منظمة الأغذية والزراعة للأمم المتحدة
联合国粮食及农业组织
Food and Agriculture Organization of the United Nations
Organisation des Nations Unies pour l'alimentation et l'agriculture
Продовольственная и сельскохозяйственная организация Объединенных Наций
Organización de las Naciones Unidas para la Alimentación y la Agricultura

Country report

supporting the preparation of *The Second Report on the State of the World's Animal Genetic Resources for Food and Agriculture*, including sector-specific data contributing to *The State of the World's Biodiversity for Food and Agriculture* - 2013 -

Country: Lesotho

I. EXECUTIVE SUMMARY

Please provide an executive summary (not more than two pages) that will allow national and international stakeholders to gain a quick overview of the content of the country report.
The executive summary should contain information on:

- key trends and driving forces affecting animal genetic resources management in your country;
- strengths, weaknesses and gaps in capacity to manage animal genetic resources in your country;
- key constraints and challenges with respect to animal genetic resources management in your country;
- priorities and strategic directions for future action (focusing particularly on the next ten years).

This report is a follow up on the State of Lesotho's Animal Genetic Resource submitted for State of the World's Animal Genetic Resource report of 2005. It will attempt to cover recent trends, strengths, weaknesses, constraints and challenges within the country's animal genetic resources as well as the future prospects and priorities in the next ten years.

About ten years ago a national survey was conducted to determine the animal genetic resources (including poultry) within each district and agro-ecological zone by species, breed and strains. FAO guidelines were used in describing features and traits. Indigenous knowledge of farmers was widely used in identification of the indigenous breeds. Phenotypic characterization was only done for the Basotho Pony while genetic characterization has not been done for any species.

The current conservation practice is orientated towards *in situ* conservation which has the advantage of conserving the environment where the Animal Genetic Resource is raised. The *ex situ* conservation is rare but is practiced in specialized dairy cattle (using imported frozen semen) and the Merino sheep and pigs (using fresh semen).

Livestock species kept in Lesotho are cattle, sheep, goats, chickens, pigs, horses, donkeys, ducks, rabbits, geese and turkeys. Sheep and goats are reared for wool and mohair respectively. These constitutes the highest proportion of all livestock kept. These are reared in extensive system in the foothills and mountains.

For improvement of wool and mohair quality, Lesotho imports wool Merino sheep and Angora goats from South Africa Other imported animal genetic material include breeding stock for dairy cattle and pigs as well as semen for dairy cattle. The main exports from the country are high-quality wool and mohair and Basotho pony to a lesser extent. The country produces 0.14% of the wool and 14% of the mohair produced globally. It is the second most important mohair producer in the world after South Africa.

Constraints and challenges with respect to AnGR management include poor management of flocks in terms of animal

health, breeding, feeding and inadequate management of rangelands. The rangelands are overgrazed and animals become malnourished and moribund especially during winter when there is limited forage. The end result is poor growth, low production and productivity and eventual morbidity and mortality. There is a general lack of capacity in animal breeding and genetics, characterization, inventory and monitoring of trends.

Strengths identified in the capacity to manage animal genetic resources in Lesotho are:

- The presence of a national focal point for management animal genetic resource inclusive the national coordinator, alternate and National Advisory Committee.
- The coordination of programmes and activities is easy due to the countries small size and homogeneity of inhabitants.
- Livestock keepers have strong participation in animal genetic resources management through their associations and cooperatives.
- Different agroecological zones enables keeping of livestock under different farming systems and implementation of breeding programmes,

The following weaknesses have been identified for capacity to manage animal genetic resources in Lesotho:

- Animal breeders are present in academic institutions (though they are available in limited numbers) where they are not beneficial to stakeholders in animal genetic resources management.
- Lesotho does not have her own *ex situ* conservation facilities hence importation of frozen semen for specialized dairy cattle.
- Laws governing livestock farming are present but old (Laws of Lerotholi, 1905 and Importation of Livestock Proclamation, 1947). This is compounded further by poor implementation of laws is low due to weak governance and conflicting interests.

The livestock sub-sector in Lesotho has the following gaps in capacity to manage animal genetic resources:

- General lack of infrastructure is for managing animal genetic resources, including; breeding centres (cattle, horses, pigs and chickens) and Artificial insemination centers.
- Establishment of niche market for organically produced livestock products.

Priorities and Strategic Direction for Future Action (2015 - 2025)

In 1998 the Southern Africa Development Community (SADC) initiated a programme on the management of Farm Animal Genetic Resources (FAnGR) through which all countries of the SADC Region, including Lesotho, were able to put structures for management of Farm Animal Genetic Resources which among others was the establishment of the National Focal Point. Although some work was done in the area of Animal Genetic Resources (AnGR) management, a substantial amount still remains. In forging the way forward in the programme of FAnGR Lesotho sees its priorities as being 1. Capacity building for management of Farm Animal Genetic Resources and 2. Conservation of Breeds at Risk while the proposed strategies for future action are:

(a) Drafting and adoption of the National Strategy for Management of Farm Animal Genetic Resources, including an Action Plan,
(b) Survey of Animal Genetic Resources,
(c) Capacity building for management of Farm Aninal Genetic Resources,
(d) Characterization Studies,
(e) Up-dating policies and legislation related to management of Animal Genetic Resources
(f) Conservation of breeds at risk and
(g) Monitoring Animal Genetic Resources

Priorities

1. Capacity building for management of Farm Animal Genetic Resources (FAnGR)

Limited capacity at the national level hampers efforts made to manage FAnGR appropriately therefore Lesotho considers building the capacity for management of Farm Animal Genetic Resources as its top priority. This will involve (i) Training people in animal breeding and genetics, (ii) Putting in place the infrastructure for conservation and management of Farm Animal Genetic Resources and (iii) Financing conservation and management of Animal Genetic Resources Programmes.

2. Conservation of breeds at risk

Although the exact numbers have not yet been established, there is a general feeling within Lesotho that numbers of Basotho cattle, Basotho chicken, Basotho pony and Basotho pig are declining at an alarming rate thus these breeds are at risk of extinction. Programmes on management of Farm Animal Genetic Resources will therefore aim at saving these breeds through (i) Establishment of breeding centers, (ii) Promotion of breed conservation oriented breeding programmes as well as (iii) Promotion of community based conservation and management of AnGR.

II. DATA FOR UPDATING THE PARTS AND SECTIONS OF *THE STATE OF THE WORLD'S ANIMAL GENETIC RESOURCES FOR FOOD AND AGRICULTURE*

FLOWS OF ANIMAL GENETIC RESOURCES

1. Studies of gene flow in animal genetic resources have generally concluded that most gene flow occurs either between developed countries or from developed countries to developing countries. Does this correspond to the pattern of gene flow into and out of your country?

For developed countries, exceptions to the usual pattern would include significant imports of genetic resources from developing countries. For developing countries, exceptions would include significant exports of genetic resources to developed countries, and/or significant imports and/or exports of genetic resources to/from other developing countries.

- ○ yes
- ○ no
- ◉ yes but with some significant exceptions

1.1. If you answer "no" or "yes but with some significant exceptions", please provide further details. Please include information on: which species are exceptions and which regions of the world are the sources and/or destinations of the respective genetic material.

Importation of wool Merino sheep and Angora goats from South Africa for improvement of wool and mohair quality. Other imported animal genetic material include breeding stock for dairy cattle and pigs as well as semen for dairy cattle. Export of Basotho pony to Namibia and Republic of South Africa.

2. Have there been any significant changes in patterns of geneflow in and out of your country in the last ten years?

- ◉ yes
- ○ no

2.1. If yes, please indicate whether this view is based on quantified data (e.g. import and export statistics collected by the government).

- ◉ yes
- ○ no

2.2. If yes, please provide references (preferably including web links) (if relevant, indicate which types of animal genetic resources are covered).

The references are: SADC LIMS and Lesotho Bureau of Statistics.
Animal genetic resources covered include wool Merino sheep, Angora goat, dairy cattle, and pigs.

2.3. Please also describe the changes, indicating the species involved, the direction of the changes, and the regions of the world to and from which the patterns of imports and exports have changed.

Lesotho imports rams to improve the quality of wool from South Africa. As a result of this, there is a change realized in sheep flocks where wool fiber diameter has changed from f of 22+ microns (strong) to 19-21 microns (medium) and 18 microns and less (fine).

3. Please describe how the patterns of geneflow described under Questions 1 and 2 affect animal genetic resources and their management in your country.

Note: Please answer this question even if the pattern of geneflow into and out of your country corresponds to the "usual" pattern described in the first sentence of Question 1 and/or has not changed significantly in the last ten years.

Change realized in sheep flocks where wool is changing from strong to medium and fine. The urge to improve the quality of wool that is associated with increased income serves as an incentive for better management of sheep flocks.

LIVESTOCK SECTOR TRENDS

4. Please indicate the extent to which the following trends or drivers of change have affected or are predicted to affect animal genetic resources and their management in your country and describe these effects.

Note: Relevant impacts on animal genetic resources and their management might include, for example, changes in the type of animal genetic resources kept (e.g. different breeds or species), changes in the uses to which animal genetic resources are put, changes in the geographical distribution of different types of animal genetic resources, increases or decreases in the number of breeds at risk of extinction, changes in the objectives of breeding programmes, changes in the number or type of conservation programmes being implemented, etc. In the text sections, please briefly describe the changes. If possible, provide some concrete examples of the challenges or opportunities presented by the respective drivers and the actions taken to address these challenges or opportunities. If relevant, you may also indicate why a given driver is not affecting animal genetic resources and their management in your country. For a general discussion of drivers of change, please see The State of the World's Animal Genetic Resources for Food and Agriculture (Part 2, Section A) (http://www.fao.org/docrep/010/a1250e/a1250e00.htm).

Drivers of change	Impact on animal genetic resources and their management over last ten years	Future impact on animal genetic resources and their management (predicted for the next ten years)	Describe the effects on animal genetic resources and their management
Changing demand for livestock products (quantity)	medium	high	There will be importation of variety of genetic material in all species thus there will be a need to improve on breeding programs in order to conserve desired genes.
Changing demand for livestock products (quality)	low	low	The proportion of population cautious of quality is expected to remain low therefore there will be insignificant change in animal genetic resources management.
Changes in marketing infrastructure and access	none	medium	Government of Lesotho intends to invest in processing infrastructure (abattoirs, milk processing etc) therefore there will be significant change in animal genetic resources management.
Changes in retailing	none	medium	There will be importation of variety of genetic material in all species thus there will be a need to improve on breeding programs in order to conserve desired genes.
Changes in international trade in animal products (imports)	high	high	Imports of products such as red meat has remained high because of increasing population and availability of these products in South Africa.
Changes in international trade in animal products (exports)	medium	medium	Exports are for wool and mohair only and this calls for improvement of the two fiber producing species through appropriate breeding programs use. As a result of these the quality and quantities of wool and mohair are expected to rise steadily.
Climatic changes	high	high	Lately snowfalls, hail storms, low temperatures, early and late frosts are unpredictable. These demands for livestock breeds suitable to the prevailing changes will be high therefore there will be a need to address that changing demand through breeding programs.
Degradation or improvement of grazing land	high	medium	It expected that rangelands will be improved through efforts made by Lesotho government to resuscitate the Range Management Areas (RMA`s) and Grazing Associations (GA`s) in order to enable proper range utilization.

Drivers of change	Impact on animal genetic resources and their management over last ten years	Future impact on animal genetic resources and their management (predicted for the next ten years)	Describe the effects on animal genetic resources and their management
Loss of, or loss of access to, grazing land and other natural resources	high	medium	Large tracts of land have been lost due to overgrazing, burning and impoundment of rivers. However, effort is being made to rehabilitate land lost as a result of overgrazing and burning.
Economic, livelihood or lifestyle factors affecting the popularity of livestock keeping	medium	high	Livestock farmers in particular wool and mohair growers receive high incomes and this attracts a lot of people into the wool and mohair industry.
Replacement of livestock functions	medium	high	Draught animal power is rapidly being replaced by machinery due to stock theft. Promotion of dairy and beef breeds as well as the upgrading of the Basotho cattle has let to a declining populations of this breed.
Changing cultural roles of livestock	medium	low	It is a tradition in Lesotho to slaughter animals in particular cattle for dowry, funerals and ceremonies. The culture to use live animals in these activities is being replaced by use of products purchased from meat markets.
Changes in technology	low	medium	Livestock farmers know and apply different technologies in livestock management (Use of fresh semen in sheep and pigs, use of premixes for ration formulation).
Policy factors	low	medium	Present livestock policies and legal frameworks are not being enforced due to weak governance.
Disease epidemics	low	low	The country at times experiences sporadic and temporary epidemics namely Newcastle Disease and Anthrax.

OVERVIEW OF ANIMAL GENETIC RESOURCES

5. Please provide the number of locally adapted and exotic breeds kept in your country.

Data on the number of breeds is needed in order to calculate the percentage of breeds subject to the various management activities that are covered in this questionnaire. In line with the request of the Commission on Genetic Resources for Food and Agriculture at its Fourteenth Regular Session (CGRFA-14/13/Report, paragraph 31), FAO will implement the "locally adapted" vs. "exotic breed" classification system in the Domestic Animal Diversity Information System (DAD-IS). Once countries have fully updated their breed lists and classified all breeds in DAD-IS, it will be possible to use these data to obtain the numbers of breeds in each category.

Species	Locally adapted breeds	Exotic breeds
Cattle (specialized dairy)	0	4
Cattle (specialized beef)	0	3
Cattle (multipurpose)	1	1
Sheep	2	0
Goats	2	4
Pigs	1	3
Chickens	1	7

Species	Locally adapted breeds	Exotic breeds
Horses	1	2
Asses	1	0
Ducks	1	1
Rabbits	0	2
Turkeys	1	0
Geese	0	1

CHARACTERIZATION

To provide further details of your country's activities in the field of characterization, surveying and monitoring, please go to Strategic Priority Area 1 of the "Progress report on the implementation of the Global Plan of Action for Animal Genetic Resources 2007–2013" (below).

6. Please provide an overview of the current state of characterization in your country by indicating the extent to which the activities shown in the following table have been carried out.

Note: Please focus on characterization studies that have been conducted within the last ten years (baseline surveys of population size may have been conducted in the more distant past). Recall that some types of characterization study on your country's breeds may have been conducted outside your country. For the first two columns, please insert the number of breeds; for columns 3 to 8 please choose one of the following categories: none; low (approximately <33%); medium (approximately 33–67%); high (approximately >67%).

Species	Baseline survey of population size	Regular monitoring of population size	Phenotypic characterization	Molecular genetic diversity studies – within breed	Genetic diversity studies based on pedigree	Molecular genetic diversity studies – between breed	Genetic variance component estimation	Molecular genetic evaluation
Cattle (specialized dairy)	0	0	none	none	none	none	none	none
Cattle (specialized beef)	0	0	none	none	none	none	none	none
Cattle (multipurpose)	0	0	none	none	none	none	none	none
Sheep	0	0	none	none	none	none	none	none
Goats	0	0	none	none	none	none	none	none
Pigs	0	0	none	none	none	none	none	none
Chickens	2	0	low	none	none	none	none	none
Horses	1	0	medium	none	none	none	none	none

INSTITUTIONS AND STAKEHOLDERS

To provide further details of your country's activities in the field of institutions and stakeholders, please go to Strategic Priority Area 4 of the "Progress report on the implementation of the Global Plan of Action for Animal Genetic Resources 2007–2013" (below).

7. Please indicate the state of your country's capacities and provisions in the following areas of animal genetic resources management.

	Score
Education	low
Research	low
Knowledge	low
Awareness	medium
Infrastructure	none
Stakeholder participation	medium
Policies	low
Policy implementation	low
Laws	low
Implementation of laws	low

8. Please provide further information regarding your country's capacities in each of the above-mentioned areas of management. If relevant, please indicate what obstacles or constraints your country faces in each of these areas and what needs to be done to address these constraints. You may also provide information on any particular successes achieved in your country in any of these areas and on the reasons for these successes.

	Description
Education	Animal breeders are present in academic institutions such as the National University of Lesotho and Lesotho Agricultural College. These personnel constitutes the capacity for the country to train people in animal genetic resources management.
Research	The Department of Agricultural Research has a division that manages issues of livestock research including the management of animal genetic resources. However, currently the division does not have an animal breeder or geneticist. There is a need of training people in animal breeding and genetics.
Knowledge	The Department of Field Services has a cadre of livestock staff at district and area levels. However, the number is limited as most of them have general agricultural knowledge. There is a need of training people in animal genetic resources management.
Awareness	Livestock keepers and other stakeholders are aware and actively involved in the management of animal genetic resources.
Infrastructure	The infrastructure is generally lacking for managing animal genetic resources. There is a need to establish breeding centres (cattle, horses, pigs and chickens) and Artificial insemination centers.
Stakeholder participation	Livestock keepers have strong participation in animal genetic resources management through their associations and cooperatives. Other stakeholders get involved in the National Advisory Committee for animal genetic resources that was established through SADC Management of Farm Animal Genetic Resources Project.
Policies	Policies such as selective breeding to maintain purity are in place.

	Description
Policy implementation	Selective breeding, isolation of breeds by geographic locations (intensitive farming system in the lowlands and extensive farming system in the highlands and foothills) are being implemented.
Laws	Laws governing livestock farming are present but old (Laws of Lerotholi, 1905 and Importation of Livestock Proclamation, 1947). There is a need to enact new laws governing livestock production to include management of animal genetic resources.
Implementation of laws	Implementation of laws is low due to weak governance and conflicting interests. There is a need to empower community leaders through training in governance that include issues related to management of animal genetic resources.

9. What steps have been taken in your country to engage or empower the various stakeholders in animal genetic resources management (e.g. establishment of livestock keepers' organizations, development of biocultural community protocols)?

Note: Biocultural community protocol: a document that is developed after a community undertakes a consultative process to outline their core cultural and spiritual values and customary laws relating to their traditional knowledge and resources. For a discussion of the potential role of biocultural community protocols in the conservation of animal genetic resources, please see the guidelines In vivo conservation of animal genetic resources (http://www.fao.org/docrep/018/i3327e/i3327e.pdf).

The following livestock keepers` organizations have been established: Lesotho National Wool and Mohair Association, National Dairy Association, National Poultry Association, Lesotho Mare Camps Association and Prince Lerotholi Merino Breeders Association.

BREEDING PROGRAMMES

Note: Breeding programmes: systematic and structured programmes for changing the genetic composition of a population towards a defined breeding goal (objective) to realize genetic gain (response to selection), based on objective performance criteria. Breeding programmes typically contain the following elements: definition of breeding goal; identification of animals; performance testing; estimation of breeding values; selection; mating; genetic gain and transfer of genetic gain. Breeding programmes are usually operated either by a group of livestock breeders organized in a breeders' association, community-based entity or other collective body; by a large commercial breeding company; or by the government.

To provide further details of your country's activities in the field of breeding programmes, please go to Strategic Priority Area 2 of the "Progress report on the implementation of the Global Plan of Action for Animal Genetic Resources 2007–2013" (below).

10. Who operates breeding programmes in your country?

Note: the objective of this question is to identify which stakeholders lead or organize the breeding programmes that exist in your country. Stakeholder participation in the implementation of the various elements of breeding programmes is covered under Question 15. If you wish to provide further information on the activities of the various stakeholder groups (including collaborative activities on an international scale), please provide it in the text section of Question 15.

Species	Government	Livestock keepers organized at community level	Breeders' associations or cooperatives	National commercial companies	External commercial companies	Non-governmental organizations	Others
Cattle (specialized dairy)	yes	yes	no	no	no	yes	no
Cattle (specialized beef)	no	yes	no	no	no	no	no
Cattle (multipurpose)	no	yes	no	no	no	no	no
Sheep	yes	yes	yes	no	no	no	no
Goats	no	yes	no	no	no	no	no
Pigs	no	no	no	no	no	no	no
Chickens	no	no	no	no	no	no	no
Horses	no	yes	no	no	no	no	no

10.1. If you choose the option "others", please indicate what kind of operator(s) this refers to.

N/A

11. For how many breeds in your country are the following activities undertaken?

Note: Please do not include activities that are only undertaken for experimental purposes, i.e. include only activities that directly serve or involve livestock keepers. However, please include activities even if they do not at present form part of a breeding programme. The intention is to obtain an indication of whether the "building blocks" of a breeding programme are available or being developed in your country. Loc = Locally adapted breeds; Ex = Exotic breeds.

Species	Tools															
	Animal identification		Breeding goal defined		Performance recording		Pedigree recording		Genetic evaluation (classic approach)		Genetic evaluation including genomic information		Management of genetic variation (by maximizing effective population size or minimizing rate of inbreeding)		Artificial insemination	
	Loc	Ex	Loc	Ex	Loc	Ex	Loc	Ex	Loc	Ex	Loc	Ex	Loc	Ex	Loc	Ex
Cattle (specialized dairy)	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4
Sheep	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0
Cattle (specialized beef)	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0
Cattle (multipurpose)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0
Goats	0	0	0	0	0	0	0	0	0	0	0	0	2	4	0	0
Horses	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0

12. Please indicate how many of the breeds in your country are subject to breeding programmes applying the following breeding methods.

Note: Loc = Locally adapted breeds; Ex = Exotic breeds.

Species	Breeding method			
	Straight/pure-breeding only		Straight/pure-breeding and cross-breeding	
	Loc	Ex	Loc	Ex
Cattle (specialized dairy)	0	4	0	0
Cattle (specialized beef)	0	0	0	1
Sheep	0	1	1	0
Goats	0	1	1	0
Horses	1	0	1	0

13. Please indicate the state of research and training in the field of animal breeding in your country.

Species	Training	Research
Cattle (specialized dairy)	low	none
Cattle (specialized beef)	low	none
Cattle (multipurpose)	low	none
Sheep	low	low
Goats	low	none
Pigs	low	none

Species	Training	Research
Chickens	low	low

14. Please indicate the extent to which livestock keepers in your country are organized for the purposes of animal breeding.

Species	Organization of livestock keepers
Cattle (specialized dairy)	none
Cattle (specialized beef)	none
Cattle (multipurpose)	none
Sheep	low
Goats	none
Pigs	none
Chickens	none

15. Please indicate the level of stakeholder involvement in the various elements of breeding programmes in your country.

Note: If your country has different types of breeding programme, the level of involvement of the various stakeholders may vary from one type of programme to another. In answering this question please try to indicate the overall degree of involvement of the various stakeholder groups.

Cattle (specialized dairy)	Government	Research organizations	Breeders' associations or cooperatives	Individual breeders/livestock keepers	National commercial companies	External commercial companies	Non-governmental organizations	Others
Setting breeding goals	none	none	none	none	none	none	none	none
Animal identification	none	none	none	none	none	none	none	none
Recording	none	none	none	none	none	none	none	none
Provision of artificial insemination services	low	none	none	none	none	none	none	none
Genetic evaluation	none	none	none	none	none	none	none	none

Cattle (specialized beef)	Government	Research organizations	Breeders' associations or cooperatives	Individual breeders/livestock keepers	National commercial companies	External commercial companies	Non-governmental organizations	Others
Setting breeding goals	none	none	none	none	none	none	none	none
Animal identification	none	none	none	none	none	none	none	none
Recording	none	none	none	none	none	none	none	none
Provision of artificial insemination services	none	none	none	none	none	none	none	none
Genetic evaluation	none	none	none	none	none	none	none	none

Cattle (multipurpose)	Government	Research organizations	Breeders' associations or cooperatives	Individual breeders/livestock keepers	National commercial companies	External commercial companies	Non-governmental organizations	Others
Setting breeding goals	none	none	none	none	none	none	none	none
Animal identification	none	none	none	none	none	none	none	none
Recording	none	none	none	none	none	none	none	none
Provision of artificial insemination services	none	none	none	none	none	none	none	none
Genetic evaluation	none	none	none	none	none	none	none	none

Sheep	Government	Research organizations	Breeders' associations or cooperatives	Individual breeders/livestock keepers	National commercial companies	External commercial companies	Non-governmental organizations	Others
Setting breeding goals	medium	none	medium	low	none	none	none	none
Animal identification	none	none	none	low	none	none	none	none
Recording	none	none	low	low	none	none	none	none
Provision of artificial insemination services	none	none	none	low	none	none	none	none
Genetic evaluation	none	none	none	none	none	none	none	none

Goats	Government	Research organizations	Breeders' associations or cooperatives	Individual breeders/livestock keepers	National commercial companies	External commercial companies	Non-governmental organizations	Others
Setting breeding goals	medium	none	medium	low	none	none	none	none
Animal identification	none	none	none	low	none	none	none	none
Recording	none	none	low	low	none	none	none	none
Provision of artificial insemination services	none	none	none	none	none	none	none	none
Genetic evaluation	none	none	none	none	none	none	none	none

Pigs	Government	Research organizations	Breeders' associations or cooperatives	Individual breeders/livestock keepers	National commercial companies	External commercial companies	Non-governmental organizations	Others
Setting breeding goals	medium	none	none	none	none	none	none	none
Animal identification	none	none	none	none	none	none	none	none
Recording	none	none	none	none	none	none	none	none
Provision of artificial insemination services	none	none	none	low	none	none	none	none
Genetic evaluation	none	none	none	none	none	none	none	none

Chickens	Government	Research organizations	Breeders' associations or cooperatives	Individual breeders/livestock keepers	National commercial companies	External commercial companies	Non-governmental organizations	Others
Setting breeding goals	none	none	none	none	none	none	none	none
Animal identification	none	none	none	none	none	none	none	none
Recording	none	none	none	none	none	none	none	none
Provision of artificial insemination services	none	none	none	none	none	none	none	none
Genetic evaluation	none	none	none	none	none	none	none	none

Horses	Government	Research organizations	Breeders' associations or cooperatives	Individual breeders/livestock keepers	National commercial companies	External commercial companies	Non-governmental organizations	Others
Setting breeding goals	medium	none	low	low	none	none	none	none
Animal identification	none	none	none	none	none	none	none	none
Recording	none	none	none	none	none	none	none	none
Provision of artificial insemination services	none	none	none	none	none	none	none	none
Genetic evaluation	none	none	none	none	none	none	none	none

15.1. If you choose the option "others", please indicate what kind of operator(s) this refers to.

N/A

15.2. Please provide further information on the roles that the stakeholders identified in the table play in the implementation of the various activities. If relevant, please also provide further information on the organizational roles played by the stakeholders identified in Question 10.

There are currently no collaborative activities of animal breeding that are done internationally.

16. Does your country implement any policies or programmes aimed at supporting breeding programmes or influencing their objectives?

Species	Policies or programmes
Cattle (specialized dairy)	yes
Cattle (specialized beef)	yes
Cattle (multipurpose)	yes
Sheep	yes
Goats	yes
Pigs	yes
Chickens	no
Horses	yes

16.1. Please describe these policies or programmes, indicating whether or not they include any measures specifically aimed at supporting breeding programmes for locally adapted breeds or any measures specifically aimed at supporting breeding programmes for exotic breeds (including breed-replacement programmes). Please indicate whether different types of programme are promoted in different production systems (and describe the differences).

Species	Description of policies or programmes
Cattle (specialized dairy)	Specialized dairy cattle breeds used are exotic and artificial insemination (frozen semen) is applied to maintain purity of breeds. Isolation of breeds by geographic locations (intensive farming system in the lowlands and extensive farming system in the highlands and foothills) are being implemented.
Cattle (specialized beef)	The country has programmes for improving beef quality in Basotho cattle through up-grading that involves importation of specialized beef bulls (Drakensberger).
Cattle (multipurpose)	None
Sheep	The country has programmes for maintaining purity in wool Merino that involves importation of rams.
Goats	The country has programmes for improving mohair in Angora goats through up-grading of the local breed that involves importation of Angora bucks.
Pigs	There are programmes for multiplication through use of imported boars.
Chickens	There are programmes for multiplication of dual-purpose chickens done by government, individuals and Non-Governmental organizations.
Horses	The country has programmes for maintaining purity in Basotho Pony that involves use of breeding camps.

17. Please describe the consequences of your country's breeding policies and programmes, or lack of breeding policies and programmes, for your country's animal genetic resources and their management.

Species	Description of consequences
Cattle (specialized dairy)	The government effort to maintain purity has resulted in increasing populations of Holstein-friesian, Dairy Swiss and Jersey.
Cattle (specialized beef)	The specialized beef cattle are used for up-grading therefore there are no consequences involving the breed (Drakensberger).
Cattle (multipurpose)	The up-grading of Basotho cattle has resulted in improved beef quality.
Sheep	The quality of Merino wool has improved from strong to medium. Higher yields are obtained in some flocks.
Goats	The quality of Angora mohair has improved and there are higher yields are obtained in some flocks. Lesotho is second biggest producer of mohair in the world.
Pigs	The government effort to maintain purity has resulted in increasing populations of Landrace, Large white and Duroc.
Chickens	The effort to multiply the dual-purpose chicken breed (Potchefstroom koekoek) has resulted in increasing populations.
Horses	The effort to maintain purity in the Basotho pony has resulted in increasing populations of this breed.

18. Please describe the main constraints to the implementation of breeding programmes in your country and what needs to be done to address these constraints. You may also provide information on any particular successes achieved in your country with respect to the establishment and operation of breeding programmes and on the factors that have contributed to these successes.

Livestock keepers are generally smallholders hence lack specific breeding objectives unless they are organized into groups. Communal grazing further serves as an impediment to appropriate breeding programmes because animals mix in grazing land. Establishment of Range Management Areas (RMAs) managed by Grazing Associations (GAs) serves as

remedy for controlled grazing and breeding therefore encouraged. Lesotho is completely surrounded the Republic of South Africa this serves as a disincentive for improvement of animals for products like beef that can easily be imported from South Africa. Breeds development in South Africa which is our main source of breeding stock is very fast therefore purelines of breeds are not easily available (e.g. Landrace and Large white in pigs; Holstein-friesian in dairy cattle). There is generally lack of professionals capacity in particular animal breeding and genetics.
Successes of established breeding programmes are found in sheep and goats (Prince Lerotholi Ram Breeders Association consisting of 33 wool Merino Ram Breeders) and in horses (Basotho Pony Mare Camp Associations)

19. Please describe future objectives, priorities and plans for the establishment or further development of breeding programmes in your country.

Species	Description of future objectives, priorities and plans
Cattle (specialized dairy)	To maintain purity of specialized dairy breeds already existing in the country through use of AI.
Cattle (specialized beef)	To establish studs for specialized beef namely Drakensberger, Africander, Brahman, Hereford and Angus
Cattle (multipurpose)	To maintain purity of Brown Swiss and upgrade Basotho cattle for improved quality of milk, meat and for draught power.
Sheep	To improve the quality and yield of wool per animal through importation of superior quality wool Merino rams. To build capacity of wool Merino Breeders in AI (using fresh semen) in order to increase conception rates as well as number of animals served by one ram. To introduce mutton breeds through establishment of feedlots.
Goats	To improve the quality and yield of mohair per animal through importation of superior quality Angora goat bucks.
Pigs	To establish pig studs for superior pork producing breeds. Conserve Basotho pig through establishment of breeding centers. Upgrade Basotho pig through AI using improved breeds for pork yield and quality.
Chickens	To establish parent stock farms for layer, broiler, dual-purpose and Basotho chickens. Conserve Basotho chicken through establishment of breeding centers.
Horses	Strengthen the capacity of Basotho Pony Mare Camp Associations to breed the horse.

CONSERVATION

To provide further details of your country's activities in the field of conservation, please go to Strategic Priority Area 3 of the "Progress report on the implementation of the Global Plan of Action for Animal Genetic Resources 2007–2013" (below).

20. Please provide an indication of the extent to which your country's breeds are covered by conservation programmes.

Please focus on at-risk breeds and breeds for which there are serious grounds for concern about their potential to fall into the at-risk category in the near future. Countries should not reduce their scores because of a lack of conservation programmes for breeds that are clearly not at risk. The main purpose of this question is to obtain an indication of the extent to which your country's conservation programmes meet the objective of protecting breeds from extinction. If your country has no official national criteria for classifying breed risk status or lacks the relevant data for identifying which breeds are at risk, please base your answers on estimations. Please also note that Question 8 of the "Progress report on the implementation of the Global Plan of Action for Animal Genetic Resources – 2007 to 2013" (below) requests countries to provide information on the criteria they use to assess the risk status of animal genetic resources.

Note: n/a = no programmes implemented because all breeds of this species present in the country are secure.

Species	In situ conservation	Ex situ in vivo conservation	Ex situ in vitro conservation
Cattle (specialized dairy)	none	none	none
Cattle (specialized beef)	none	none	none
Cattle (multipurpose)	none	none	none
Sheep	low	none	none
Goats	low	none	none

Species	In situ conservation	Ex situ in vivo conservation	Ex situ in vitro conservation
Pigs	none	none	none
Chickens	none	none	none
Horses	low	none	none

21. Does your country use formal approaches to prioritize breeds for conservation?

- ○ yes
- ◉ no

21.1. If so, which of the following factors are considered?

Note: See Sections 2 and 3 of the FAO guidelines In vivo conservation of animal genetic resources (http://www.fao.org/docrep/018/i3327e/i3327e.pdf).

	Considered in formal prioritization approaches
Risk of extinction	no
Genetic uniqueness	no
Genetic variation within the breed	no
Production traits	no
Non-production traits	no
Cultural or historical importance	no
Probability of success	no

22. Please indicate which of the following methods are used as elements of in situ conservation programmes in your country and which operators are managing them.

Note: Operators: the sector(s) that initiate(s) and manage(s) the respective activities. If both sectors undertake the respective activity, please answer "yes" in both rows. Please answer "yes" if the respective sector only works with some of the species targeted. If necessary, details of which sector addresses which species can be provided in the textual response. Information on what kinds of public- or private-sector organizations undertake the activities can also be provided, if necessary, in the textual response. Species targeted: Please answer "yes" if there are any such activities targeting the respective species, whether they are undertaken by the public sector, private sector or both.

Operators / Species targeted	Promotion of niche marketing or other market differentiation	Community-based conservation programmes	Incentive or subsidy payment schemes for keeping at-risk breeds	Development of biocultural community protocols	Recognition/award programmes for breeders	Conservation breeding programmes	Selection programmes for increased production or productivity in at-risk breeds	Promotion of at-risk breeds as tourist attractions	Use of at-risk breeds in the management of wildlife habitats and landscapes	Promotion of breed-related cultural activities	Extension programmes to improve the management of at-risk breeds	Awareness-raising activities providing information on the potential of specific at-risk breeds
Public sector	yes	no	no	no	no	no	no	yes	no	yes	yes	no
Private sector	yes	yes	no	no	no	yes	yes	yes	no	yes	no	no

Operators / Species targeted	Promotion of niche marketing or other market differentiation	Community-based conservation programmes	Incentive or subsidy payment schemes for keeping at-risk breeds	Development of biocultural community protocols	Recognition/award programmes for breeders	Conservation breeding programmes	Selection programmes for increased production or productivity in at-risk breeds	Promotion of at-risk breeds as tourist attractions	Use of at-risk breeds in the management of wildlife habitats and landscapes	Promotion of breed-related cultural activities	Extension programmes to improve the management of at-risk breeds	Awareness-raising activities providing information on the potential of specific at-risk breeds
Cattle (specialized dairy)	no	no	no	no	no	no	no	no	no	no	no	no
Cattle (specialized beef)	no	no	no	no	no	no	no	no	no	no	no	no
Cattle (multipurpose)	no	no	no	no	no	no	no	no	no	no	no	no
Sheep	no	no	no	no	no	yes	no	no	no	no	no	no
Goats	no	no	no	no	no	yes	no	no	no	no	no	no
Pigs	no	no	no	no	no	no	no	no	no	no	no	no
Chickens	no	no	no	no	no	no	no	no	no	no	no	no
Horses	yes	yes	no	no	no	yes	yes	yes	no	yes	no	no

22.1. Please provide further details of the activities recorded in the table and any other in situ conservation activities or programmes being implemented in your country.

During the early 1970s the Basotho Pony was deemed to be at risk of extinction. As a result of this the government of Lesotho initiated a conservation programme aimed at preserving the breed. This involved the establishment of government operated breeding and marketing center. Along with these community based conservation areas known as Basotho Pony Mare Camps were established and are still functional.

23. Does your country have an operational in vitro gene bank for animal genetic resources?

In vitro gene bank: a collection of documented cryoconserved genetic material, primarily stored for the purpose of medium- to long-term conservation, with agreed protocols and procedures for acquisition and use of the genetic material.

- ○ yes
- ◉ no

23.1. If your country has no in vitro gene bank for animal genetic resources, does it have plans to develop one?

- ◉ yes
- ○ no

23.2. If yes, please describe the plans.

The plan is to establish studs for beef cattle and pigs that will also serve as AI centers.

24. If your country has an in vitro gene bank for animal genetic resources, please indicate what kind of material is stored there.

	Stored in national genebank
Semen	no
Embryos	no
Oocytes	no
Somatic cells (tissue or cultured cells)	no
Isolated DNA	no

25. If your country has an in vitro gene bank for animal genetic resources, please complete the following table.

Species	Number of breeds for which material is stored	Number of breeds for which sufficient material is stored	Does the collection include material from not-at-risk breeds?	Have any extinct populations been reconstituted using material from the gene bank?	Have the gene bank collections been used to introduce genetic variability into an in situ population?	Have the gene bank collections been used to introduce genetic variability into an ex situ population?	Do livestock keepers or breeders' associations participate in the planning of the gene banking activities?
Cattle (specialized dairy)							
Cattle (specialized beef)							
Cattle (multipurpose)							
Sheep							
Goats							
Pigs							
Chickens							

25.1. Please provide further details of the activities recorded in the table (including any examples of the use of gene bank material to reconstitute populations or introduce genetic variability) and any other in vitro conservation activities or programmes being implemented in your country.

N/A

26. Does your country have plans to enter into collaboration with other countries to set up a regional or subregional in vitro gene bank for animal genetic resources?

- (•) yes
- ( ) no

26.1. If yes, please describe the plans, including a list of the countries involved.

Lesotho plans to collaborate with Botswana and South Africa that already have in vitro gene bank facilities.

27. If there have been any cases in your country in which breeds that were formerly classified as at risk of extinction have recovered to a position in which they are no longer at risk, please list the breeds and describe how the recovery was achieved.

During the early 1970s the Basotho Pony was deemed to be at risk of extinction. As a result of this the government of Lesotho initiated a conservation programme aimed at preserving the breed. This involved the establishment of government operated breeding and marketing center. Along with these community based conservation areas known as Basotho Pony Mare Camps were established and are still functional. Currently the Basotho Pony population is estimated at 500 horses consisting of mares and stallions thus the breed is considered to be no longer at risk

REPRODUCTIVE AND MOLECULAR BIOTECHNOLOGIES

28. Please indicate the level of availability of reproductive and molecular biotechnologies for use in livestock production in your country.

Note: low = at experimental level only; medium = available to livestock keepers in some locations or production systems; high = widely available to livestock keepers.

	Biotechnologies								
Species	Artificial insemination	Embryo transfer	Multiple ovulation and embryo transfer	Semen sexing	In vitro fertilization	Cloning	Genetic modification	Molecular genetic or genomic information	Transplantation of gonadal tissue
Cattle (specialized dairy)	medium	none	none	none	none	none	none	none	none
Sheep	medium	none	none	none	none	none	none	none	none
Pigs	medium	none	none	none	none	none	none	none	none

28.1. Please provide additional information on the use of these biotechnologies in your country.

Government introduced artificial insemination in specialized dairy cattle in the late 1980s using imported frozen semen. Private sector including NGOs and veterinarians have since joined in the provision of this service to dairy farmers in the seven lowland districts. The Mokhotlong District Wool and Mohair Association has recently pioneered AI in sheep using fresh semen. Recently some pig farmers have initiated artificial insemination by using fresh semen.

29. If the reproductive and/or molecular technologies are available for use by livestock keepers in your country, please indicate which stakeholders are involved in providing the respective services to the livestock keepers.

	Stakeholders					
	Public sector	Breeders' associations or cooperatives	National non-governmental organizations	Donors and development agencies	National commercial companies	External commercial companies
Artificial insemination	yes	yes	yes	no	no	no
Embryo transfer	no	no	no	no	no	no

29.1. Please provide additional information on the roles that the providers identified in the table play in the provision of biotechnology services in your country.

Government of Lesotho through the Department of Livestock Services of the Ministry of Agriculture and Food Security procures frozen semen and other related consumable materials and provides AI services to specialized dairy farmers at highly subsidized prices. Some NGOs involved in AnGR and veterinarians have joined government in providing AI service to dairy farmers. In Mokhotlong district the small stock association has had a progressive wool farmer trained as AI technician that provides this service to other progressive members of the association. Progressive individual pig farmers practice AI on their farms and also offer the service to their neighbours at a fee.

30. Please indicate which biotechnologies your country is undertaking research on.

Biotechnologies	Public or private research at national level	Research undertaken as part of international collaboration
Artificial insemination	no	no
Embryo transfer or MOET	no	no
Semen sexing	no	no
In vitro fertilization	no	no
Cloning	no	no
Genetic modification	no	no
Use of molecular genetic or genomic information for estimation of genetic diversity	no	no
Use of molecular genetic or genomic information for prediction of breeding values	no	no
Research on adaptedness based on molecular genetic or genomic information	no	no

30.1. Please briefly describe the research.

N/A

31. Please estimate the extent to which artificial insemination (using semen from exotic and/or locally adapted breeds) and/or natural mating is used in your country's various production systems.

Note: low = approximately <33% of matings; medium = approximately 33–67% of matings; high = approximately >67% of mating; n/a = production system not present in this country.

Cattle (specialized dairy)	Ranching or similar grassland -based production systems	Pastoralist systems	Mixed farming systems (rural areas)	Industrial systems	Small-scale urban or peri-urban systems
Artificial insemination using semen from locally adapted breeds	n/a	n/a	n/a	n/a	n/a
Artificial insemination using nationally produced semen from exotic breeds	n/a	n/a	low	low	low
Artificial insemination using imported semen from exotic breeds	n/a	n/a	low	medium	medium
Natural mating	n/a	high	high	medium	low

32. Please provide further details on the use of reproductive and molecular biotechnologies in animal genetic resources management in your country. Please note any particular constraints to implementing these activities and any problems associated with their use. Please indicate what needs to be done to address these constraints and/or problems. You may also provide information on any particular successes achieved in your country in the use of biotechnologies in animal genetic resources management and on the factors that have contributed to these successes.

Artificial Insemination was first introduced in Lesotho in specialized dairy cattle in the late 1980s and it is still the only reproductive biotechnology implemented to date where it has been extended to sheep and pigs. Implementation of this technology has had several constraints; including:
1) semen and other relevant consumable materials are imported from South Africa,
2) shortage of resources e.g transport, skilled manpower and funds,
3) the mountainous and hilly terrain of the country makes it difficult to provide the service timely,
4) poor detection of heat signs by the farmers,
5) poor AI conception rates compared to natural mating.

To address the above mentioned constraints:
1) there is a need to establish AI centers in country.
2) lobby parliament to increase AnGR budget in accordance with the Maputo declaration. 3) AI service should be made available at agricultural resource centers.
4) farmers should get adequate training on reproductive cycle.

Successes achieved:
1) reduced costs of production as there is no need to buy and maintain bulls, boars and rams.
2) increased quantity and quality of products e.g milk, meat and fibre.

III. DATA CONTRIBUTING TO THE PREPARATION OF *THE STATE OF THE WORLD'S BIODIVERSITY FOR FOOD AND AGRICULTURE*

INTEGRATION OF THE MANAGEMENT OF ANIMAL GENETIC RESOURCES WITH THE MANAGEMENT OF PLANT, FORESTRY AND AQUATIC GENETIC RESOURCES

1. Please indicate the extent to which the management of animal genetic resources in your country is integrated with the management of plant, forestry and aquatic genetic resources. Please describe the collaboration, including, if relevant, a description of the benefits gained by pursuing a collaborative approach.

	Extent of collaboration	Description
Development of joint national strategies or action plans	limited	There is collaboration between the ministry responsible for AnGR and ministry responsible for soil conservation, forestry and range management on issues pertaining to management of rangelands including minimization of siltation in water bodies. The Department of Livestock Services collaborates with other departments of the ministry. eg collaboration with the Department of Crops in issues pertaining to fodder production.
Collaboration in the characterization, surveying or monitoring of genetic resources, production environments or ecosystems	none	
Collaboration related to genetic improvement	limited	There is collaboration between the Department of Livestock Services and the Department of Marketing in wool and mohair testing.
Collaboration related to product development and/or marketing	limited	The Department of Livestock Services collaborates directly with the Department of Marketing of the Ministry of Trade and Industry for marketing of livestock and livestock products including development of value chain linkages.
Collaboration in conservation strategies, programmes or projects	limited	The Department of Livestock Services collaborates with a number of stakeholders through a committee established under the SADC Management of Farm Animal Genetic Resources programme
Collaboration in awareness-raising on the roles and values of genetic resources	limited	There is collaboration between the Department of Livestock Services and the Department of Marketing in raising awareness on genetic improvement of wool and mohair producing animals.
Training activities and/or educational curricula that address genetic resources in an integrated manner	none	
Collaboration in the mobilization of resources for the management of genetic resources	none	

2. Please describe any other types of collaboration.

None

3. If relevant, please describe the benefits that could be achieved by strengthening collaboration in the management of genetic resources in the animal, plant, forest and aquatic sectors in your country. If specific plans to increase collaboration are in place, please describe them and the benefits foreseen

N/A

4. Please describe any factors that facilitate or constrain collaborative approaches to the management of genetic resources in your country.

Collaboration in the management of animal genetic resource is facilitated through a committee established under the SADC Management of Farm Animal Genetic Resources programme. The committee comprised of representatives from academic and research institutions, farmer based organizations. However, the committee has been inactive for some time because there are currently no operational projects.

5. If there are constraints, please indicate what needs to be done to overcome them.

There is need to seek funding for AnGR related projects such as characterization of Basotho chickens, Basotho cattle, Basotho pigs and Basotho pony. There is also a need to conserve these breeds through establishment of breeding centers.

ANIMAL GENETIC RESOURCES MANAGEMENT AND THE PROVISION OF REGULATING AND SUPPORTING ECOSYSTEM SERVICES

6. Do your country's policies, plans or strategies for animal genetic resources management include measures specifically addressing the roles of livestock in the provision of regulating ecosystem services and/or supporting ecosystem services?

Regulating ecosystem services: "Benefits obtained from the regulation of ecosystem processes" – Millennium Ecosystem Assessment. 2005. Ecosystems and human well-being: synthesis. Washington D.C., Island Press (available at http://millenniumassessment.org/documents/document.356.aspx.pdf), page 40. Supporting ecosystem services: "Services necessary for the production of all other ecosystem services" – Millennium Ecosystem Assessment. 2005. Ecosystems and human well-being: synthesis. Washington D.C., Island Press (available at http://millenniumassessment.org/documents/document.356.aspx.pdf), page 40.

- (●) yes
- ( ) no

6.1. If yes, please describe these measures and indicate which supporting and/or regulating ecosystem services are targeted, and in which production systems.

Examples of supporting and regulatory ecosystem services provided by livestock might include the following: provision or maintenance of wildlife habitats (e.g. via grazing); seed dispersal (e.g. in dung or on animals' coats); promoting plant growth (e.g. stimulating growth via grazing or browsing); soil formation (e.g. via the supply of manure); soil nutrient cycling (e.g. via supply of manure); soil quality regulation (e.g. affecting soil structure and water-holding capacity via trampling or dunging); control of weeds and invasive species (e.g. via grazing or browsing invasive plants); climate regulation (e.g. by promoting carbon sequestration through dunging); enhancing pollination levels (e.g. by creating habitats for pollinators); fire control (e.g. by removal of biomass that may fuel fires); avalanche control (e.g. grazing to keep vegetation short to reduce the probability that snow will slide); erosion regulation (e.g. indirect via fire control services); maintenance of water quality and quantity (e.g. indirect effect via erosion control); management of crop residues (e.g. consumption of unwanted crop residues by animals); pest regulation (e.g. by destruction of pests or pest habitats); disease regulation (e.g. by destruction of disease vectors or their habitats); buffering of water quantities – flood regulation (e.g. indirect effect via fire and erosion control).

The ecosystems targeted are the rangelands and measures undertaken support water production, prevention of siltation in water bodies and provision of adequate grazing land. The destocking of rangelands, rotational grazing, protection of wetlands and prevention of veld fires all lead to prevention of siltation in water bodies and provision of adequate grazing land.

6.1.1 Please describe what the outcome of these measures has been in terms of the supply of the respective ecosystem services (including an indication of the scale on which these outcomes have been obtained).

In targeted areas there are more palatable plant species on the rangelands and wetlands release more water.

6.1.2 Please describe what the outcome of these measures has been in terms of the state of animal genetic resources and their management (including an indication of the scale on which these outcomes have been obtained).

General improvement of livestock indicated by increased production and productivity.

7. Do your country's policies, plans or strategies for animal genetic resources management include measures specifically addressing environmental problems associated with livestock production?

Examples might include choosing to use particular species or breeds because they are less environmentally damaging in a given ecosystem or adapting breeding goals to produce animals that have some characteristic that makes them more environmentally friendly.

- (●) yes
- ( ) no

7.1. If yes, please describe these measures and indicate the environmental problems that are targeted, and in which production systems.

Environmental problem that exist in the country is high land degradation as a result of over grazing and inappropriate ploughing practices in some areas. The country has imposed a ban on importation of donkeys in the early 1970`s as they are more environmentally damaging to the rangelands. As a means of de-stocking, government introduced a culling and selection programme in small-stock whereby one improved animal was exchanged for two inferior animals. Integrated watershed management is also promoted throughout the country.

7.1.1 Please describe what the outcome of these measures has been in terms of the reduction of the respective environmental problem (including an indication of the scale on which these outcomes have been obtained).

There has been a decline in animal populations grazing on the rangelands and has resulted in the improvement of some rangelands. Integrated watershed management has resulted in reduced soil erosion on cropping land.

7.1.2 Please describe what the outcome of these measures has been in terms of the state of animal genetic resources and their management (including an indication of the scale on which these outcomes have been obtained).

General improvement of livestock indicated by increased production and productivity of livestock.

8. Please describe any constraints or problems encountered or foreseen in the implementation of measures in your country aimed at promoting the provision of regulating and supporting ecosystem services or reducing environmental problems.

Lack of resources especially transport and finances.

9. Please provide examples of cases in which the role of livestock or specific animal genetic resources is particularly important in the provision of regulating and/or supporting ecosystem services in your country. Please also describe any examples in which diverse animal genetic resources are important in terms of reducing the adverse environmental effects of livestock production.

None - All grazing animals are destructive to rangelands. However, there are strategies such as rotational grazing and destocking are used to regulate cover in rangelands.

10. Please describe the potential steps that could be taken in your country to further expand or strengthen positive links between animal genetic resources management and the provision of regulating and/or supporting ecosystem services or the reduction of environmental problems. If your country has specific plans to take further action in this field, please describe them.

N/A

11. Please provide any further information on the links between animal genetic resources management in your country and the provision of supporting and/or regulating ecosystem services and/or the reduction of environmental problems.

N/A

IV. PROGRESS REPORT ON THE IMPLEMENTATION OF THE *GLOBAL PLAN OF ACTION FOR ANIMAL GENETIC RESOURCES* – 2007 TO 2013

Note: Please provide further details in the text boxes below each question, including, if relevant, information on why no action has been taken.

STRATEGIC PRIORITY AREA 1: CHARACTERIZATION, INVENTORY AND MONITORING OF TRENDS AND ASSOCIATED RISKS

- The state of inventory and characterization of animal genetic resources
- The state of monitoring programmes and country-based early warning and response systems
- The state of international technical standards and protocols for characterization, inventory, and monitoring

1. Which of the following options best describes your country's progress in building an inventory of its animal genetic resources covering all livestock species of economic importance (SP 1, Action 1)?

Glossary: An inventory is a complete list of all the different breeds present in a country.

- (●) a. Completed before the adoption of the GPA
- ( ) b. Completed after the adoption of the GPA
- ( ) c. Partially completed (further progress since the adoption of the GPA)
- ( ) d. Partially completed (no further progress since the adoption of the GPA)

Please provide further details:

Lesotho undertook breed survey in 2003 as part of SADC Management of Farm Animal Genetic Resources Programme.

2. Which of the following options best describes your country's progress in implementing phenotypic characterization studies covering morphology, performance, location, production environments and specific features in all livestock species of economic importance (SP 1, Actions 1 and 2)?

- ( ) a. Comprehensive studies were undertaken before the adoption of the GPA
- ( ) b. Sufficient information has been generated because of progress made since the adoption of the GPA
- ( ) c. Some information has been generated (further progress since the adoption of the GPA)
- (●) d. Some information has been generated (no further progress since the adoption of the GPA)
- ( ) e. None, but action is planned and funding identified
- ( ) f. None, but action is planned and funding is sought
- ( ) g. None

Please provide further details:

Phenotypic characterisation of the Basotho Pony was undertaken in 2003. This is the only breed that has been characterized phenotypically.

3. Which of the following options best describes your country's progress in molecular characterization of its animal genetic resources covering all livestock species of economic importance (SP 1)?

- ( ) a. Comprehensive studies were undertaken before the adoption of the GPA
- ( ) b. Sufficient information has been generated because of progress made since the adoption of the GPA
- ( ) c. Some information has been generated (further progress since the adoption of the GPA)

- ○ d. Some information has been generated (no further progress since the adoption of the GPA)
- ○ e. None, but action is planned and funding identified
- ○ f. None, but action is planned and funding is sought
- ◉ g. None

Please provide further details:

N/A

4. Has your country conducted a baseline survey of the population status of its animal genetic resources for all livestock species of economic importance (SP 1, Action 1)?

Glossary: A baseline provides a reference point for monitoring population trends. Population status refers to the total size of a national breed population (ideally, also the proportion that is actively used for breeding and the number of male and female breeding animals).

- ○ a. Yes, a baseline survey was undertaken before the adoption of the GPA
- ○ b. Yes, a baseline survey has been undertaken or has commenced after the adoption of the GPA
- ○ c. Yes, a baseline survey has been undertaken for some species (coverage increased since the adoption of the GPA)
- ○ d. Yes, a baseline survey has been undertaken for some species (coverage not increased since the adoption of the GPA)
- ○ e. No, but action is planned and funding identified
- ◉ f. No, but action is planned and funding is sought
- ○ g. No

Please provide further details:

Survey of animal breeds has been undertaken to establish breeds that exists in the country but population size for each breed is not known. In other words there has never been a baseline survey for any of the known breeds.

5. Have institutional responsibilities for monitoring the status of animal genetic resources in your country been established (SP 1, Action 3)?

Glossary: Monitoring is a systematic set of activities undertaken to document changes in the population size and structure of animal genetic resources over time.

- ○ a. Yes, responsibilities established before the adoption of the GPA
- ○ b. Yes, responsibilities established after the adoption of the GPA
- ◉ c. No, but action is planned and funding identified
- ○ d. No, but action is planned and funding is sought
- ○ e. No

Please provide further details:

Considered for implementation under Strengthening the Capacity of African Countries to Conservation and Sustainable Utilization of African Animal Genetic Resources project.

6. Have protocols (details of schedules, objectives and methods) been established for a programme to monitor the status of animal genetic resources in your country (SP 2)?

- ○ a. Yes, protocols established before the adoption of the GPA
- ○ b. Yes, protocols established after the adoption of the GPA
- ◉ c. No, but action is planned and funding identified
- ○ d. No, but action is planned and funding is sought
- ○ e. No

Please provide further details:

Considered for implementation under Strengthening the Capacity of African Countries to Conservation and Sustainable Utilization of African Animal Genetic Resources project.

7. Are the population status and trends of your country's animal genetic resources being monitored regularly for all livestock species of economic importance (SP 1, Action 2)?

- ○ a. Yes, regular monitoring commenced before the adoption of the GPA
- ○ b. Yes, regular monitoring commenced after the adoption of the GPA
- ○ c. Yes, regular monitoring is being undertaken for some species (coverage increased since the adoption of the GPA)
- ○ d. Yes, regular monitoring is being undertaken for some species (coverage not increased since the adoption of the GPA)
- ○ e. No, but action is planned and funding identified
- ◉ f. No, but action is planned and funding is sought
- ○ g. No

Please provide further details:

Breeds existing in the country are known however neither baseline survey nor monitoring has been undertaken.

8. Which criteria does your country use for assessing the risk status of its animal genetic resources (SP 1, Action 7)?

Glossary: FAO has developed criteria that it uses to allocate breeds to risk-status categories based on the size and structure of their populations (http://www.fao.org/docrep/010/a1250e/a1250e00.htm).

- ◉ a. FAO criteria
- ○ b. National criteria that differ from the FAO criteria
- ○ c. Other criteria (e.g. defined by international body such as European Union)
- ○ d. None

Please provide further details. If applicable, please describe (or provide a link to a web site that describes) your national criteria or those of the respective international body:

N/A

9. Has your country established an operational emergency response system (http://www.fao.org/docrep/meeting/021/K3812e.pdf) that provides for immediate action to safeguard breeds at risk in all important livestock species (SP 1, Action 7)?

- ○ a. Yes, a comprehensive system was established before the adoption of the GPA
- ○ b. Yes, a comprehensive system has been established since the adoption of the GPA
- ○ c. For some species and breeds (coverage expanded since the adoption of the GPA)
- ○ d. For some species and breeds (coverage not expanded since the adoption of the GPA)
- ◉ e. No, but action is planned and funding identified
- ○ f. No, but action is planned and funding is sought
- ○ g. No

Please provide further details:

Considered for implementation under Strengthening the Capacity of African Countries to Conservation and Sustainable Utilization of African Animal Genetic Resources project.

10. Is your country conducting research to develop methods, technical standards or protocols for phenotypic or molecular characterization, or breed evaluation, valuation or comparison? (SP 2, Action 2)

- ○ a. Yes, research commenced before the adoption of the GPA
- ○ b. Yes, research commenced after the adoption of the GPA
- ◉ c. No, but action is planned and funding identified

- ○ d. No, but action is planned and funding is sought
- ○ e. No

Please provide further details:

Considered for implementation under Strengthening the Capacity of African Countries to Conservation and Sustainable Utilization of African Animal Genetic Resources project.

11. Has your country identified the major barriers and obstacles to enhancing its inventory, characterization and monitoring programmes?

- ◉ a. Yes
- ○ b. No
- ○ c. No major barriers and obstacles exist. Comprehensive inventory, characterization and monitoring programmes are in place.

Please provide further details. If barriers and obstacles have been identified, please list them:

The main obstacles identified are lack of human capacity and funding.

12. If applicable, please list and describe the measures that need to be taken to address these barriers and obstacles and to enhance your country's inventory, characterization and monitoring programmes:

Human capacity will be considered for funding in the new project Strengthening the Capacity of African Countries to Conservation and Sustainable Utilization of African Animal Genetic Resources.

13. Please provide further comments on your country's activities related to Strategic Priority Area 1: Characterization, inventory and monitoring of trends and associated risks (including regional and international cooperation)

Note: It is not necessary to duplicate information provided in previous sections. Where relevant, please provide cross-references.

Refer to 12

STRATEGIC PRIORITY AREA 2: SUSTAINABLE USE AND DEVELOPMENT

- The state of national sustainable use policies for animal genetic resources
- The state of national species and breed development strategies and programmes
- The state of efforts to promote agro-ecosystem approaches

14. Does your country have adequate national policies in place to promote the sustainable use of animal genetic resources (see also questions 46 and 54)?

- ◉ a. Yes, since before the adoption of the GPA
- ○ b. Yes, policies put in place or updated after the adoption of the GPA
- ○ c. No, but action is planned and funding identified
- ○ d. No, but action is planned and funding is sought
- ○ e. No

Please provide further details. If available, please provide the text of the policies or a web link to the text:

The Livestock and Range Management Policy of 1994 stipulate practicing extensive livestock production system in the mountains and foothills areas while intensive livestock production practiced in the lowlands. Grazing Control Regulations of 1980 allows only the pure Angora goats and pure wool Merino sheep in the rangelands. Laws of Lerotholi states the castration of inferior sires of goats and sheep.

15. Do these policies address the integration of agro-ecosystem approaches into the management of animal genetic resources in your country (SP5) (see also questions 46 and 54)?

Glossary: The ecosystem approach is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way (for further information see http://www.cbd.int/ecosystem/description.shtml).

- (●) a. Yes
- ( ) b. No, but a policy update is planned and funding identified
- ( ) c. No, but action is planned and funding is sought
- ( ) d. No

Please provide further details:

The country encourages the practice of extensive livestock production system in the mountains as well as the foothills areas and intensive livestock production in the lowlands.

16. Do breeding programmes exist in your country for all major species and breeds, and are these programmes regularly reviewed, and if necessary revised, with the aim of meeting foreseeable economic and social needs and market demands (SP4, Action 2)?

- ( ) a. Yes, since before the adoption of the GPA
- ( ) b. Yes, put in place after the adoption of the GPA
- (●) c. For some species and breeds (coverage has increased since the adoption of the GPA)
- ( ) d. For some species and breeds (coverage has not increased since the adoption of the GPA)
- ( ) e. No, but action is planned and funding identified
- ( ) f. No, but action is planned and funding is sought
- ( ) g. No

Please provide further details:

There are clear breeding programmes for sheep and goats.

17. Is long-term sustainable use planning – including, if appropriate, strategic breeding programmes – in place for all major livestock species and breeds (SP4, Action 1)?

- ( ) a. Yes, since before the adoption of the GPA
- ( ) b. Yes, put in place after the adoption of the GPA
- (●) c. For some species and breeds (further progress made since the adoption of the GPA)
- ( ) d. For some species and breeds (no further progress made since the adoption of the GPA)
- ( ) e. No, but action is planned and funding identified
- ( ) f. No, but action is planned and funding is sought
- ( ) g. No

Please provide further details:

There are clear breeding programmes for sheep and goats.

18. Have the major barriers and obstacles to enhancing the sustainable use and development of animal genetic resources in your country been identified?

- (●) a. Yes
- ( ) b. No
- ( ) c. No major barriers and obstacles exist. Comprehensive sustainable use and development measures are in place.

Please provide further details. If barriers and obstacles have been identified, please list them:

The main obstacles identified are lack of human capacity and funding.

19. Have the long-term impacts of the use of exotic breeds on locally adapted breeds (e.g. economic, environmental or genetic impacts) and on food security been assessed in your country (SP4, Action 1)?

Glossary:

Exotic breeds are breeds that are maintained in a different area from the one in which they were developed. Exotic breeds comprise both recently introduced breeds and continually imported breeds.

Locally adapted breeds are breeds that have been in the country for a sufficient time to be genetically adapted to one or more of traditional production systems or environments in the country. The phrase "sufficient time" refers to time present in one or more of the country's traditional production systems or environments. Taking cultural, social and genetic aspects into account, a period of 40 years and six generations of the respective species might be considered as a guiding value for "sufficient time", subject to specific national circumstances.

f. No

Please provide further details:

No assessment have been done however it is observed that cross breeding of Exotic breeds and local breeds of cattle occurs.

20. Have recording systems and organizational structures for breeding programmes been established or strengthened (SP4, Action 3)?

- ○ a. Yes, sufficient recording systems and organizational structures for breeding programmes have existed since before the adoption of the GPA
- ○ b. Yes, sufficient recording systems and organizational structures for breeding programmes exist because of progress made since the adoption of the GPA
- ○ c. Yes, recording systems and organizational structures for breeding programmes are partially in place (and were established or strengthened after the adoption of the GPA)
- ○ d. Yes, recording systems and organizational structures for breeding programmes are partially in place (but no progress has been made since the adoption of the GPA)
- ◉ e. No, but action is planned and funding identified
- ○ f. No, but action is planned and funding is sought
- ○ g. No

Please provide further details:

There are organizational structures for breeding Merino sheep and Angora goats however there is no recording system in place, they are yet to be established.

21. Are mechanisms in place in your country to facilitate interactions among stakeholders, scientific disciplines and sectors as part of sustainable use development planning (SP5, Action 3)?

- ◉ a. Yes, comprehensive mechanisms have existed since before the adoption of the GPA
- ○ b. Yes, comprehensive mechanisms exist because of progress made since the adoption of the GPA
- ○ c. Yes, mechanisms are partially in place (and were established or strengthened after the adoption of the GPA)
- ○ d. Yes, mechanisms are partially in place (but no progress has been made since the adoption of the GPA)
- ○ e. No, but action is planned and funding identified
- ○ f. No, but action is planned and funding is sought
- ○ g. No

Please provide further details:

Collaboration in the management of animal genetic resource is facilitated through a committee established under the SADC Management of Farm Animal Genetic Resources programme.

22. Have measures been implemented in your country to provide farmers and livestock keepers with information that facilitates their access to animal genetic resources (SP 4, Action 7)?

- ◉ a. Yes, comprehensive measures have existed since before the adoption of the GPA

- ○ b. Yes, comprehensive measures exist because of progress made since the adoption of the GPA
- ○ c. Yes, measures partially implemented (and were established or strengthened after the adoption of the GPA)
- ○ d. Yes, measures partially implemented (but no progress has been made since the adoption of the GPA)
- ○ e. No, but action is planned and funding identified
- ○ f. No, but action is planned and funding is sought
- ○ g. No

Please provide further details:

Livestock farmers keeping different species of animals access information that facilitates access to animal genetic resources through offices in the ministry of agriculture.

23. Has your country developed a national policy or entered specific contractual agreements for access to and the equitable sharing of benefits resulting from the use and development of animal genetic resources and associated traditional knowledge (SP3, Action 2)?

- ○ a. Yes, sufficient measures (policy and/or agreements) have been in place since before the adoption of the GPA
- ○ b. Yes, sufficient measures (policy and/or agreements) are in place because of progress made since the adoption of the GPA
- ○ c. Yes, some measures (policy and/or agreements) are in place (progress has been made since the adoption of the GPA)
- ○ d. Yes, some measures (policy and/or agreements) are in place (but no progress has been made since the adoption of the GPA)
- ○ e. No, but a policy and/or agreements are in preparation
- ○ f. No, but a policy and/or agreements are planned
- ◉ g. No

Please provide further details:

Access and benefit sharing issues will be considered for funding in the new project Strengthening the Capacity of African Countries to Conservation and Sustainable Utilization of African Animal Genetic Resources.

24. Have training and technical support programmes for the breeding activities of livestock-keepers been established or strengthened in your country (SP 4, Action 1)?

- ◉ a. Yes, sufficient programmes have existed since before the adoption of the GPA
- ○ b. Yes, sufficient programmes exist because of progress made since the adoption of the GPA
- ○ c. Yes, some programmes exist (progress has been made since the adoption of the GPA)
- ○ d. Yes, some programmes exist (but no progress has been made since the adoption of the GPA)
- ○ e. No, but action is planned and funding identified
- ○ f. No, but action is planned and funding is sought
- ○ g. No

Please provide further details:

Livestock farmers keeping different species of animals are supported technically on breeding programmes through offices in the ministry of agriculture.

25. Have priorities for future technical training and support programmes to enhance the use and development of animal genetic resources in your country been identified (SP 4, paragraph 42)?

- ○ a. Yes, priorities have been identified or updated since the adoption of the GPA
- ○ b. Yes, priorities were identified before the adaption of the GPA but have not been updated
- ◉ c. No, but action is planned and funding identified
- ○ d. No, but action is planned and funding is sought
- ○ e. No

Please provide further details:

To be considered for funding in the new project Strengthening the Capacity of African Countries to Conservation and Sustainable Utilization of African Animal Genetic Resources.

26. Have efforts been made in your country to assess and support indigenous or local production systems and associated traditional knowledge and practices related to animal genetic resources (SP 6, Action 1, 2)?

- ○ a. Yes, sufficient measures have been in place since before the adoption of the GPA
- ○ b. Yes, sufficient measures are in place because of progress made since the adoption of the GPA
- ◉ c. Yes, some measures are in place (and were established or strengthened after the adoption of the GPA)
- ○ d. Yes, some measures are in place (but no progress has been made since the adoption of the GPA)
- ○ e. No, but action is planned and funding identified
- ○ f. No, but action is planned and funding is sought
- ○ g. No

Please provide further details:

Some work has concentrated on local chickens.

27. Have efforts been made in your country to promote products derived from indigenous and local species and locally adapted breeds, and facilitate access to markets (SP 6, Action 2, 4)?

- ○ a. Yes, sufficient measures have been in place since before the adoption of the GPA
- ○ b. Yes, sufficient measures are in place because of progress made since the adoption of the GPA
- ○ c. Yes, some measures are in place (and were established or strengthened after the adoption of the GPA)
- ◉ d. Yes, some measures are in place (but no progress has been made since the adoption of the GPA)
- ○ e. No, but action is planned and funding identified
- ○ f. No, but action is planned and funding is sought
- ○ g. No

Please provide further details:

Auction facilities were established to facilitate market access of indigenous species though they are currently not functional.

28. If applicable, please list and describe priority requirements for enhancing the sustainable use and development of animal genetic resources in your country:

Establishment of breeding centers for different species of indigenous animals.

29. Please provide further comments on your country's activities related to Strategic Priority Area 2: Sustainable Use and Development (including regional and international cooperation)

Note: It is not necessary to duplicate information provided in previous sections. Where relevant, please provide cross-references.

STRATEGIC PRIORITY AREA 3: CONSERVATION

- The state of national conservation policies
- The state of *in situ* and *ex situ* conservation programmes
- The state of regional and global long-term conservation strategies and agreement on technical standards for conservation

30. Does your country regularly assess factors leading to the erosion of its animal genetic resources (SP 7, Action 2)?

- ○ a. Erosion not occurring
- ○ b. Yes, regular assessments have been implemented since before the adoption of the GPA
- ○ c. Yes, regular assessments have commenced since the adoption of the GPA
- ◉ d. No, but action is planned and funding identified
- ○ e. No, but action is planned and funding is sought
- ○ f. No

Please provide further details:

To be considered in the new project Strengthening the Capacity of African Countries to Conservation and Sustainable Utilization of African Animal Genetic Resources**.**

31. What factors or drivers are leading to the erosion of animal genetic resources? Please describe the factors specifying which breeds or species are affected:

Market forces and new technologies favours fast growing breeds as opposed to slow growing indigenous breeds hence reduction in their numbers: example exotic pig breeds versus indigenous. There are no indigenous breeds conservation measures put in place e.g. indigenous pigs, chickens and cattle.

32. Does your country have conservation policies and programmes in place to protect locally adapted breeds at risk in all important livestock species (SP 7, SP 8 and SP 9)?

Glossary: Locally adapted breeds are breeds that have been in the country for a sufficient time to be genetically adapted to one or more of traditional production systems or environments in the country. The phrase "sufficient time" refers to time present in one or more of the country's traditional production systems or environments. Taking cultural, social and genetic aspects into account, a period of 40 years and six generations of the respective species might be considered as a guiding value for "sufficient time", subject to specific national circumstances.

- ○ a. Country requires no policies and programmes because all locally adapted breeds are secure
- ○ b. Yes, comprehensive policies and programmes have been in place since before the adoption of the GPA
- ○ c. Yes, comprehensive policies and programmes exist because of progress made since the adoption of the GPA
- ○ d. For some species and breeds (coverage expanded since the adoption of the GPA)
- ◉ e. For some species and breeds (coverage not expanded since the adoption of the GPA)
- ○ f. No, but action is planned and funding identified
- ○ g. No, but action is planned and funding is sought
- ○ h. No

Please provide further details:

Government established Basotho Pony Stud as well as a pony trekking and marketing center in an endeavour to conserve and promote the breed.

33. If conservation policies and programmes are in place, are they regularly evaluated or reviewed (SP 7, Action 1; SP 8, Action 1; and SP 9, Action 1)?

- ○ a. Yes
- ◉ b. No, but action is planned and funding identified
- ○ c. No, but action is planned and funding is sought

- ○ d. No

Please provide further details:

To be considered in the new project Strengthening the Capacity of African Countries to Conservation and Sustainable Utilization of African Animal Genetic Resources.

34. Does your country have in situ conservation measures in place for locally adapted breeds at risk of extinction and to prevent breeds from becoming at risk (SP 8 and SP 9)?

Glossary: Locally adapted breeds are breeds that have been in the country for a sufficient time to be genetically adapted to one or more of traditional production systems or environments in the country. The phrase "sufficient time" refers to time present in one or more of the country's traditional production systems or environments. Taking cultural, social and genetic aspects into account, a period of 40 years and six generations of the respective species might be considered as a guiding value for "sufficient time", subject to specific national circumstances.

- ○ a. Country requires no in situ conservation measures because all locally adapted breeds are secure
- ○ b. Yes for all breeds
- ○ c. For some breeds (coverage expanded since the adoption of the GPA)
- ◉ d. For some breeds (coverage not expanded since the adoption of the GPA)
- ○ e. No, but action is planned and funding identified
- ○ f. No, but action is planned and funding is sought
- ○ g. No

Please provide further details:

Government supports Basotho Pony Mare Camps as an in situ conservation measure. However, other locally adapted breeds will be considered under Strengthening the Capacity of African Countries to Conservation and Sustainable Utilization of African Animal Genetic Resources project.

35. Does your country have ex situ in vivo conservation measures in place for locally adapted breeds at risk of extinction and to prevent breeds from becoming at risk (SP 8 and SP 9)?

Glossary: Ex situ in vivo conservation - maintenance of live animal populations not kept under their normal management conditions - e.g. in zoological parks or governmental farms - and/or outside the area in which they evolved or are now normally found.

- ○ a. Country requires no ex situ in vivo conservation measures because all locally adapted breeds are secure
- ○ b. Yes for all breeds
- ○ c. For some breeds (coverage expanded since the adoption of the GPA)
- ○ d. For some breeds (coverage not expanded since the adoption of the GPA)
- ◉ e. No, but action is planned and funding identified
- ○ f. No, but action is planned and funding is sought
- ○ g. No

Please provide further details:

To be considered in the new project Strengthening the Capacity of African Countries to Conservation and Sustainable Utilization of African Animal Genetic Resources.

36. Does your country have ex situ in vitro conservation measures in place for locally adapted breeds at risk of extinction and to prevent breeds from becoming at risk (SP 8 and SP 9)?

Glossary: Ex situ in vitro - conservation, under cryogenic conditions including, inter alia, the cryoconservation of embryos, semen, oocytes, somatic cells or tissues having the potential to reconstitute live animals at a later date.

- ○ a. Country requires no ex situ in vitro conservation measures because all locally adapted breeds are secure
- ○ b. Yes for all breeds
- ○ c. For some breeds (coverage expanded since the adoption of the GPA)
- ○ d. For some breeds (coverage not expanded since the adoption of the GPA)
- ◉ e. No, but action is planned and funding identified

- ○ f. No, but action is planned and funding is sought
- ○ g. No

Please provide further details:

Lesotho plans to collaborate with Botswana and South Africa that already have in vitro gene bank facilities.

37. Please describe the measures (indicating for each whether they were introduced before or after the adoption of the GPA) or provide a web link to a published document that provides further information:

N/A

38. If your country has not established any conservation programmes, is this a future priority?

- ◉ a. Yes
- ○ b. No

Please provide further details:

Government future priority is to conserve all locally adapted species including indigenous chickens, pigs and cattle.

39. Has your country identified the major barriers and obstacles to enhancing the conservation of its animal genetic resources?

- ○ a. Country requires no conservation programmes because all animal genetic resources are secure
- ◉ b. Yes
- ○ c. No
- ○ d. No major barriers and obstacles exist. Comprehensive conservation programmes are in place

Please provide further details. If barriers and obstacles have been identified, please list them:

The main obstacles identified are lack of human capacity and funding.

40. If your country has existing ex situ collections of animal genetic resources, are there major gaps in these collections (SP 9, Action 5)?

- ○ a. Yes
- ◉ b. No

If yes, have priorities for filling the gaps been established?

- ○ a. Yes
- ○ b. No, but action is planned and funding identified
- ○ c. No, but action is planned and funding is sought
- ○ d. No

Please provide further details:

N/A

41. Are arrangements in place in your country to protect breeds and populations that are at risk from natural or human-induced disasters (SPA 3)?

- ◉ a. Yes, arrangements have been in place since before the adoption of the GPA
- ○ b. Yes, arrangements put in place after the adoption of the GPA
- ○ c. No, but action is planned and funding identified

- ○ d. No, but action is planned and funding is sought
- ○ e. No

Please provide further details:

Government established the Disaster Management Authority (DMA) which is responsible for managing the risks brought by natural and human-induced disasters (Snowfall, floods, disease outbreaks etc)
Parliament has enacted Stock theft Law to curb the rampant stock theft.

42. Are arrangements in place in your country for extraction and use of conserved genetic material following loss of animal genetic resources (e.g. through disasters), including arrangements to enable restocking (SP 9, Action 3)?

- ○ a. Yes, arrangements have been in place since before the adoption of the GPA
- ○ b. Yes, arrangements put in place after the adoption of the GPA
- ◉ c. No, but action is planned and funding identified
- ○ d. No, but action is planned and funding is sought
- ○ e. No

Please provide further details:

To be considered in the new project Strengthening the Capacity of African Countries to Conservation and Sustainable Utilization of African Animal Genetic Resources**.**

43. Is your country conducting research to adapt existing, or develop new, methods and technologies for in situ and ex situ conservation of animal genetic resources (SP 11, Action 1)?

- ○ a. Yes, research commenced before the adoption of the GPA
- ○ b. Yes, research commenced since the adoption of the GPA
- ◉ c. No, but action is planned and funding identified
- ○ d. No, but action is planned and funding is sought
- ○ e. No

Please provide further details. If yes, please briefly describe the research:

To be considered in the new project Strengthening the Capacity of African Countries to Conservation and Sustainable Utilization of African Animal Genetic Resources**.**

44. Does your country implement programmes to promote documentation and dissemination of knowledge, technologies and best practices for conservation (SP 11, Action 2)?

- ○ a. Yes, programmes commenced before the adoption of the GPA
- ○ b. Yes, programmes commenced since the adoption of the GPA
- ◉ c. No, but action is planned and funding identified
- ○ d. No, but action is planned and funding is sought
- ○ e. No

Please provide further details:

To be considered in the new project Strengthening the Capacity of African Countries to Conservation and Sustainable Utilization of African Animal Genetic Resources**.**

45. What are your country's priority requirements for enhancing conservation measures for animal genetic resources? Please list and describe them:

1.Capacity building: Training in animal breeding and genetics
Establishment of breeding centers
2. Funding: Breed surveys to establish populations within breeds
Characterization studies (Phenotypic and molecular)

46. Please provide further comments describing your country's activities related to Strategic Priority Area 3: Conservation (including regional and international cooperation)

Note: It is not necessary to duplicate information provided in previous sections. Where relevant, please provide cross-references.

Government supports Basotho Pony Mare Camps as an in situ conservation measure.

STRATEGIC PRIORITY AREA 4: POLICIES, INSTITUTIONS AND CAPACITY-BUILDING IMPLEMENTATION AND FINANCING OF THE GLOBAL PLAN OF ACTION FOR ANIMAL GENETIC RESOURCES

- The state of national institutions for planning and implementing animal genetic resources measures
- The state of information sharing
- The state of educational and research facilities capacity for characterization, inventory, and monitoring, sustainable use, development, and conservation
- The state of awareness of the roles and values of animal genetic resources
- The state of policies and legal frameworks for animal genetic resources

47. Does your country have sufficient institutional capacity to support holistic planning of the livestock sector (SP 12, Action1)?

- ○ a. Yes, sufficient capacity has been in place since before the adoption of the GPA
- ○ b. Yes, sufficient capacity is in place because of progress made after the adoption of the GPA
- ◉ c. No, but action is planned and funding identified
- ○ d. No, but action is planned and funding is sought
- ○ e. No

Please provide further details:

To be considered in the new project Strengthening the Capacity of African Countries to Conservation and Sustainable Utilization of African Animal Genetic Resources**.**

48. What is the current status of your country's national strategy and action plan for animal genetic resources (SP 20)?

Glossary: National strategy and action plan for animal genetic resources: a strategy and plan, agreed by stakeholders and preferably government-endorsed, that translates the internationally agreed Global Plan of Action for Animal Genetic Resources into national actions, with the aim of ensuring a strategic and comprehensive approach to the sustainable use, development and conservation of animal genetic resources for food and agriculture.

- ○ a. Previously endorsed national strategy and action plan is being updated (or new version has been endorsed)
- ○ b. Completed and government-endorsed
- ○ c. Completed and agreed by stakeholders
- ○ d. In preparation
- ○ e. Preparation is planned and funding identified
- ◉ f. Future priority activity
- ○ g. Not planned

Please provide further details. If available, please provide a copy of your country's national strategy and action plan as a separate document or as a web link:

The country already has programmes for management of farm Animal Genetic Resources but lacks a separate Strategies and an Action Plan document, it is therefore the countries priority to develop the document.

49. Are animal genetic resources addressed in your country's National Biodiversity Strategy and Action Plan (http://www.cbd.int/nbsap/)?

- ○ a. Yes
- ○ b. No, but they will be addressed in forthcoming plan
- ◉ c. No

Please provide further details:

Lesotho developed a National Biodiversity Strategy in 2000 but this does not cover conservation and management of Farm Animal Genetic Resources. (National Strategy on Lesotho`s Biological Diversity: Conservation of Sustainable Use)

50. Are animal genetic resources addressed in your country's national livestock sector strategy, plan or policy (or equivalent instrument)?

- ◉ a. Yes
- ○ b. No, but they will be addressed in a forthcoming strategy, plan or policy
- ○ c. No, animal genetic resources are not addressed
- ○ d. No, the country does not have a national livestock sector strategy, plan or policy

Please provide further details. If available, please provide the text of the strategy, plan or policy or a web link to the text:

The Livestock and Range Management Policy of 1994 addresses issues of animal genetic resources.

51. Has your country established or strengthened a national database for animal genetic resources (independent from DAD-IS) (SP 15, Action 4)?

- ○ a. Yes, a national database has been in place since before the adoption of the GPA
- ○ b. Yes, a national database is in place because of progress made since the adoption of the GPA
- ◉ c. Yes, a national database is in place but still requires strengthening (progress since adoption of the GPA)
- ○ d. Yes, a national database is in place but still requires strengthening (no progress since adoption of the GPA)
- ○ e. No, but action is planned and funding identified
- ○ f. No, but action is planned and funding is sought
- ○ g. No

Please provide further details:

Database called Livestock Information Management System (LIMS) was established in 2008?

52. Have your country's national data on animal genetic resources been regularly updated in DAD-IS?

Note that the Commission on Genetic Resources for Food and Agriculture has requested FAO to produce global status and trends reports every two years.

- ○ a. Yes, regular updates have been occurring since before the adoption of the GPA
- ○ b. Yes, regular updates started after the adoption of the GPA
- ○ c. No, but it is a future priority
- ◉ d. No

Please provide further details:

LMIS is not linked to DAD-IS.

53. Has your country established a National Advisory Committee for Animal Genetic Resources (SP 12, Action 3)?

- (●) a. Yes, established before the adoption of the GPA
- ( ) b. Yes, established after the adoption of the GPA
- ( ) c. No, but action is planned and funding identified
- ( ) d. No, but action is planned and funding is sought
- ( ) e. No

Please provide further details. If a National Advisory Committee has been established, please list its main functions:

National Advisory Committee was established under the SADC Management of Farm Animal Genetic Resources Programme.

54. Is there strong coordination and interaction between the National Focal Point and stakeholders involved with animal genetic resources, such as the breeding industry, livestock keepers, government agencies, research institutes and civil society organizations (SP 12, Action 3)?

- (●) a. Yes, strong coordination has been in place since before the adoption of the GPA
- ( ) b. Yes, strong coordination was established after the adoption of the GPA
- ( ) c. No, but action is planned and funding identified
- ( ) d. No, but action is planned and funding is sought
- ( ) e. No

Please provide further details:

The National Focal Point exists, the National Advisory Committee is also present but does not meet regularly.

55. Does the National Focal Point (or other institutions) undertake activities to increase public awareness of the roles and values of animal genetic resources (SP 18)?

- (●) a. Yes, activities commenced before the adoption of the GPA
- ( ) b. Yes, activities commenced after the adoption of the GPA
- ( ) c. No, but activities are planned and funding identified
- ( ) d. No, but activities are planned and funding is sought
- ( ) e. No

Please provide further details:

Department of Livestock Services,the National Focal Point, together with participating institutions raises awareness on conservation and management of animal genetic resources.

56. Does your country have national policies and legal frameworks for animal genetic resources management (SP 20)?

- ( ) a. Yes, comprehensive national policies and legal frameworks were in place before the adoption of the GPA and are kept up to date
- ( ) b. Yes, comprehensive and up-to-date national policies and legal frameworks in place because of progress made since the adoption of the GPA
- ( ) c. Yes, some national policies and legislation in place (strengthened since the adoption of the GPA)
- (●) d. Yes, some national policies and legislation in place (not strengthened since the adoption of the GPA)
- ( ) e. No, but action is planned and funding identified
- ( ) f. No, but action is planned and funding is sought
- ( ) g. No

Please provide further details:

The Livestock and Range Management Policy of 1994 addresses issues of animal genetic resources. Other legal frameworks are the Grazing Control Regulations of 1980 and Laws of Lerotholi. However, there is a need to up-date the pieces of legislation as well as the policy to be in line with current developments.

57. Which of the following options best describes the state of training and technology transfer programmes in your country related to inventory, characterization, monitoring, sustainable use, development and conservation of animal genetic resources (SP14, Action 1)?

- ○ a. Comprehensive programmes have been in place since before the adoption of the GPA
- ○ b. Comprehensive programmes exist because of progress made since the adoption of the GPA
- ○ c. Some programmes exist (further progress since the adoption of the GPA)
- ◉ d. Some programmes (no further progress since the adoption of the GPA)
- ○ e. None, but action is planned and funding identified
- ○ f. None, but action is planned and funding is sought
- ○ g. None

Please provide further details:

Phenotypic characterization of Basotho Pony has been undertaken under SADC Management of Farm Animal Genetic Resources Programme. There is need for molecular characterization of this breed and others, inventory and monitoring of breeds and programmes related to conservation and sustainable use of animal genetic resources.

58. Have organizations (including where relevant community-based organizations), networks and initiatives for sustainable use, breeding and conservation been established or strengthened (SP 14, Action 3)?

- ○ a. Yes, comprehensive organizations, networks and initiatives have existed since before the adoption of the GPA
- ○ b. Yes, comprehensive organizations, networks and initiatives exist because of progress made since the adoption of the GPA
- ◉ c. Yes, some organizations, networks and initiatives exist (established or strengthened since adoption of the GPA)
- ○ d. Yes, some organizations, networks and initiatives exist (but no progress made since adoption of the GPA)
- ○ e. No, but action is planned and funding identified
- ○ f. No, but action is planned and funding is sought
- ○ g. No

Please provide further details:

The following farmers associations exists: Lesotho National Wool and Mohair Growers Association (LNWMGA), Basotho Mare Camp Association and Prince Lerotholi Ram Breeders Association.

59. Are there any national NGOs active in your country in the fields of:

Characterization?

- ○ a. Yes
- ◉ b. No

Sustainable use and development?

- ○ c. Yes
- ◉ d. No

Conservation of breeds at risk?

- ◉ e. Yes
- ○ f. No

If yes, please list the national NGOs and provide links to their web sites:

Rural Self-help Development Association (RSDA) Web: www.rsda.co.ls

60. Has your country established or strengthened research or educational institutions in the field of animal genetic resources management (SP 13, Action 3)?

- ○ a. Yes, adequate research and education institutions have existed since before the adoption of the GPA
- ○ b. Yes, adequate research and education institutions exist because of progress made since the adoption of the GPA
- ○ c. Yes, research and education institutions exist but still require strengthening (progress made since the adoption of the GPA)
- ○ d. Yes, research and education institutions exist but still require strengthening (no progress made since the adoption of the GPA)
- ○ e. No, but action is planned and funding identified
- ◉ f. No, but action is planned and funding is sought
- ○ g. No

Please provide further details:

Department of Agricultural Research has just initiated a programme on management of animal genetic resources and currently seeks funding to expand the programme.

61. Please provide further comments describing your country's activities related to Strategic Priority Area 4: Policies, Institutions and Capacity-building (including regional and international cooperation)

Note: It is not necessary to duplicate information provided in previous sections. Where relevant, please provide cross-references.

IMPLEMENTATION AND FINANCING OF THE *GLOBAL PLAN OF ACTION FOR ANIMAL GENETIC RESOURCES*

- The state of international collaboration for planning and implementing animal genetic resources measures
- The state of financial resources for the conservation, sustainable use and development of animal genetic resources

62. Has your country established or strengthened international collaboration in (SP 16):

Characterization?

- ○ a. Yes
- ◉ b. No, but action is planned and funding identified
- ○ c. No, but action is planned and funding is sought
- ○ d. No

Sustainable use and development?

- ○ e. Yes
- ◉ f. No, but action is planned and funding identified
- ○ g. No, but action is planned and funding is sought
- ○ h. No

Conservation of breeds at risk?

- ◉ i. Yes
- ○ j. No, but action is planned and funding identified
- ○ k. No, but action is planned and funding is sought
- ○ l. No

Please provide further details:

Breed conservation involves the Basotho Pony.

63. Are there any international NGOs active in your country in the fields of:

Characterization?

- ○ a. Yes
- ◉ b. No

Sustainable use and development?

- ○ c. Yes
- ◉ d. No

Conservation of breeds at risk?

- ○ e. Yes
- ◉ f. No

If yes, please list the international NGOs:

64. Has national funding for animal genetic resources programmes increased since the adoption of the GPA?

- ○ a. Yes
- ◉ b. No

Please provide further details:

65. Has your country received external funding for implementation of the GPA?

- ○ a. Yes
- ◉ b. No
- ○ c. No, because country generally does not receive external funding

Please provide further details:

66. Has your country supported or participated in international research and education programmes assisting developing countries and countries with economies in transition to better manage animal genetic resources (SP 15 and 16)?

- ○ a. Yes, support or participation in place before the adoption of the GPA and strengthened since
- ○ b. Yes, support or participation in place before the adoption of the GPA but not strengthened since
- ○ c. Yes, support or participation in place since the adoption of the GPA
- ○ d. No, but action is planned and funding identified
- ○ e. No, but action is planned and funding is sought
- ◉ f. No

Please provide further details:

Lesotho is a Least Developed Country.

67. Has your country supported or participated in programmes aimed at assisting developing countries and countries with economies in transition to obtain training and technologies and to build their information systems (SP 15 and 16)?

- ○ a. Yes, support or participation commenced before the adoption of the GPA and strengthened since
- ○ b. Yes, support or participation commenced before the adoption of the GPA but not strengthened since
- ○ c. Yes, support or participation commenced since the adoption of the GPA
- ○ d. No, but action is planned and funding identified
- ○ e. No, but action is planned and funding is sought
- ◉ f. No

Please provide further details:

Lesotho is a Least Developed Country.

68. Has your country provided funding to other countries for implementation of the Global Plan of Action?

- ○ a. Yes
- ○ b. No, but action is planned and funding identified
- ○ c. No, but action is planned and funding is sought
- ○ d. No
- ◉ e. No, because country is generally not a donor country

Please provide further details. If relevant, specify whether funding was bilateral or multilateral; research cooperation or aid; and to whom and for what it was given:

69. Has your country contributed to international cooperative inventory, characterization and monitoring activities involving countries sharing transboundary breeds and similar production systems (SP 1, Action 5)?

- ○ a. Yes
- ○ b. No, but action is planned and funding identified
- ○ c. No, but action is planned and funding is sought
- ◉ d. No

Please provide further details:

70. Has your country contributed to establishing or strengthening global or regional information systems or networks related to inventory, monitoring and characterization of animal genetic resources (SP 1, Action 6)?

- ○ a. Yes
- ○ b. No, but action is planned and funding identified
- ○ c. No, but action is planned and funding is sought
- ◉ d. No

Please provide further details:

71. Has your country contributed to the development of international technical standards and protocols for characterization, inventory and monitoring of animal genetic resources (SP2)?

- ○ a. Yes
- ○ b. No, but action is planned and funding identified
- ○ c. No, but action is planned and funding is sought
- ◉ d. No

Please provide further details:

72. Has your country contributed to the development and implementation of regional in situ conservation programmes for breeds that are at risk (SP 8, Action 2; SP 10, Action 1)?

- ○ a. Yes
- ○ b. No, but action is planned and funding identified
- ○ c. No, but action is planned and funding is sought
- ◉ d. No

Please provide further details:

Breed conservation involves the Basotho Pony.

73. Has your country contributed to the development and implementation of regional ex situ conservation programmes for breeds that are at risk (SP 9, Action 2; SP 10, Action 3; SP 10, Action 4)?

- ○ a. Yes
- ○ b. No, but action is planned and funding identified
- ○ c. No, but action is planned and funding is sought
- ◉ d. No

Please provide further details:

74. Has your country contributed to the establishment of fair and equitable arrangements for the storage, access and use of genetic material stored in supra-national ex situ gene banks (SP9, Action 3)?

- ○ a. Yes
- ○ b. No, but action is planned and funding identified
- ○ c. No, but action is planned and funding is sought
- ◉ d. No

Please provide further details:

75. Has your country participated in regional or international campaigns to raise awareness of the status of animal genetic resources (SP19)?

- ○ a. Yes
- ○ b. No, but action is planned and funding identified

- ○ c. No, but action is planned and funding is sought
- ◉ d. No

Please provide further details:

Awareness creation has been done at national level.

76. Has your country participated in reviewing or developing international policies and regulatory frameworks relevant to animal genetic resources (SP 21)?

- ○ a. Yes
- ○ b. No, but action is planned and funding identified
- ○ c. No, but action is planned and funding is sought
- ◉ d. No

Please provide further details:

EMERGING ISSUES

77. In view of the possibility that at some point countries may wish to update the GPA, please list any aspects of animal genetic resources management that are not addressed in the current GPA but will be important to address in the future (approximately the next ten years). Please also describe why these issues are important and indicate what needs to be done to address them.
Issues to be addressed in future

Issues to be addressed in future (next ten years)	Reasons	Actions required

Submit by Email