**Write shop Concept note**

<table>
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<th><strong>Title</strong></th>
<th>Development of revised and harmonized characterization, Inventory and monitoring Animal genetic resources tools’ guidelines</th>
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| **Background** | Animal Genetic Resources (AnGR) for food and agriculture are essential for Africa’s food security, and contribute to the livelihoods of millions of people within and without the continent. In the agricultural sector, livestock contributes significantly to the Gross Domestic Product (GDP) within Africa at approximately 30% and even up to 50% in some countries (FAO 2011\(^1\)). A significant proportion of the African population depends on these resources as Staal et al., (2009) reports that 81 million and 28 million people are dependent on income generated from small ruminants in West Africa and Southern Africa respectively. It is estimated that over 80% of rural poor in Africa are smallholder livestock keepers (FAO 2009\(^2\), Hanotte et al. 2010\(^3\)). Livestock products such as milk and meat have been rated as some of the richest sources of protein currently contributing up to 13% of the world’s calorie intake (Smith et al. 2013\(^4\), FAO 2011\(^1\)). Indeed livestock hold promise to alleviate poverty and contribute significantly towards food and nutritional security (Smith et al. 2013\(^4\)). It is therefore critical that checks are put in place to prevent the loss of these valuable animal genetic resources that are the economic backbone and bread basket for many in rural Africa. These genetic resources can be effectively managed by ensuring a deeper understanding of their population dynamics, status and trends and spatial distribution.  

Characterization, surveying and monitoring have remained key elements in the development of effective AnGR management plans and emphasis should be placed on certifying that these critical processes are well executed. Knowledge on population trends and genetic status of livestock populations informs breeding strategies, conservation programs and policy-making processes. Evidently, without clearly defining the importance and priority areas of AnGR, policy makers cannot formulate sustainable and effective policies. However, policy makers armed with crucial AnGR information can ensure coordinated resource allocation and sustainable policies are in place. This information is critical at local, national, regional and global levels.  

Despite, characterization and inventory of AnGR being fundamental components of breed improvement programmes and conservation strategies, the first State of the World’s Animal Genetic Resources for Food and Agriculture report, documents that actual population sizes for over two-thirds of African breed populations is missing. The lack of this vital information places Africa’s rich AnGR diversity at risk as declines in numbers of indigenous populations may remain undetected and result in the complete loss of ecologically-important traits or entire local animal populations. In the FAO activity report of 2007-2009, DAD-IS records on population sizes was updated by only 11.8% of countries in Africa as opposed to 30% of European countries. Of interest, Africa had the highest proportion of countries that had updated their breed descriptions records as at the period of reporting. The former phenomenon describes a situation whereby African countries clearly face serious challenges in taking inventory of their animal populations. |

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\(^4\) Smith et al. (2013). Beyond milk, meat and eggs; Role of livestock in food and nutrition security. Animal Frontiers 3:1 doi10.2527/af.2013-0002
In reference to Africa, spatial distribution and location of many livestock species remains relatively poorly documented and many domestic animal populations are not geo-referenced. The availability of this information would contribute towards a better understanding of socio-economic and biophysical environments, a combination of key features that would present an opportunity to predict changing livestock systems. Clearly, the lack of this vital information on African AnGR is a clear indication that there is an evident challenge in relation effective utilization of the available characterization, Inventory and monitoring tools in Africa. These ever-present challenges faced by users within the African continent require urgent re-address.

From an e-discussion “Improving the utilization of Animal Genetic Resources characterization, inventory and monitoring tools in Africa” and the workshop “Assessment of Animal Genetic Resources Characterization, Inventory and Monitoring tools to guide revision and harmonization processes” organised by AU-IBAR, several issues contribute to the poor utilization of the current AnGR tools were highlighted. This included technical incapacity, tools insensitivity/awareness and disharmony in tools use across Member States amongst others. In order to tackle these issues, members proposed the revision of these tools to accommodate the peculiarities of the African AnGR and the continent as a whole. The revisions should ensure that the tools are farmer/livestock keeper friendly, include image processing tools and indigenous knowledge, typical of our African heritage. These revised tools should be adopted by African member states, research institutes and universities. This unified approach would further inform the basic and necessary capacity building needed within Africa so as to build a technically sound workforce thus dealing with the issue of technical incapacity.

Africa needs to work towards standardization/harmonization of AnGR tools with the primary intention of tailoring these tools to suit the continent’s specific needs and ensuring appropriate mechanisms are in place so as to promote the adoption of these harmonized tools throughout the continent.

In adherence to promoting knowledge and sound practices, AU-IBAR intends to build consensus on the methodologies and tools for characterization, inventory and monitoring of AnGR in Africa. These guidelines will offer advice to users enabling the orchestration of well-targeted, cost effective and “demand-driven” phenotypic and genetic characterization surveys as well as planning and implementation of national inventory and monitoring activities.

Presently in most African countries, the application of FAO’s characterization and inventory guidelines has been in use but it is evident that there is need to improve on the informativeness and utility of the tools especially in the African context. From the e-discussion “Improving the utilization of Animal Genetic Resources characterization, inventory and monitoring tools in Africa” and the workshop “Assessment of Animal Genetic Resources Characterization, Inventory and Monitoring tools to guide revision and harmonization processes” held, various shortcomings of the tools in use were identified. For example the Production Environment Descriptors (PEDs) tool through versatile has challenges with its implementation due to the large amount of data required to be collected through single and repeated measurements thus posing both high cost challenges and respondent unreliability. In addition, the use of inventory and monitoring tools was limited to small-scale collection of data through household surveys and focus groups. Large-scale collection of population size data through livestock censuses appears to be rarely utilized within African states notably due to the large monetary budgets required for successful implementation. It was thus evident that sustainable measures need to be put in
place to enable improved utilization of AnGR tools within the continent.

Following an expert’s consultation on “Assessment of Animal Genetic Resources Characterization, Inventory and Monitoring tools to guide revision and harmonization processes” held in September 2014 in Dar-es-Salaam, Tanzania, key outcomes were documented. The participants established suitable characterization, inventory and monitoring tools for use within the continent. The steps towards maximum utilization of these proposed tools require in-depth revision and addition establishment of strategic options that will ensure bilateral and regional harmonization. For example, during this workshop, it was agreed that Member States should standardize phenotypic characterization and a composite tool was proposed which consisted of aspects drawn from phenotypic descriptor lists and the production environment descriptors (PEDs). The revision of the phenotypic characterization tool also entailed the incorporation of sketches that would guide linear body measurement. The phenotypic characterization tool would mainly collate data on the following categories; Morphometrics, Environment, Production and reproduction; Adaptation; Socio-economic and Indigenous knowledge. The consensus was that various biological samples should also be collected during surveys to make provision for molecular characterization as well as additional related AnGR research (i.e. landscape genomics). The deliberations also highlighted the importance of making the guidelines farmer/livestock keeper friendly so as to encourage their participation in the characterization and taking inventory activities of AnGR. Farmers need not feel that the tools are invasive or cumbersome but to rather embrace their application through adoption of a participatory approach consequently promoting ownership.

During these deliberations, it was deemed necessary that a specialized group namely the Animal Genetic Resources Taxonomy Advisory Group (AnGR-TAG) should be established and will be mandated to drive the process of revision and harmonization of these proposed tools. The role of this expert group will be to offer technical advice and expertise aimed at improving the utilization of characterization, inventory and monitoring tools, ensuring that they are customized to collect data more efficiently, in a user friendly manner and remain relevant to the African continent. The AnGR-TAG members will be considered as the primary advocates for the various user-sectors and should ensure that their representatives’ needs are adequately addressed.

Having recently established the AnGR-TAG that comprises primarily of 16 technical experts drawn from the 5 sub-regions of Africa and implementing partners (FAO, ILRI and CIRDES), this write-shop provides the platform for the newly appointed members to undertake their mandate. The write-shop will enable in-depth deliberations on the development of the revised AnGR tools’ guidelines and establishment of strategic options to guide implementation and improved utilization of the AnGR tools. These strategic options will be used as guidelines by the sub-regional focal points (S-RFPs) to spearhead implementation within the member states. The working documents availed by the AU-IBAR genetic team will be reference material to guide the deliberations.

Through this unified approach, the genetic project intends to build consensus on methodologies and tools for characterization, inventory and Monitoring of AnGR between AU member states. This will ultimately promote harmonization and synchronization of data collection, data analysis and comparativeness across the region.
Objectives

The write shop will specifically aim to:

1. Develop the first draft of the revised and harmonized characterization (phenotypic and molecular), inventory and monitoring AnGR tools guidelines.

Content framework will include;

a. General principles
b. Data collection templates (as per recommendation of working documents)
c. Laboratory protocols – e.g. DNA extraction
d. Coding
e. Photography (as per recommendation of working documents)
f. Sketches
g. Descriptors glossary (definition of terms)
h. Data management
i. Data analysis

 Nb: These guidelines must be considered as living documents that will continually evolve with the needs and specific requirements of MS.

2. Establish the criteria for selection of Member States for the first phase of implementation

3. Establish and compile data collector networks

4. Formulate step-wise strategic options to guide implementation and improved utilization of the revised and harmonized AnGR tool guidelines

Outputs

The expected outcomes include;

1. First draft of revised and harmonized tools’ guidelines for characterization, inventory and monitoring of AnGR in Africa developed.

2. Established selection criteria of MS for 1st phase of implementation

3. Established and compiled data collector networks

4. Clearly outlined strategic options to guide successful implementation and improved utilization of the revised AnGR tools

Agenda

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<td>Presentation of workshop background, objectives, methodology and expected outcomes</td>
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<td>Presentation of Dar-es-Salaam Workshop Outcomes;</td>
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<td>• Phenotypic tool</td>
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<td>Item</td>
<td>Group work</td>
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<td>Item 3</td>
<td><strong>Group work</strong>: Development of guidelines for phenotypic characterization of AnGR <em>(Based on the content framework outlined above)</em></td>
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<td>Item 4</td>
<td><strong>Group work</strong>: Development of guidelines for Molecular genetic characterization of AnGR <em>(Based on the content framework outlined above)</em></td>
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<td>Item 6</td>
<td>Compilation and ratification of 1st draft of revised AnGR tools guidelines Development of MS selection criteria – Phase 1</td>
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<td>Item 7</td>
<td><strong>Group work</strong>: Establishment of strategic options to guide implementation and improved utilization of the revised and harmonized AnGR</td>
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<td>Item 9</td>
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**Participants**

This write-shop is intended for all newly elected Animal Genetic Resources Taxonomy advisory Group (AnGR-TAG) members.

**Partners**

FAO, ILRI, BecA, CIRDES and CCARDESA

**Duration**

Workshop will be for 4 days

**Venue**

Naivasha, Kenya

**Tentative date**

14th – 17th April 2015