder consultations in order to ascertain how such benefits could be used to sustainably support such programmes. Only stakeholder buy-in makes the system economically sustainable.
3. Participation of stakeholders is likely to increase if they are able to clearly see benefits from doing so. It is therefore important that the different uses and benefits of the system are explored in the planning stage through a participatory needs assessment. Benefits of participation and disadvantages of non-participation in an AIR system have to be clearly defined and communicated to all stakeholders.
4. When developing a new AIR system, it is essential to participatory undertake needs assessments, assess the prevailing conditions and existing systems, specify the objectives and determine what is feasible in each given situation. A country can learn from other countries, but should do its own assessment. There is no one-size-fits-all model.
5. Any system must be adapted to socio-economic conditions, production environments, livestock service provisions and veterinary institutions, varying levels of capability within both farmers and officials, limited communication networks and limited availability of resources (both in terms of manpower and finance).
6. A national AIR system requires appropriate national regulation to be in place.

7. The development of an AIR system should be undertaken in a phased manner; it should be extended progressively to new administrative units and/or species and/or functions and activities. It is not advisable to implement a new system that immediately extends to all regions and species. Likewise, it is essential to leave room for piloting, making mistakes, learning and adjusting. The system must be modular, capable of being extended to cover new functions or activities incrementally. The FAO guidelines 'Development of Integrated Multipurpose Animal Recording Systems' are available and should be used to guide the process.
8. The allocation of a unique identification number for individual animals or groups of animals, for premises and for owners within a country is a pre-requisite for operating any AIR system. Other modules or systems, such as traceability and performance recoding features can be added or linked later.
9. Countries should follow international standards and quality protocols and use certified products to ensure quality. The OIE Terrestrial Animal Health Code (Articles 4.1 and 4.2) and the ICAR international guidelines and standards serve as references. International standards also allow for interoperability at regional or international levels, as certain aspects of the systems, for example theft control or breeding, require regional collaboration. The regional harmonization of national regulation is another step towards improved regional collaboration.
10. An integrated AIR system requires comprehensive software. A number of predesigned commercial software packages are available for purchase. It is important to note that pre-designed commercial software may sometimes not offer a sufficient degree of customizability to meet all requirements of a new AIR system. Alternatively, such software may be developed locally to meet specific needs.
11. An integrated approach is recommended in which data is collected in a manner which minimizes duplication of efforts, e.g. multiple data recording by various stakeholders (veterinary services, breeding services etc.). The dual nature of public and private benefits of AIR systems has several consequences. Country experiences showed that purely public systems may not be sustainable as implementation and operating costs are high. Therefore countries may wish to consider that development and sustenance of a multi-purpose animal recording system is complex and requires long term commitment of human and financial resources and these should not be underestimated. Before any decision is taken to introduce an AIR system, it is important to carry out a detailed economic appraisal of the system. Depending upon the results, this can help to communicate the benefits of the AIR system to stakeholders including funding agencies.
12. Ensuring stakeholder commitment from the outset, including national government, is essential for successful implementation of any AIR system. While public funding is often essential at the outset of such system, in order to ensure its long term sustainability, it is important that the system evolves to enable operating costs to be shared by all beneficiaries, including farmers. Good governance and rule of law are essential to establish the enabling institutional environment for AIR systems and promote sustainable and inclusive partnerships. The competent authority should be a facilitator and a coordinator of the various stakeholders rather than be the single implementer and duly recognize the ownership, multiple accesses to and integrated use of AIR data.
13. Most technical problems are solvable, as expertise is available and experiences are transferable. However, institutional problems are harder to overcome and have to be solved nationally.
14. The availability of regular training and education programmes for end users is vital to implement and sustain any AIR system. It is equally important to provide online support to end users, through the establishment of trouble shooting support.

15. Partnerships at international, regional and national levels, as well as public-private partnerships, should be strengthened and sustained in order to promote AIR for traceability, genetic improvement and productivity gains, and livestock development in Sub-Saharan Africa.
16. The Symposium thanked the Government and the People of the Republic of South Africa for hosting and supporting it.

Pretoria, 16 April 2015

[http://www.fao.org/fileadmin/templates/raf/pdfFiles/AIR_Pretoria_Declaration.pdf]

The FAO guidelines on Development of Integrated Multipurpose Animal Recording Systems mentioned in the Declaration were endorsed by CGRFA 15 and can be accessed from the FAO website at <http://www.fao.org/3/a-at517e.pdf>

As pointed out in 2.3.b) above, animal identification and systematic recording of performance data are key to demonstrating the potential advantages of African AnGR and stimulating potential user interest in these resources.



Fulani girl in a N'Dama herd, Guinea (© 2012 AU-IBAR)

3.6. The OIE Terrestrial Code

The World Organisation for Animal Health, generally known by its French acronym OIE, is the recognized international authority on the health aspects of animals and their products. The OIE Terrestrial Animal Health Code (see <http://www.oie.int/international-standard-setting/terrestrial-code/>) sets out standards for the improvement of animal health and welfare and veterinary public health worldwide, including through standards for safe international trade in terrestrial animals (mammals, birds and bees) and their products.

The health measures in the Terrestrial Code are intended to be used by veterinary authorities of importing and exporting countries to provide for early detection, reporting and control of agents that are pathogenic to animals or humans, and to prevent their transfer via international trade in animals and animal products, while avoiding unjustified sanitary barriers to trade. The Terrestrial

Code also constitutes a reference within the World Trade Organization Agreement on the Application of Sanitary and Phytosanitary Measures as an international standard for animal health and zoonoses.

According to the Terrestrial Code all forms of animal identification falls under the competence of the OIE, which leads to possible complications when such identification is primarily intended for other purposes (like recording breed performance data). This is an issue that needs to be resolved through cooperation between national veterinary authorities and other stakeholders with a different interest in animal identification, e.g. traceability for trade purposes, or performance data recording for germplasm marketing.

3.7. National veterinary and herdbook regulations

Most countries have at least nominal national regulations empowering veterinary authorities to control movements of animals and/or animal products. In countries with EU meat export quotas, for example, such national systems are usually highly functional, because they are regularly monitored and audited by the importing countries as a condition of market access. Where such systems exist and are functioning properly it is highly likely that they already record all movements of AnGR, including internal movements, exports and imports. It could be a realistic option to use this capacity for ABS purposes, provided the institutional issues related to the division of powers and responsibilities can be resolved.

Some countries additionally have herdbook regulations which control the marketing of purebred animals for breeding purposes. Where such measures exist they can potentially be used to provide and/or capture additional information about the AnGR accessed from that country, and to control subsequent rights to AnGR by laying down rules that must be followed before individual animals can be added to a herdbook.

3.8. Customary laws, Biocultural Community Protocols and other community-level procedures

Some ILCs have customary laws that restrict individual rights to AnGR, even when the resources are privately owned. For example, in some communities all animals of a particular color or bloodline are nominally regarded as royal property and their owners are prevented from disposing of them except in accordance with predefined procedures. Other communities place a premium on individual or family ownership rights and would never consider interfering in the livestock management practices of a herd owner.

Biocultural Community Protocols (BCPs) are relatively new instruments that record community agreements on how the genetic resources and associated traditional knowledge of the community are to be managed and accessed. BCPs are explicitly recognized in the Nagoya Protocol (as the result of an African Group proposal) and Parties to the Protocol are encouraged to support and recognize their use. The AU Guidelines also call for support to BCPs. Developing a BCP can involve quite a lot of effort and expense, but going through the process of reflection and discussion that is required to reach an agreement can help communities to better understand their collective endowment of genetic resources and associated traditional knowledge and lead to better conservation and sustainable use practices. Such efforts should be encouraged and supported as far as possible. Some countries are even considering making an ILC's right to grant access to GR and aTK conditional on the community having agreed on a BCP that meets minimum standards prescribed in ABS laws and regulations.



Herd of Sahelian breed of goats with the herder, Chad (© 2016 AU-IBAR)

3.9. Property rights and private ownership of AnGR

Although the CBD is unambiguous in its recognition of the sovereign right of States to determine access to GR in their jurisdiction this does not mean that a country's internal legal system automatically allows the government to do whatever it wants with GR that is privately owned. If a country's constitution allows, it might be possible for the government to pass national laws restricting the rights of AnGR owners to grant access. In other countries the constitution guarantees private property rights and it would be illegal for government to prevent owners from freely disposing of their private property and/or exporting AnGR. There might also be a legal distinction between AnGR of exotic breeds (e.g. stud animals bred from bloodlines originally imported by their owners) and AnGR derived from local breeds, where parallel collective or communal rights over the breed might override private ownership of individual animals. A case by case legal assessment is advised before any ABS policies in this regard are finalized.

3.10. Private law contracts governing transfers of AnGR

In *Legal Aspects of Exchange, Use and Conservation of Farm Animal Genetic Resources* (FNI 2007), Tvedt et al comment on the use of private contracts as follows:

The right to use the animal in breeding is often specified in a (formal or informal) contract between the seller and the buyer of an animal. The main rule that ownership can be transferred also applies to animals. The contract or informal agreement determines the scope of what is transferred and which rights still belong to the seller (if any). As a contract is individually agreed, the seller may keep or reserve himself certain rights to the offspring of the animals. The contract then determines which rights are transferred to the contracting party. If no reservation is included in the terms for the sales, the assumption is that the buyer of the animal receives all the rights that the seller had, including taking advantage of the genetic resources. If an animal is sold to the slaughter house for the meat value, the interpretation of that contract will likely be that the buyer does not have a right to use the genetic resources, but only a right to use the meat and other products.

Contracts imply a dynamic element in establishing (or transferring) rights from one owner to the other. The point of departure is that the owner can transfer what he has the right to, but he cannot transfer more than already is covered by his legal right. The contract determines the scope of what is transferred and which rights still belong to the seller. A contract is individually agreed, and is thus more specific than the general rules of ownership. The owner decides whether he or

she wants to sell the animal or give access to the genetic material by selling e.g. semen, eggs or embryos. Thus, the exchange of genetic material is subject to a contract between the provider (seller) and the user (buyer), also if the transaction is between persons in different countries.

The value of a contract is closely related to the compliance by others to its terms and conditions. Therefore, the potential to use contracts must be seen in the perspective of the possibility to enforce others to comply with the content of the contract. In a transparent market, where the seller has good control over the further use of what he sells, the use of contracts will probably be effective. This is for example the case where one needs to register the animal in a herdbook for the next generation of animals to become valuable, and the register depends upon the documentation of the parents of the young animal. The seller of semen could for instance reserve for himself the right to sell semen, or reserve for himself a right to the off-spring of the next generation of calves, to ensure a right to the genetic resources coming out of the breeding with his individual. This agreement or contract could be more or less formal and more or less standardized. A comprehensive study of contractual practice regarding transfer of AnGR has not been undertaken yet, and is difficult because such contracts are commonly kept secret.

An obvious advantage to using contracts is that industry is accustomed to this legal tool. Effective contract laws including systems for enforcement are in place in the majority of countries, increasing the chance for achieving the content of the agreement. The most important limitation of the use of a contract is that it only applies between two parties, and has no legally binding effects for third parties. Thus a contract can hardly be binding for the next rounds of transfer of the AnGR. A contract may include clauses which seek to regulate the subsequent transfer of the genetic material, the enforcement of which may only be possible in a highly regulated or transparent market, or if an effective tracing system is in place.

Where national law on property rights allow the use of private contracts as a means of controlling AnGR transfers there might be additional value in developing a legally prescribed Standard Material Transfer Agreement or minimal standards that must be included in contracts for them to be legally enforceable.

3.11. Intellectual Property Rights

Tvedt et al (2007) also identify and discuss at some length various intellectual property rights (IPR) that are potentially relevant to transfers of AnGR, including trademarks, geographical indications, trade secrets and patents:

Trademarks “protect a distinction between one product and all other products in the market – for the purpose of charging a higher price than competing products. Thus, genetic material per se cannot be protected or covered by a trademark. A trademark can, however, be a useful tool in the animal sector as the value-adding elements created in breeding can be protected. A trademark can improve the value of a product.”

Geographical indications “do not protect or establish any exclusive rights to the genes per se. They may be interesting as a value-adding legal mechanism in the animal sector, if the quality or reputation of a product is linked to a certain geographical area, and commonly linked to the use of particular breeds.” In France the Bresse breed of broiler chicken is a Protected Designation of Origin.

Trade secrets have a “rather narrow scope and do not provide for exclusive commercial rights to the one seeking to hold information secret. Protection of undisclosed information is relevant in animal breeding, where commercial breeders want to keep their nucleus stock and the pedigree and value information away from competitors. However, protection by trade secret is more difficult to enforce than other IPR.”

Patents were originally designed to protect industrial inventions and innovations. They have been granted for inventions related to AnGR in certain jurisdictions, but this is still controversial and has not been thoroughly tested in law. Since patents are granted nationally it is an option to exclude AnGR from patentability. The African position of “no patents on life” should be considered. The exact application of patent law to AnGR requires further study of the applicability of fundamental concepts such as “prior art” and “inventive step”.

A Patent Landscape Report on Animal Genetic Resources prepared for the World Intellectual Property Organization (WIPO) by Paul Oldham et al., in cooperation with the FAO in 2014 concluded that:

- Key technologies relating to animal breeding have a long history and breakthroughs typically involve new methods or technologies rather than depending on genetic material per se;
- Developments involving transgenic animals now focus on recombinant proteins and medical markets rather than products for human consumption;
- Phenotypic selection is being replaced by genomic selection and the rise of genomic indices;
- The completion of major livestock genome sequencing projects has important implications for food and agriculture. However, the patent environment for genetic inventions is less permissive than in the past;
- Emerging developments in synthetic biology, metabolic engineering, genome engineering and genome editing have potentially important implications for food and agriculture and merit further investigation;
- Following a surge of patent activity in the late 1990s the dominant trend in patent filings involving animal genetic resources of relevance to food and agriculture has been downwards. This reflects a combination of factors external and internal to the patent system. Future trends may change following the completion of major genome sequencing projects and the rise of new technologies such as synthetic biology, genome engineering and genome editing;
- The majority of patent activity focuses on dominant breeds and does not involve genetic material from rarer breeds from specific countries or the use of traditional knowledge. This reflects the nature and orientation of existing technologies directed to animal breeding;
- Patent data could potentially provide a useful source of information for farmers and animal breeding organizations to address issues such as disease resistance and control or adaptation to climate change;
- The research detected an emerging trend towards the combination and integration of genetic information with software and business methods that merits further investigation in the context of the completion of genome sequencing projects for major livestock animals.

3.12. Livestock Keepers’ Rights or Farmers’ Rights

Tvedt et al (2007) observe that the concept of farmers’ rights has not been explored in much detail in the livestock sector and that doing so would first require wider international recognition of the role played by farmers or livestock keepers in the conservation and sustainable use of AnGR. They go on to add that:

Different strategies have been suggested for securing livestock keepers' rights, and these include codifying the customary laws that relate to the management of AnGR. A first step in this direction would be to review relevant customary law in order to identify which principles need to be included. Given that grazing rights are crucial to maintaining pastoral societies and are thus closely linked to conservation both at a breed level and at an allelic level, livestock keepers' rights could include production and grazing rights, as well as the protection of traditional knowledge. Mechanisms to strengthen livestock keepers' understanding of AnGR issues, their negotiation capacity and access to legal support would also necessarily be a crucial element of a strategy for developing livestock keepers' rights.



Farmers discussing livestock issues, Niger (© 2013 AU-IBAR)

Obstacles to the implementation of livestock keepers' rights are that they could conflict with other intellectual property rights. For example, if a patent on a particular gene existed, the consent of the patent holder could be required when animals that express that gene were used for further breeding. Addressing this potential conflict is not however an insurmountable problem. [...] One approach would be that livestock keepers' rights could inter alia be relevant for inclusion both when assessment of the patent criteria is carried out, as well as during enforcement. Livestock keeper practices are typically not published in a manner qualifying as prior art according to the patent system. Two alternative approaches also might be considered: i) either single countries could implement exemptions to intellectual property rights for livestock keepers, or ii) standard exemptions could be developed at a regional or multilateral level.

It is also possible to imagine some form of a sui generis protection system for livestock keepers' rights. This concept would have to be developed further on a theoretical level [...] but could include a model for benefit sharing or could combine individual and community rights over AnGR. A crucial issue in the development of such a concept would be whether a sui generis system should include a positive right to exclude others or whether it should be geared towards being a negative right aiming at preventing misappropriation of what is in use by livestock keepers.



Women presenting her Djallonke sheep herd, Cameroun (© 2013 AU-IBAR)

IV. Assessment of legal environment for exchange and movement of AnGR

From the information presented above it appears that there is ample international and regional legal guidance on potential measures to regulate the exchange and movement of AnGR, but a lack of national and local implementation and application.

Movement and of exchange of livestock breeds and germplasm have been taking place for a very long time. Throughout human history, livestock producers have relied on a vibrant international exchange of animal genetic resources to attain improvements in the quality and productivity of their animals. According to an FAO report, “on a global scale, the most significant gene flows have involved the “big five” livestock species: cattle, sheep, goats, pigs and chickens⁴.

There is thus significant movement and exchange of animal genetic resources among the countries and regions in both developing and developed countries.

The situation in the AnGR however differs from what can be observed in the plant sector where large national and multinational firms, operate alongside publicly funded national institutions and international centres and where national international ex situ collections are sources of breeding material. In contrast to plant genetic resources for food and agriculture where flows of these resources tend to take place from South to North, in the case of AnGR, diverse germplasm originating from the South are not considered essential for breeding purposes. As such, the flows of AnGr mainly take place in accordance with the following scenarios: North-North, North-South and South-South. In this regard and as suggested by one author, “most flows of genetic material originate from developed countries and occur among developed countries, most of which are without zoo-sanitary restrictions, and involve animals suited to high-input production systems.”⁵ The same author further states that “there have also been important transfers between the regions of the South, most notably the transfer of South Asian cattle to Latin America and that “relatively little movement of livestock germplasm has occurred from the South to the North”⁶. This view is also reiterated in an FAO report on the World State Animal Genetic resources which provides that “during the past two centuries, global livestock numbers and the exchange of breeds and animal genetic material have greatly increased. North– North exchanges have prevailed. North–South and South–South exchanges have been more limited, and South–North flows have been the least frequent.”⁷

That being said, some level inter regional movements of AnGR takes place between neighboring countries. Such exchanges are often not recorded and are difficult to track. Breed conservation programmes are lacking in many countries. The same is true for structured breeding programmes, and for the policy and legal frameworks needed to support sustainable management of animal genetic resources.

In drawing the link to ABS, it is important to note that the adoption of national measures on ABS will be grounded in the fact that access to genetic resources should take place on “mutually agreed

⁴FAO, *the state of Agricultural Biodiversity in the Livestock Sector “Flows of animal genetic resources available at <ftp://ftp.fao.org/docrep/fao/010/a1250e/a1250e03.pdf>*

⁵Irene Hoffmann “*International flows of animal genetic resources – historical perspective, current status and future expectations*” available at <http://cgn.websites.wur.nl/seminars/Worshop20100812/Hoffmann.pdf>

⁶Ibid

⁷*The State of the World’s Animal Genetic Resources for Food and Agriculture P.55, the full report can be accessed at the following pag: <ftp://ftp.fao.org/docrep/fao/010/a1250e/a1250e.pdf>*

terms” and “be subject to prior informed consent,”. However, other aspects of AnGR beyond the core requirements envisaged in ABS, can also be regulated, and some of the countries have already instituted requirements for animal genetic material import and export. FAO’s Technical Working Group on AnGR Access and Benefit sharing issues explained in its recent report in 2014 that:

“[t]he sovereign right of states to determine access to genetic resources should not be confused with other categories of entitlement, such as the private ownership of an animal. A farmer’s ownership of an animal may be conditioned by certain laws. For example, animal welfare legislation may regulate the handling, husbandry and transport of the animal. Other laws may require the animal to be vaccinated against specific diseases, and so on. In a similar way, ABS measures may require that, even though an animal is the private property of a farmer or the collective property of a community, certain conditions (e.g., related to the need for “prior informed consent”) must be met before it can be provided to a third party for research and development”⁸

In that regard and as articulated by the Global Plan of Action for Animal Genetic Resources and Interlaken Declaration the “area that requires development is the framework for the exchange of animal genetic resources among countries”. Policy development should take into account the increasing role of intellectual property rights in the sector, and the need to secure fair and equitable benefit-sharing, the rights of indigenous and local communities, particularly pastoralists, and the role of their knowledge systems.”⁹



Kuri cattle herd, Chad (© 2015 AU-IBAR)

⁸Commission on Genetic Resources for Food and Agriculture. (2014). *Report of the Eighth Session of the Intergovernmental Technical Working Group on Animal Genetic resources for Food and Agriculture. Report CGREFA/WG-an-gr-8/14/REPORT*. Rome: FAO.

⁹Global Plan of Action for Animal Genetic Resources and Interlaken Declaration Para 40 Report available at the following site <ftp://ftp.fao.org/docrep/fao/010/a1404e/a1404e00.pdf>

V. National-level progress towards the implementation of the Nagoya Protocol

As of December 2015, of the total of 69 countries that have acceded to or ratified the Nagoya Protocol, 29 were African countries.¹⁰ The table below provides a brief overview of national developments towards the implementation of the Nagoya Protocol in African countries that have to date ratified or acceded to the Protocol, or have moved to do so.

Countries	Overview of progress towards implementation
Algeria	<ul style="list-style-type: none"> Algeria is a Party to the CBD, but has only signed the Nagoya Protocol. Ratification is on the agenda but is unlikely to happen in the coming 12 months. The main legal framework is provided by Law 2014-07 on Biological Resources, adopted on 9 August 2014, which aims to create the conditions for the collection, circulation and use of biological resources (BR) and aTK for sustainable and beneficial development in the national interest.
	<p>It contains a number of provisions on ABS, but eight regulations must be adopted under the law to make it operational, and more. Six of the regulations have been developed by the Ministry of Environment (MREE)</p> <p>The remaining two regulations are still in development at the MREE. They will cover the involvement of Algerian scientists in research and the banking of duplicate samples in national gene banks, as well as the mechanisms for fair and equitable benefit sharing resulting from the use of BR and aTK.</p>
Benin	National Stakeholder Committee but no measures in place yet.
Botswana	<p>Botswana does not have a specific legislation on access to genetic resources and benefit-sharing as provided for under the CBD and the Nagoya Protocol. However, there is sectoral legislation with components of and relevance to ABS. In Botswana, natural resources are managed by a statutory authority, usually a government department that would be responsible for administering sector-specific legislation depending on the resource. There are at least 19 pieces of legislation relevant to ABS issues, with six covering land. The rest are sectoral, addressing water and waste management, industry, public health, forestry, agriculture, fish protection and aquatic weeds. The Wildlife and National Parks Act and the Agricultural Resources Act, provide, to a reasonable extent, the structures, processes and procedures for application to access resources (particularly wild flora and fauna within gazetted wildlife parks).</p> <p>These measures pre-date both the CBD and the Nagoya Protocol, and benefit-sharing is not addressed by the existing legislation. However, these two Acts can be the foundation for development of ABS legislation in Botswana.</p> <p>A Draft National Environment Act is undergoing review and consultation, and suggestions have been made to consider ABS as one of the Chapter of this Act, instead of creating an additional piece of legislation dealing specifically with the issue.</p>
Burkina Faso	No measure in place yet
Burundi	No measure in place yet
Comoros	No measure in place yet
Congo	No measure in place yet
Côte d'Ivoire	No measure in place yet
DRC	No measure in place yet

¹⁰The countries that have ratified or acceded to the Protocol in Africa include: Benin, Botswana, Burkina Faso, Burundi, Comoros, Congo, Djibouti, Ivory Coast, DRC, Egypt, Ethiopia, Gabon, Gambia, Guinea, Guinea Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mauritania, Mauritius, Mozambique, Namibia, Niger, Rwanda, Seychelles, South Africa and Uganda

Countries	Overview of progress towards implementation
Egypt	<p>In 2008, Egypt adopted a national biodiversity strategy and action plan (NBSAP) which places institutional development and capacity building as top priorities. Although Egypt does not have a dedicated ABS or biodiversity law, it is the first Arab country that regulates access to its GR and TK. The Egyptian Intellectual Property Law (82/2002) establishes a BS regime in the context of Plant Variety Protection. Article 200 of the law obliges plant breeders to share the profits gained from using Egyptian GRs or TK to breed new varieties with the interested party and according to regulations. It requires plant breeders to disclose the origin of GRs or TK relied on to develop the new variety and makes plant variety protection contingent upon the genetic resource having been acquired legitimately under Egyptian law.</p>
Ethiopia	<p>Ethiopia has enacted a law that regulates access to genetic resources (Access to Genetic Resources and Traditional Knowledge, and Community Rights Proclamation No 482/2006). The law applies to access to genetic resources (including derivatives) found in ex situ or in situ conditions and the traditional knowledge associated therewith. It subjects the access to genetic resources and community knowledge to the requirement of permit from Institute of Biodiversity Conservation (IBC) and sharing of benefit arising from the use thereof. It also stipulates that access to genetic resource under multilateral system of access of the International Treaty shall be granted subject to the conditions and procedure provided therein (art 15(2)). A regulation to implement the proclamation was gazetted. The regulation cited as “Access to Genetic Resources and Community Knowledge, and Community Rights” facilitates Access Agreement, which will be signed in accordance with article 14(2) of the proclamation on access to, and sharing the benefits arising from the utilization of genetic resources and/or community knowledge.</p>
	<p>Regulation:</p> <p>This is a law which was specifically issued to implement the access proclamation. It entered into force on 9 November 2009 as a Council of Ministers Regulation (No. 169/ 2009). Procedures for access, procedures for community consent, administration and utilization of access money and other miscellaneous provisions. The regulation also contains two templates for commercial and non-commercial access requests. The law confers mandates for regional states so that these may administer access request for the resources within their boundaries. Accordingly, states have powers and responsibilities to enact detailed regulations necessary to implement the Regulation within their regions and designate and strengthen institutions at all levels to implement the Regulations.</p> <p>Both legislation and regulations, having been developed prior to the Nagoya Protocol, need to be revised or amended to address the new obligations/ requirements under the Nagoya Protocol.</p>
Gabon	No measures in place yet
Gambia	No measures in place yet
Guinea	No measures in place yet
Guinea Bissau	No measures in place yet
Kenya	<p>The relevant measures in place in Kenya include the Environment Management and Coordination Act 1999 and Environmental Management & Co-ordination (Conservation of Biological Diversity & Resources, Access to Genetic Resources & Benefit Sharing) Regulations (2006). Furthermore, the Constitution of Kenya provides that all natural resources and the benefits derived thereof belong to the Government and people of Kenya.</p> <p>All laws on the issue of access to and protection of resources (intellectual property laws) are subject to the provisions of the Constitution.</p> <p>The Environmental Management and Co-ordination Act (No. 8 of 1999) provides for the regulation of biological resources and genetic resources for ensuring sustainable management and protection of such resources.</p> <p>No specific policy in Kenya on GR.</p>

Countries	Overview of progress towards implementation
	<p>Section 53 – NEMA required to issue guidelines and prescribe measures for the sustainable management and utilization of genetic resources in Kenya, appropriate arrangements for access to GR of Kenya including issue of licenses and fees for such access, and sharing of benefits derived from access to GR in Kenya.</p> <p>The Environmental Management and Coordination (Conservation of Biological Diversity and Resources, Access to Genetic Resources and Benefit Sharing) Regulations do not apply to:</p> <ol style="list-style-type: none"> the exchange of genetic resources, their derivative products, or the intangible components associated with them, which are carried out by a local community of Kenya among themselves and for their own consumption; access to genetic resources derived from plant breeders as defined under the relevant laws relating to plant breeding and plant varieties; human genetic resources; and approved research activities intended for educational purposes within recognized Kenyan academic and research institutions which are governed by relevant intellectual property laws. <p>Below are some of the gaps in the current framework that have to be addressed to ensure compliance with the Nagoya Protocol</p> <ul style="list-style-type: none"> No clear provision of how benefits are to be distributed to local community (what is fair and equitable?) Who is the local community and TK associated to them? Do the regulations cover biological resources as well? No standard form/provisions of the contents of PIC and MTA – this may cause confusion to providers/owners and users as this is a new issue for the country No distinct lines when research ends and commercialization starts – the dilemma of enforcement
Lesotho	No measure in place yet
Liberia	Draft legislation has been developed and has gone through nationwide consultation.
Madagascar	A draft interim ABS legislation in the form of decree is under elaboration. A full-fledged legislation will be elaborated but the decree is intended to cover for the interim period before the legislation is adopted, approved and in force.
Malawi	<p>The relevant measures in place include the Environment Management Act 1996 and Procedures and Guidelines for Access and Collection of Genetic Resources of Malawi 1996. Articles 35 and 36 of the Environmental Management Act contain provisions on the conservation of biodiversity and on access to genetic resources.</p> <p>The Minister may assess and identify Malawi’s biological resources before formulating and implementing policies and frameworks for their protection. The Act also contains suggested actions that the Minister may undertake for the conservation of biological resources. The Minister may also restrict access to Malawi’s genetic resources, or impose fees or benefit sharing measures involving the owner of the technology and the government</p>
	<p>The guidelines’ objectives are to:</p> <ul style="list-style-type: none"> ensure that research of Malawi’s genetic materials does not lead to loss of biodiversity; to ensure that the exchange of genetic resource and germplasm and the commercialisation of research results are done in such a way that Malawi benefits economically from whatever is exported; to encourage the establishment of gene banks and genetic gene banks (in situ and ex situ) and the formation of strong linkages with these banks, including the SADC gene-bank; to ensure that research projects involving the exchange of genetic resources and germplasm are effected in a manner that encourages collaboration with foreign researchers;

Countries	Overview of progress towards implementation
	<ul style="list-style-type: none"> to ensure that expatriate researchers/collectors work closely with competent local researchers to safeguard Malawi's interests and ; to ensure that research projects on genetic resources are geared towards Malawi's socioeconomic development and that their execution does not lead to fragmentation and duplication of efforts <p>Malawi is in the process of developing regulations for ABS. The regulations will take into account the articles of the NP.</p>
Mauritania	No measures in place yet
Mauritius	No measures in place yet
Mozambique	No measures in place yet
Morocco	<p>No measures in place yet.</p> <p>Below some steps taken by Morocco towards the ratification and implementation of the Nagoya Protocol:</p> <ul style="list-style-type: none"> Morocco signed the NP in December 2011 Ratification process is at the final stage Adoption (Bill of Ratification) by the Council of Government in March 2012 Adoption (Bill of Ratification) by Cabinet in June 2012 (meeting presided by HM the King) Unanimous adoption (Bill of Ratification) by the first chamber of Parliament on 12 February, 2013 Publication of the Bill of Ratification in the Official Gazette N° 6166 4 July, 2013 Deposit of the instrument of ratification in New York is only contingent on getting the Seal of approval by HM the King
	<p>Implementation</p> <ul style="list-style-type: none"> A draft law ("Avant Projet de loi") has been elaborated and is being examined by Cabinet. Once approved by Cabinet the draft law will be discussed through consultations with various stakeholders prior to being formally submitted to Parliament for approval - the process could take up to two years.
Namibia	Interim Bioprospecting Committee has been operating under a Cabinet Mandate since 2007. Draft Access to Genetic Resources and Associated Traditional Knowledge Bill was tabled in Parliament in November 2015.
Niger	No measures in place yet
Rwanda	No measures in place yet
Seychelles	The Seychelles does not have a comprehensive legislative/ regulatory ABS Framework. The Seychelles developed a draft bill in 2005 on access and benefit sharing entitled commentary on the Development of the Republic of Seychelles Access to Genetic Resources and Benefit Sharing. The objective of the bill was to set the perimeters for the development of all aspects of a full fledge legislation and supporting legislation on ABS in the Seychelles. However, since the development of the bill in 2005 nothing has been done to further advance this process.
Tunisia	No measures in place yet
South Africa	<p>South Africa has promulgated the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA) as a framework legislation to regulate ABS issues. This legislation was built on the basis of the White Paper on the Conservation and Sustainable Use of South Africa's Biological Diversity, 1997, the CBD and the Bonn Guidelines on ABS. The NEMBA objectives are to provide for:</p> <ol style="list-style-type: none"> the management and conservation of biological diversity within the Republic; the use of indigenous biological resources in a sustainable manner;

Countries	Overview of progress towards implementation
	<p>iii. the fair and equitable sharing among stakeholders of benefits arising from bioprospecting involving indigenous biological resources; and to give effect to ratified international agreements relating to biodiversity which are binding on the Republic.</p> <p>ABS issues in the NEMBA are being implemented through the Bioprospecting, Access and Benefit Sharing (BABS) Amendment Regulations. These regulations provide for</p> <ul style="list-style-type: none"> • The notification process for the discovery phase of bioprospecting involving any indigenous genetic and biological resources; (b) • A permitting system is required for bioprospecting and biotrade activities involving any indigenous genetic and biological resources or export from the Republic of any indigenous genetic and biological resources for the purposes of bioprospecting , biotrade or any other kind of research; • form and content of and requirements and criteria for benefit sharing and material transfer agreements; and • Set out the administration process of the Bioprospecting Trust Fund. <p>In terms of steps towards the implementation of the Nagoya Protocol, South Africa is currently reviewing its existing ABS framework to ensure alignment with the requirements under the Nagoya Protocol.</p>
<p>Uganda</p>	<p>National regulations on ABS were formulated in March 2005 in line with Article 15 of the CBD on Access to Genetic Resources.</p> <p>The objectives of the national regulations are to:</p> <ol style="list-style-type: none"> 1. Prescribe procedure for access to genetic resources for scientific research, commercial purposes, bio-prospecting or industrial application; 2. Provide for the sharing of benefits derived from genetic resources; and 3. Promote the sustainable management and utilization of genetic resources. <p>In terms of institutional arrangements for implementation the regulations designated the Uganda National Council for Science and Technology (UNCST) as the Competent Authority, whose functions are spelt out in the regulations and include the following:</p> <ol style="list-style-type: none"> a. Processing applications b. Coordinating activities relating to access to genetic resources c. Establishing and maintaining a depository for all MTAs d. Ensuring samples/specimens are deposited in approved locations in Uganda e. Training, ensuring technology transfer f. Facilitating negotiations and conclusion of MTA g. Ensuring the people of Uganda benefit from the genetic resources accessed h. Submitting reports to NEMA on the implementation of the regulations.

VI. Analysis of Nagoya Protocol implementation

From the information above it is clear that no country in Africa has to date developed or enacted post-Nagoya Protocol measures that are in compliance with the obligations set out in the Nagoya Protocol. Rather, countries are in one of the following two situations:

- a. Countries that have comprehensive pre-Nagoya measures on ABS (Ethiopia, Kenya, South Africa..) are in the process amending existing domestic measures to meet the obligations set out in the Nagoya Protocol.
- b. Countries that have no comprehensive ABS measures in place – the majority of African countries – have to develop/enact entirely new laws and regulations to meet their requirements under the Nagoya Protocol.

The coverage of ABS laws is relevant to the AnGR sector as it determines to what extent the sector will be affected by these laws. It has to be noted however that the range of resources covered by the laws and guidelines differ widely. In some countries the scope of the laws and guidelines extends to all biological resources (Ethiopia).

A few measures recognize genetic resources to be something different from biological resources (that they are genetic and/or biochemical information, for example, or a right to engage in a specific use), but still control movement and use of those resources by controlling the movement and use of biological material (see e.g. *Malawi's Environmental Management Act Art. 36*)

VII. Technical standards and protocols for the exchange and movement of genetic materials

Very few African countries have so far developed legal measures aimed specifically at regulating AnGR, at least from an ABS perspective. However, national and international AnGR movements are frequently subject to veterinary health regulations, which can potentially serve as a legal foundation for also regulating ABS aspects of such movements. Doing so would however require that the difficult issues of mandates and responsibilities can be resolved between veterinary and ABS authorities.

“Management of AnGR” can be taken to encompass conservation of AnGR (including the indirect effects of sustaining the production systems where the genetic resources are utilized), genetic improvement (including regulation of specific techniques and the associated infrastructure) and animal health (including provisions related to trade, breeding and transport.)

Countries have different subsets of the total number of animal breeds in the world. Additionally, countries are increasingly interdependent, relying on access to AnGR from elsewhere. The conservation and use of AnGR also often involve the application of traditional knowledge associated with these resources, given that livestock breeds or varieties and the knowledge associated with their management are often developed by local or indigenous communities. Scientific institutions and commercial enterprises may further develop such materials in the same country or elsewhere. While the Global Plan of Action for Animal Genetic Resources provides a comprehensive framework for the management of AnGR, the Nagoya protocol adds important dimensions in relation to compliance and the protection of traditional knowledge which can be useful in regulating the flow of AnGR.

The conservation of animal genetic resources in Africa is based upon two complementary approaches, in situ and ex situ conservation. In situ conservation entails the active breeding of animal populations for food and agricultural production in such a way that genetic diversity is optimally utilized in the short term and maintained for the longer term. Activities that support in situ conservation include performance recording schemes, development of breeding programmes and management of genetic diversity within animal populations. In situ conservation also includes steps taken to ensure the sustainable management of ecosystems used for agriculture and food production. Ex situ conservation is carried out through long-term cryogenic storage of frozen semen (and sometimes ova or embryos), which is relatively expensive to establish but quite cost-effective to run.

Though a large number of African countries have ratified the Nagoya Protocol, many of them still lack the necessary capacities to effectively implement the Protocol. For example, many do not yet have functional domestic legislative, administrative or policy measures on ABS in place and have not yet set up the institutional arrangements to support implementation of the Protocol at the national level. Many lack experts in ABS and related issues. Moreover, the level of awareness of the Protocol and its provisions is still quite low in most countries, which has led in some case to a slow ratification/accession process. Key stakeholders – including government officials, indigenous and local communities, the private sector and the public – are not fully aware of the provisions of the Protocol which can lead to difficulties in both ratification and implementation. Expertise to effectively carry out regulatory functions is limited, as is capacity to collect, manage and share ABS information. Almost all countries need capacity-building and support in development of tools for

monitoring utilization of genetic resources, including through checkpoints.

The following provides a summary of key challenges that countries are facing in relation to the ratification and implementation of the Nagoya Protocol.

Ratification/ Accession to the Nagoya Protocol

- The legal procedures for ratifying/ acceding to the Nagoya Protocol and domesticating it can be cumbersome and intricate in some countries. In some countries, implementing legislation has to be passed before ratification/accession can be formally approved, causing substantial delays.
- In some countries, extensive and protracted stakeholder consultations have caused delays in processes towards ratification/accession.

Inventory of Genetic Resources

- Most African countries do not have the tools, mechanisms, expertise and financial means to carry out extensive inventories to fully appreciate the potential of their resources.
- The role of R&D investment in unlocking potential value is poorly understood and often under-appreciated.
- In the African context of arbitrary colonial-era borders there are special challenges around identifying and regulating transboundary genetic resources.

Engagement and participation of stakeholders

- In communicating and carrying out consultations with ILCs regarding the development of national ABS measures, some African countries are encountering challenges related to local languages, use of technical terms, social and cultural contexts, and the local peculiarities of traditional authorities.

Development of administrative, legislative and policy measures

- Elaborating coherent policy frameworks to provide a national vision on ABS issues and a basis for any legal and institutional frameworks
- Developing in-country expertise on ABS issues to guide the legal and policy processes
- Taking stock of domestic measures relevant to ABS in light of the obligations under the Nagoya Protocol
- Reviewing existing laws and policies in order to identify potential conflicts
- Harmonizing existing national regulatory frameworks
- Developing regulations to implement ABS laws

Negotiation/ conclusion of mutually agreed terms

- Developing capacity of the public sector, the private sector and ILCs to negotiate effective contracts, including through the development of legal expertise
- Lack of robust information system(s) for tracking MATs, exchanged materials
- Lack of capacity to ensure the enforcement of Material Transfer Agreements

Developing mechanisms for the monitoring of the utilization of genetic resources in view of ensuring compliance

- Building capacity to monitor the utilization of genetic resources once the resources leave the country

- Minimizing regulatory transaction costs as an incentive to promote compliance
- Developing lasting partnerships between stakeholders to build trust and support compliance
- Building capacity to develop effective measures regarding access to justice

In relation to AnGR, as noted above, most African countries lack the legal, institutional and policy frameworks to manage the characterization, inventory and monitoring mechanisms needed to adequately regulate inflow and outflow of animal genetic resources. Below, a list of other capacity issues that are faced by countries in this area:

- Lack of priority given to issues related to AnGR
- Indigenous knowledge on AnGR is fast disappearing yet there is no systems for capturing, transmitting and verifying such knowledge
- Awareness of all the actors involved in the management of AnGR
- Inventory of AnGR
- Valuation of our AnGR (better utilization)
- Develop identification, recording and traceability of systems for our AnGR

VIII. Existing practices

a) South Africa

South Africa has well developed and comprehensive legislation in the Animal Improvement Act (1998). It provides for the breeding, identification and utilization of genetically superior animals, in order to improve production and performance. The act contains provisions on: collection, analysis, registration and use of animal genetic material; import and export of animal genetic material; and breeding societies. Furthermore, the act provides for the designation of an officer – the Registrar of Animal Improvement – responsible for keeping a register of semen collectors, inseminators, embryo collectors, embryo transferors, import agents, centers, donor animals, animal breeders' societies and registering authorities. The act regulates certain actions in respect of animals and genetic material, such as, among other things, import and export.

The import of genetic material is permitted only to persons registered as import agents, or a person acting on their behalf; the collection, evaluation, processing, packaging or storage of embryos or ova is permitted only to persons registered as embryo collectors or to the owner of an animal from which the embryos or ova are collected, evaluated, processed, packed or stored. The sale or import of genetic material is prohibited unless such material is accompanied by the prescribed written warranty. The import of an animal with the aim of recording or registering such animal in terms of any breed standards is also forbidden, as well as the import of genetic material with the aim of recording or registering the progeny to be begotten from such genetic material in terms of any breed standards, unless such importation has been authorized by the registrar, in writing. Export of animals and genetic material of local breeds is possible only with the written authorization of the registrar. According to the act, the Minister can establish a scheme for the evaluation and certification of the performance of animals or a kind or breed of animal specified in the notice, with the objective of improving the genetic production potential of such animals, provided that a cost benefit analysis of such a scheme has been carried out. The act also regulates the constitution of breeding societies which provide for the promotion, breeding, recording or registration, genetic improvement and use of a kind of animal or an animal of a specified breed of such kind of animal; and for the determination and the application of breed standards. Among the requirements for constituting such a society is the registration of a 'breed standard' defined as a written set of phenotypic or genotypic standards of excellence for the animal for which the society is being established.

Another relevant South African law is the "Animal Identification Act" of 2002, which provides for measures for the marking and the registration of animals used in agriculture. A registrar of animal identification is designated by the Minister within the Department of Agriculture. A register of all identification marks must be kept by the registrar, and each animal owner must apply for registration of an identification mark and mark his or her animals in the prescribed manner.

b) Uganda

In Uganda, genetic improvement is regulated by the Animal Breeding Act, which establishes the National Animal Genetic Resources Centre and Data Bank. The act provides for the promotion of sustainable animal and fisheries genetic improvement, regulation and control, marketing, import and export and quality assurance of animal and fisheries genetic materials. It also provides guidelines, on appropriate breeding strategies, to farmers, investors, researchers, extension workers and civic leaders on, among other things, suitable breeds for various agro-ecological zones; alternative breeding

programmes; management systems for the conservation and sustainable use of indigenous genetic resources; and modern breeding technologies. According to the Uganda Animal Breeding Act, a sample of all genetic materials – namely semen, ova, eggs, and embryos – shall be submitted to a national depository for examination and future reference. All new genetic materials shall conform to the national biosafety standards as set by the Uganda National Council of Science and Technology (UNCST) and the Uganda National Bureau of Standards (UNBS) and a satisfactory genetic impact statement shall be provided by the promoter to the Centre and other designated offices. All genetic material developed in Uganda shall be patented in accordance with the provisions of the National and International Intellectual Property Rights. Imported and locally produced genetic material shall be strictly screened, to conform to quality and performance standards established by the director.

c) Rwanda

The Government of Rwanda recently adopted key policies namely Vision 2020 and the Poverty Reduction Policy that will foster development for the next 2 decades. One of the pillars of the vision is the transformation from subsistence to a productive, high value, market-oriented Agriculture that acts as a catalyst for further economic development in processing, trade and releasing people from the agricultural sector into other sectors of the economy. Key products for this policy are milk, meat, fish, hides and skins and honey.



Ankole herd, Uganda (© 2014 AU-IBAR)

In this context, the government of Rwanda recognizes that livestock as an important part in achieving food security for Rwanda, especially in terms of the protein requirements and also its potential role in poverty alleviation.

For the past ten years, Ministry of Agriculture and Animal Resources has been focusing on animal resource sector modernization and investment in genetic improvement, animal health and disease control, feeds and feeding, strengthening livestock infrastructure and improved service delivery.

Animal production, the integration of livestock into smallholder farming and the contribution of animal protein to diets are key factors in food security. According to EICV III 70% of households now own livestock. The growing demand for animal products due to economic growth and rising incomes represents a vital opportunity for the Ministry of Agriculture and Animal Resources to continue develop Rwanda's animal resource sector.

The challenge remains to design and develop the livestock production systems in such a way that they can contribute to both food security and poverty alleviation, especially in the smallholder sector, without leading to environmental degradation. Genetic improvement is only one of the many contributing factors to increased livestock productivity and production and with improving the nutritional status and health status of animals one of the key factors for this improvement in livestock production.

Rwanda does not have schemes for registered pure breeding. This makes that it is difficult to maintain purebred populations of animals and execute selection activities within these populations.

The Government of Rwanda is currently reviewing laws related to animal husbandry to make them rhyme with the present times. Once this is done, health will improve thereby making it safe to consume more animal products and this will encourage farmers to produce more and sales will increase and generate more income to the farmers.

d) Kenya

The livestock sector significantly contributes to the Kenya economy (entire national GDP 10%) and socio economic development in the country.

The major production systems (PS) include:

- Mixed Crop-Livestock PS in the Highlands
- Mixed Crop-Livestock PS in the Lowlands
- Pastoral Range Livestock PS
- Ranching Livestock PS
- Landless PS
- Land Saving Livestock PS

The Kenya Animal Genetic Resources Centre (KAGRC) formally known as Central Artificial Insemination Station (CAIS) was established by Kenya Gazette Notice Number 557 of 19th June 1946 with the objective of controlling venereal diseases and genetic improvement of exotic dairy cattle. The mandate of KAGRC is to produce, preserve, and conserve, animal genetic material (semen embryo, tissues and live animals) and rear breeding bulls for provision of high quality disease free semen to meet the national demand and for export.

The new constitution in Kenya recognizes veterinary services as vital for sustainable development. Appropriate policies and legal framework to support development and coordination of animal breeding programs are being put in place.

There are few conservation programmes on AnGR in the country for their future use and development except for the wild life species.

In situ conservation: The objective is to maintain the adapted breeds in those environments. Participants in the in-situ conservation efforts in Kenya are private farms, public institutions, and indigenous communities. Shows and exhibition are currently used as incentives to conserve the breeds.

Ex situ conservation: Hardly any organized ex-situ conservation programmes for live animals (Sahiwal stud).

Kenya has a facility for cryo-preservation of semen at the Kenya Animal Genetic Resource Centre (KAGRC). Currently only producing cattle semen for local consumption (conservation programme).

Main challenges identified in Kenya in relation to AnGR Management include:

- Inadequate policies and legislation
- Inadequate manpower with certain specialized capacities
- Inadequate infrastructure and facilities
- Weak coordination and harmonization of institutions implementing AnGR Management Action Plans
- Inadequate funding of implementation of AnGR Management Action Plans
- Lack of clear National AnGR management strategies



Gala goat herd, Kenya (© 2014 AU-IBAR)

e) Malawi

- Malawi has a wide range of farm animal genetic resources (FAnGR).
- Approximately 95% of these FAnGR are of indigenous types. The remaining 5% are of exotic blood, and their crosses in varying genetic proportions (half breed, 3/4 breed, 7/8, 15/16 etc.).
- These FAnGR constitute an important sub-sector within Malawi's agriculture, contributing about 7% of the total Gross Domestic Production (GDP), and about 20% of the value of total agricultural product. Within the smallholder sector, they constitute an integral part of food security and sustainable livelihoods. Most non-market services of livestock have not been included in the GDP. These are transport, draught power, gifts and socio-cultural aspects. Given the current high prices of inorganic fertilizers, manure from FAnGR offers a cheap source of organic fertilizer for crop production.

f) Tanzania

Tanzania is rich in indigenous farm animal genetic resources. It ranks third in Africa in cattle numbers after Ethiopia and the Sudan. The most important classes of livestock to the economy are 15.6m cattle, 10.7m goats, 3.5m sheep and 27m chickens. Most of the initiatives implemented in the country so far have focused on characterization of the existing livestock genetic resources in order

to develop strategies for their improvement and conservation.¹¹



Malia bucks, Tanzania (© 2014 AU-IBAR)

¹¹*Initiative in conservation and sustainable utilization of animal genetic resources in Tanzania, paper presented at the AU-IBAR workshop on animal genetic resources, Ivory Coast, Abidjan, 14-15 April, 2013.*

IX. Suggested technical standards and protocols

- The most important and urgently needed action is to make a start on national animal identification and recording systems, using the guidance contained in the Pretoria Declaration and the FAO Guidelines for Development of Integrated Multipurpose Animal Recording Systems. The purpose of such systems should be to link animal identities (and hence their genetics) to recorded performance data.
- Countries should specify minimum conditions to be inscribed in a Material Transfer Agreement that must accompany all export of AnGR, detailing at least:
 - » Characteristics of AnGR transferred
 - » Transfer prices
 - » Transfer conditions
 - » Use restrictions
 - » Supplementary benefit sharing agreement
- DNA samples of all exported AnGR should be retained in a central national depository
- All the provisions of the OIE Terrestrial Code should be complied with

X. Guidelines/action plans to assist African countries in the ratification and implementation of the Nagoya Protocol

Ideally a country should have measures in place to implement an international agreement before it ratifies or accedes to such an agreement. As the table above on national implementation of the Nagoya Protocol shows, however, it is quite common for countries to ratify before measures are in place. This approach is usually intended to provide a legal basis for the development of appropriate measures – without ratification it can be very difficult to get the necessary political support from decision-makers or the permission and resources required developing measures.

What is clear is that countries that have ratified or acceded to the Nagoya Protocol will either have to develop new (for countries that have no ABS frameworks in place) or amend existing measures (for countries that had pre- Nagoya Protocol measures) as the Nagoya Protocol contains new obligations that entail the adoption of specific national implementation measures. This is notably the case for the compliance-related obligations under the Nagoya Protocol which are innovative and go beyond the ABS legislative scope that was previously envisaged under article 15 of the CBD. Furthermore, one key innovation in the Protocol relates to the definition of utilization of genetic resources (under Article 2) which provides more clarity as to the chain of utilization of genetic resources that falls within the scope of application of the Protocol, triggering benefit sharing requirements. These concepts have to be taken into account carefully in new or amended ABS measures for purposes of ensuring effective national implementation.

Reports from several countries note that they currently have no national legal framework for regulating access to AnGR; some list the development of such frameworks among their priority actions for the future. There is widespread recognition that where national ABS legal frameworks exist, the specific needs of the AnGR sector – as they differ from those of other genetic resource sectors such as crops and wildlife – are not on the whole well accounted for.

To facilitate ratification and implementation, the following key steps are required:

- Raise awareness of decision makers about the importance of ABS
- Secure political support, preferably from a senior figure who is prepared to act as a champion for joining the Protocol
- Strengthen the capacity of key stakeholders to understand and discuss the relevant issues
- Put in place a national consultative process and/or multi-stakeholder body to build support for ratification (and later to serve as a core of technical support for implementation)
- Develop and validate appropriate legislative and administrative measures, using the AU Guidelines as a reference
- Secure the necessary authorization (as required by national decision-making procedures)
- Deposit the necessary paperwork with the UN Treaty Section
- Agree on division of responsibility and lines of communication between stakeholders
- Implement the institutional framework

XI. General conclusions way forward and recommendations

The conservation and improvement of AnGr can contribute significantly to poverty alleviation and overall socio-economic development for African countries. Exchange of genetic material among countries and regions has been a very valuable mechanism for breed and livestock development.

Considerable differences between plant genetic resources (PGR) and AnGR exist. This entails that differentiated and more tailored regulatory regimes have to be developed in the case of AnGr. Nonetheless, some lessons can be learnt from the implementation of plant-related instruments particularly as some considerations could be relevant in the design of an international framework to promote the management and conservation of AnGr.

It is useful to first note that the negotiations of the ITPGRFA were premised, to a large extent, on the recognition that important ex situ collections were held by various institutions and countries. To this end, it was determined that establishing a multilateral system of access to these collections could promote benefit sharing in view of ensuring global food security. The Multilateral System under the ITPGRFA represents today a global pool of a number of the most important crop genetic resources for food security, shared and managed jointly by all countries that adhere to the International Treaty.

It would be difficult, in the case of animal genetic resources, to establish a similar multilateral mechanism. In the case of AnGr, similar collections either do not exist at all or not to the same extent. In contrast to seeds, AnGr are much more difficult and expensive to store ex situ. Furthermore, and as noted in this report, AnGr are more subject to private ownership than plant genetic resources, because most species or breeds of animals of economic importance are privately owned. This means that modalities for access and exchange of AnGr and associated rights raise distinct issues that have to be addressed in a distinctive manner.

As further noted in the report, the implementation of the Nagoya Protocol, which incorporates all aspects involved in the management of genetic resources and associated traditional knowledge, including capacity development, technology transfer, ownerships, mutually agreed terms, and intellectual property, is therefore directly relevant to conservation and utilization of AnGR.

A large number of African countries have ratified or acceded to the Nagoya Protocol and some are currently in the process of developing new or amending existing legislative, administrative and policy measures to implement the Nagoya Protocol. The implementation of the Nagoya Protocol thus provides an opportunity for countries to further examine how AnGr related standards and protocols could be taken into account as part of broader ABS measures.

As also highlighted in the analysis, the main challenge faced by African countries at the national level is in relation to the management and conservation of AnGR in order to achieve sustainable increases and self-sufficiency in animal products. This challenge can be addressed by implementing appropriate protocols and practices that could promote sustainable use and the conservation of AnGR for future generations.

In this specific regard, the Global Plan of Action for Animal Genetic Resources (GPA) discussed above in further details, provides a good strategic framework. The GPA provides a framework, agreed by

the international community, to support and increase the overall effectiveness of national, regional and global efforts for the sustainable use, development and conservation of AnGR, and to facilitate mobilization of resources, including adequate financial resources, development of institutions, human resources and cooperative frameworks.

The GPA contains useful guidance for countries to design of future actions and interventions in relation to the utilization, management and improvement of AnGr. More specifically the GPA contains four strategic areas which can form the basis for the development of national standards and practices for AnGr. These four strategic areas are:

1. Characterization, inventory and monitoring of trends and associated risks;
2. Sustainable use and development;
3. Conservation; and
4. Policies, institutions and capacity building;

Strategic Priority 10 of the GPA further points to the need to establish national conservation policies, and establish or strengthen in situ and ex situ national conservation programmes. African countries can draw on the GPA to define appropriate national action plans in keeping with their specific national needs and priorities in these areas. This will mean that, as a starting point, more capacity building will be needed for countries to develop technical tools and methodologies to assess national livestock production systems including the species and breeds involved in providing livestock functions.

Some other indicative actions and steps that could be taken at the national and regional levels are described below:

National level

As noted above, there is a great need, at the national level, to develop national policies and strategies as well as national action plans for the implementation of the GPA and to ensure mainstreaming of the AnGR issues in national sectoral and inter-sectoral plans, strategies and policies. In this context, provisions of the Nagoya Protocol have to be taken into account to ensure mutual supportiveness in implementation. The following immediate actions could also be of relevance for a number of countries:

- **Inventory of AnGR:** There is a need to identify which animal genetic resources exist in the country, map out where they are, their number, as well as identify typical features of the breed, such as traits, products and quality.
- **Conservation and sustainable use of AnGr:** This relates to defining protocols and standards aimed at reducing the loss of genetic variation and promoting conservation of genetic diversity within countries.
- **Awareness raising:** There is a need to increase knowledge on conservation and use of national animal genetic resources in different contexts. Decision makers, animal keepers and others who work with management of animal genetic resources should receive relevant information on basic genetics and breeding, as well as information regarding how national breeds can contribute to different areas of use and their cultural significance. This could also involve the dissemination of easily accessible information to the general public to increase their understanding of the value of conserving national breeds.

Regional level

Coordination of national efforts related to the conservation of trans-boundary breeds is a priority. As has been noted, this is important given the transboundary nature of many breeds and the mobility of animals across national borders. Regional cryo-banks have been proposed as a potential part of the solution and their cost-effectiveness deserves further evaluation.

AU-IBAR has done substantive work to facilitate the formulation and harmonization of evidence-based, coherent policies, and to strengthen the capacities of public and private institutions. At this juncture, however, there are no formal regional mechanisms in Africa that provide guidance for the development of policies and strategies for the conservation and protection of AnGR that occur/move across national jurisdictions. It would thus be appropriate to consider ways in which common regional guidelines could be developed to ensure better coordination of national measures on AnGr in Africa. As noted, the African Union Strategic and Practical Guidelines for the Coordinated Implementation of the Nagoya Protocol in Africa provide a good template which could be used and adapted, taking into account the distinct features related to AnGr, to guide countries in the implementation of AnGr-related ABS measures and to have a coordinated approach to addressing the flow and exchange of AnGr.

The following actions could be considered in this regard:

- Establish the status and trends of animal genetic resources in Africa
- Develop regional strategic and practical guidelines for the sustainable use of AnGR in Africa (mirrored on the AU Strategic and Practical Guidelines for the coordinated implementation of the Nagoya Protocol in Africa)
- Support and strengthen national and regional conservation and improvement strategies and initiatives.

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Annex

Capacity building report on the provision and benefits of the Nagoya Protocol

The Nagoya Protocol provides a transparent international legal framework to advance the implementation third objective of the Convention: the fair and equitable sharing of benefits arising out of the utilization of genetic resources.

Core Provisions of the Nagoya Protocol

Objective

The fair and equitable sharing of the benefits arising from the utilization of genetic resources, thereby contributing to the conservation and sustainable use of biodiversity

Scope

- Genetic resources within the scope of Article 15 CBD and the benefits arising from the utilization of such resources
- Traditional knowledge associated with genetic resources within the scope of the CBD and the benefits arising from the utilization of such knowledge

Access

Obligation to establish ABS measures at national level providing for:

- Legal certainty, clarity and transparency.
- Fair and non-arbitrary rules and procedures.
- Clear rules and procedures for prior informed consent and mutually agreed terms.
- Issuance of a permit or equivalent as evidence that PIC was obtained and MAT were established.

Obligation to establish:

- A national focal point:
- Make information on procedures for obtaining prior informed consent and mutually agreed terms available.
- Liaise with the Secretariat
- One or more competent national authorities:
- Grant access to genetic resources
- Advising on applicable procedures.

Fair and equitable sharing

Obligation to take measures:

Benefits arising from the utilization of genetic resources, as well as subsequent applications and commercialization, must be shared with provider country. Benefits to be shared are subject to mutually agreed terms (MAT). Benefits may be monetary and non-monetary

Compliance

Compliance obligations ensuring benefit-sharing

- Obligation to comply with national ABS legislation and with mutually agreed terms (MAT)
- Obligation to monitor the utilization of the genetic resources, including by:
- Designation of effective check points

- Establishment of an internationally recognized certificate of compliance as evidence that PIC was obtained and MAT established

Traditional knowledge associated with Genetic Resource

The Protocol aims to ensure that:

- Indigenous and local communities obtain a fair share of benefits from the use of their:
- Traditional knowledge associated to genetic resources
- Genetic resources, in cases where they have established rights to grant access to them, in accordance with national legislation
- Access will be subject to their prior informed consent, taking into account their customary laws and procedures

One of the many benefits of the Nagoya Protocol is that it provides greater legal certainty, clarity and transparency for both providers and users of genetic resources and associated traditional knowledge by establishing more predictable conditions for access to genetic resources and for ensuring the fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge. By strengthening the opportunities for fair and equitable sharing of benefits from their use, the Protocol creates incentives to conserve biological diversity, sustainably use its components, protect traditional knowledge and further enhance the contribution of biological diversity to sustainable development and human well-being.

Other benefits associated with the Protocol include:

- The Protocol, if ratified and effectively implemented, can contribute to enhancing the economic and social wellbeing of a country
- The Protocol can contribute to economic development, job creation & poverty alleviation (i.e. through reinvestment of potential monetary and non-monetary benefits)
- Ratifying and implementing the Nagoya Protocol ensures that the use of genetic resources and associated traditional knowledge effectively translates into opportunities for fair and equitable sharing of benefits
- The Protocol will strengthen the ability of indigenous and local communities (ILCs) to benefit from the use of their knowledge, innovations and practices
- By promoting the use of genetic resources and associated traditional knowledge, the Protocol creates opportunities for developing an economy relying on sustainability and increased knowledge of the value of natural resources.



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