THE FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA
NATIONAL POLICY AND STRATEGY ON ANIMAL BREEDING

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# Table of Contents

Table of Contents........................................................................................................................................... i

Part 1........................................................................................................................................................................... 2
  1.1. Introduction .......................................................................................................................................................... 2
  1.2. Objectives .......................................................................................................................................................... 3

Part 2........................................................................................................................................................................... 4
  2.1. Meat animals breeding policy and strategy ......................................................................................................... 4
  2.2. Dairy animals breeding policy and strategy ......................................................................................................... 8
  2.3. Breeding policy and strategy for chicken ............................................................................................................... 11
  2.4. Fishery breeding policy and strategy .................................................................................................................... 14
  2.5. Bee Races Breeding Policy and Strategy ............................................................................................................. 15
  2.6. Silk worm breeding policy and strategy ............................................................................................................... 17
  2.7. Equine breeding policy and strategy .................................................................................................................... 18
  2.8. Other animals ....................................................................................................................................................... 21

Part 3........................................................................................................................................................................... 23
  3.1. Strengthening of livestock research ..................................................................................................................... 23
  3.2. Conservation of animal breed/s and germplasm .................................................................................................... 23
  3.3. Breed/s standard setting, certification and regulations ............................................................................................ 24
  3.4. Establishing National Animal Resources Information System .............................................................................. 25

Part 4........................................................................................................................................................................... 26
  4.1. Ensuring participation of community and Women and Youth .............................................................................. 26
Part 1.

1.1. Introduction

Ethiopia, is a country with an estimated population over 100 million. More than 80 percent of the population live in rural areas whose livelihood mainly depend on agriculture. In general, agriculture contributes 39 to 41 percent of the national GDP and accounts for about 70 percent of the foreign currency earnings.

Livestock is one of the integral components of agriculture in Ethiopia. It contributes about 33% of agricultural GDP and 12 to 15% of the national GDP. However, if the contribution of livestock through draft power, transportation and manure is considered, its contribution to the national GDP will increase beyond the current estimate.

According to the Central Statistics Authority report (CSA, 2016) Ethiopia possesses about 57.83 million cattle, 28.89 million sheep, 29.7 million goats, 1.23 million camel, 60.5 million chicken, and 10.37 million equins. Moreover, estimates show that the country has a potential to produce up to 40,000 tones of fish from water bodies available in the country. Nevertheless, the productivity of the livestock resources is extremely low.

During the past several years, many institutions have made some efforts to improve the productivity of cattle, sheep, goats and chicken in Ethiopia. Nevertheless, most of the efforts were not satisfactory. Some of the bottlenecks that attributed to less than desirable success of Ethiopian livestock genetic improvement programmes are absence of national animal breeding policy and strategies and lack of integrity among the institutions.

In the past several years, the Federal Demoratic Republic of Ethiopia has designed various national development and strategic plans. The agricultural sector has supposed to play pivotal role in the country’s economy. In the development and
strategic plans, special attention have been given to the conservation of animal genetic resources, genetic improvement and sustainable utilizations.

Motivated with attractive development and investment policy that the country adopted, interest to import improved animal germplasm and participate into the livestock developments is growing. Such initiatives undoubtedly addresses the critical shortage of improved genotypes prevailing in the country. Though such initiatives have positive benefits, the country must be cautious about indiscriminate importation of exotic germplasm and/or export of adapted farm animal genetic resources that may lead to genetic erosion and loss of valuable adapted domestic breeds. Moreover indiscriminate crossbreeding between exotic and indigenous breeds may lead to complete replacement of native farm animals. Thus, care must be taken either during importation and/or the crossbreeding process. This national livestock breeding policy and strategy is designed to guide the conservation, improvement and utilization of animal genetic resources and avoid threats that emerge from the aforementioned problems. This livestock breeding policy document is prepared to entail to improve meat, milk, pig, rabbit and equine animals; fish, bee and other species (Ostrich, duck, Gunea fowl, crocodile and civet cat) of economic importance have been included.

1.2. Objectives

A. To implement sustainable and systematic animal breeding program in the country;
B. To regulate animal germplasm import and export;
C. To control and regulate import and export of genetically modified animals and their products
D. To conserve indigenous animal genetic resources diversity;
E. To build capacities in the area of animal breeding and genetics;
F. To establish centralized animal genetic resources database and information system
G. Enhance the participation and benefit of communities from the genetic resources
Part 2
Breeding policy and strategy

2.1. Meat animals breeding policy and strategy

2.1.1. Identifying meat-type indigenous animal species and breeds, their geographical distributions and undertaking genetic selection

Ethiopia possesses different species of livestock such as cattle, sheep, goat and camel in different agro-climatic zones of the country. However, the meat production potential of these species is not clearly known. Therefore, it is important to characterize these species and identify their geographical distribution in the country.

**Policy:** Breeds within each species of indigenous cattle, sheep, goat, and camel that possess inherent genetic potential for meat production shall be identified, selected, conserved and multiplied for further utilization.

**Strategies:**

A. Identify and characterize breeds within each species that have desirable genetic traits for meat production;

B. Improve the identified breeds within each species that possess desirable meat traits through selection.

2.1.2. Improving the meat genetic potential of indigenous animal species through cross breeding

The meat production potential and other desirable production traits of indigenous meat animal is low. However, they are adaptable to the local environment and tolerant to tropical diseases. Therefore, crossbreeding the indigenous animals with other identified
and superior indigenous meat type breeds as well as with other selected exotic meat breeds is very important to develop crossbreds with higher meat yield, adaptable to local climate and tolerant to endemic tropical diseases.

Policy:- The meat production potential of identified indigenous animal species such as cattle, sheep, goat and camel shall be improved by crossbreeding with other identified indigenous meat breeds and known exotic meat breeds that are suitable under Ethiopian agro-climates.

Strategies:-
A. Develop meat animal by crossbreeding inferior indigenous breeds with other indigenous superior breeds selected for meat traits through natural mating and artificial insemination (AI);
B. Develop meat breeds that are suitable under Ethiopian agro-climatic conditions by crossbreeding inferior indigenous breeds with selected exotic meat breeds imported in the form of live animal, semen and embryo through natural mating and AI;
C. Determine the level of exotic gene inheritances of the crossbred meat animals depending on different agro-climatic zones and production system;
D. Develop synthetic meat breeds from two or more selected breeds that are suitable under different agro-climatic zones of the country through crossbreeding;
E. Control indiscriminate crossbreeding that cause genetic erosion of indigenous animal breeds through crossbreeding with other indigenous and imported exotic meat breeds.

2.1.3. Import and export of meat animal breeds

Nowadays, interest to import meat breeds into the country is increasingly growing in an effort to improve the meat traits of indigenous animal breeds. Nevertheless, the
relative advantage of imported breeds should be pre-evaluated and registered to avoid any threats that come out of it. Moreover, stringent control and registry system should be set while exporting indigenous animal genetic resources in any form (live animal, semen and embryo). Any import and export process should be in accordance with the international genetic resource exchange conventions.

**Policy:-** Import and export of any meat animal germplam shall be stringently controlled and regulated.

**Strategies:-**

A. Control mechanism set on importation of meat breeds in any form (live animal, semen, embryo, etc) that are suitable under Ethiopian agro-climatic conditions for breeding purposes;

B. Verify performances of any meat breed imported by any private investor and/or associations under controlled environments before distributions for wider use;

C. Control export of meat breeds for breeding purposes except from meat breed improvement center/s.

2.1.4. Importing exotic rabbit and pig breeds, undertake adaptation trial to local environments, multiply and distribute for wider utilization

Ethiopia doesn’t have domesticated rabbit and pig breeds. Nevertheless, use of these species as meat animals can support meat production of the country. This is because they can be raised on limited piece of land. Recently, several private investors and individuals are interested in importing and raising these species. In some cases, production of these species have already been informally started. Nevertheless, breed type, geographic distribution and productivity is unknown. Therefore, characterization of these species and importation of suitable genotype that are adaptable to local environments will contribute to the overall meat production in the future.
Policy:- Geographical distribution, productivity, population size and breeds of exotic rabbit and pig breeds currently available in Ethiopia shall be identified, characterized and known; other meat type breeds shall be imported, adaptation trial undertaken and promising genotypes shall be multiplied for wider utilization.

Strategies:-
A. Identify the current geographical distributions of exotic rabbit and pig breeds and characterize their productivity, population size and breeds;
B. Import suitable exotic rabbit and pig breeds in the form of live animal, semen and embryo, carry out adaptation trial to local climates for their meat productivity and other desirable traits and breed them using natural mating and/or AI;
C. Facilitate establishment of multiplication centers for elite rabbit and pig breeds by private investors, producers’ associations and government body for wider distribution;

2.1.5. Establishing meat animal breed improvement and multiplication center

One of the major bottlenecks to low meat productivity in Ethiopia is the absence of multiplication and distribution center for superior quality meat breeds. Therefore, it is important to establish improved breed multiplication center/s in the country.

Policy:- Multiplication and distribution centers for improved local, crossbred and selected exotic meat breed shall be established for sustainable supply of improved quality meat breeds.

Strategies:-
A. Identify and establish breeding and multiplicaition centers for improved meat genotypes in selected agro-climatic zones of the country.
B. Establish breeding and multiplication centers for improved meat genotypes by private investors, producers’ associations and if deemed appropriate also by government.

C. Multiplication and distribution of improved breeds of meat animals carried out by private investors, producers’ cooperatives and if deemed necessary by the government.

D. Improved meat germplasm shall be distributed to potentially identified agroclimates that are suitable for meat production in order to improve community herd.

2.2. Dairy animals breeding policy and strategy

2.2.1. Identification, characterization and selection of indigenous breeds for dairy production

Ethiopia is one of the countries with lowest per capita consumption of milk and milk products. Rapid urbanizations, increase in population and economic growth together will increase demand for milk and milk products in the country. In order to bridge the gap between demand and supply, the country expend millions foreign currency for importation of dairy products.

In order to improve milk production and productivity of dairy cattle one of the alternative options is to identify and select the best animals with superior genetic performance among indigenous breeds. In this regards attention need to be given for improvement of indigenous breed by selecting the best animals for increased milk production and productivity.

Policy:- Breeds of cattle, goats, camel and sheep that have potential for milk production shall be identified and their distribution, population number determined for subsequent selection, multiplication, conservation and sustainable utilization.
Strategies:-

A. Identify and characterize indigenous breed types, their geographical distribution, population number and important traits; evaluate, multiply and distribute breeds with superior milk production potential;

B. Establish community based breed improvement program in order to improve indigenous breed for milk production traits;

C. Undertake genetic improvement for identified indigenous breed of animal for dairy production through establishment of breeder association.

2.2.2. Improving the genetic potential of indigenous animals through crossbreeding with exotic dairy breed/s

Some countries that do not have dairy type animals have attained increased milk through crossbreeding their local breed with exotic dairy breeds or mass importation of improved dairy cows. In our country too, increased milk production can be by crossbreeding local breed with exotic dairy breeds.

Since crossbreeding is proved to bring sufficient in milk production in a short period of time, such strategies have to be widely adopted, strengthened and pursue in a sustainable manner.

Policy:- Indigenous animal breeds shall be crossbred with exotic dairy breeds, selected, multiplied and distributed for sustainable utilization.

Strategies:-

A. Determine the level of exotic blood level in crossbred animals based on production system, market demand and agro-ecological zones.

B. Undertake natural mating in areas where Artificial Insemination is inaccessible through organizing farmers and supply breeding bulls;
C. Import semen, embryos and live animals from preferred countries for genetic improvement of dairy animals;
D. Identify and register preferred breeds before importation in order to protect genetic dilution of indigenous animals;
E. Develop synthetic dairy breed/s at research station through crossbreeding indigenous animals with exotic dairy breeds;
F. Produce and distribute quality semen from pedigreed bulls.

2.2.3. Establishing dairy cattle production and multiplication centers

Focus has to be given to multiplication of best producing indigenous animals and locally adapted exotic dairy breeds. These will help to undertake breed improvement activities in the country.

Policy:- For improvement of dairy animals, existing and new dairy animals breeding and multiplication centers shall be strengthened and established.

Strategies:-
A. Strengthen the existing and establish new multiplication and distribution centers for indigenous, crossbred and pure exotic breed/s by private, association and as deemed appropriate by the government.
B. Evaluate and certify multiplied dairy animals for important traits before distribution for breeding purpose

2.2.4. Import and export of dairy animal breed/s shall be regulated

Importation of dairy animal breed for dairy production by different organization and individual is increasing from time to time. However, stringent evaluation and registration is required before importation and widespread uses to avoid dilution of indigenous genetic resources.
Policy:- Import and export of dairy animal breed/s shall be regulated.

Strategies:-
A. Identify and register importation of animal genetic materials in the form of live animal, semen and embryos that are suitable for the country; evaluate productivity and other important traits before distribution;
B. Evaluate and certify performances of dairy animals multiplied by breeding centers;
C. Control export of improved dairy breeds for breeding purpose except from breeding and multiplication centers.

2.3. Breeding policy and strategy for chicken

2.3.1. Identify and characterize indigenous chicken ecotypes, geographical distributions, undertake genetic selection and conservation

Though Ethiopia possesses different ecotypes of chicken, their distributions, population size and productivity is not well known. Therefore, population size and geographic distribution need to be known and some of their desirable genetic traits need to be improved.

Policy:- Genetically superior indigenous chicken for egg and meat production shall be identified and selected based on their genetic merit, conserved, improved and multiplied for wider distribution and utilization.

Strategies:-
A. Identify and characterize indigenous chicken ecotypes, populations size and geographical distribution;
B. Select indigenous elite chicken ecotypes, multiply and distribute for wider utilization;
C. Safeguard indigenous chicken ecotypes from uncontrolled breeding to avoid genetic dilution to avoid genetic extinction.

2.3.2. Improving indigenous chicken ecotypes through crossbreeding

The productivity of indigenous chicken ecotypes is very low. Therefore, it is important to improve indigenous chicken by crossbreeding with genetically superior imported exotic chicken.

Policy:– Indigenous chicken ecotypes shall be improved through crossbreeding with other selected indigenous and exotic chicken breeds known for their egg and meat production, multiplied and distributed for wider utilization.

Strategies:–
A. Improve productivity of indigenous chicken through crossbreeding with other genetically superior indigenous chicken;
B. Import exotic fertilized eggs and semen and crossbreed them with indigenous chickens ecotypes;
C. Develop synthetic chicken breed/s through crossbreeding and selection that are suitable under different Ethiopian agro-climatic conditions.

2.3.3. Establishing new and strengthening existing chicken breeding and multiplication centers

Ethiopia has limited chicken multiplication and distribution centers. However, the existing multiplication and distribution centers are not operating at full potential and not
delivering the quality of chicken they supposed to provide to producers. Therefore, it is necessary to strengthen existing centers and establish new ones in order to satisfy an increasingly growing demand for improved chicken breeds that are more productive and suitable to a given agro-climatic conditions.

Policy:- Existing chicken multiplication and distribution centers shall be strengthened and new ones shall be established in order to ensure sustainable supply of genetically improved chicken in Ethiopia.

Strategies:-
A. Establish new breeding centers for indigenous and selected exotic chicken breeds that serve to breed, maintain and distribute parent stock to multiplication centers.
B. Strengthen existing chicken multiplication centers and establish new centers targeted to multiply selected chicken breeds for large-scale distribution;

2.3.4. Importing chicken breeds into and exporting out from Ethiopia

In Ethiopia, indigenous chicken genetic improvement program is undertaken by importing genetically improved chicken breeds in the form of day-old chicks and fertilized eggs. Maximum care need to be taken while importing chicken germplasm in any form as well as during exporting indigenous chicken from Ethiopia.

Policy:- Stringent monitoring and control mechanism shall be established on any chicken germplasm import and export.

Strategies:-
A. Control and monitor importation of any chicken breeds into Ethiopia, in any form such as day-old chicks, fertilized egg or semen.
B. Control and regulate activites undertaken by organizations engaged in the importation and multiplication of exotic chicken breeds before they distribute for large scale production.

C. Control and regulate export of indigenous and/or exotic chicken from Ethiopia for breeding purposes except from certified breeding and multiplication centers.

2.4. Fishery breeding policy and strategy

2.4.1. Characterization of locally available fish genetic resources

In order to properly utilize the fish genetic resources in Ethiopia, identification and characterization of fish type, population size and genetically desirable traits is very important. Moreover, overfishing and other man-made disaster that threatens the survival of fish genetic resources need to be regulated and monitored.

Policy:- Fish abundance, species and economically important traits shall be characterized and conserved for sustainable utilization.

Strategies:-
A. Identify and characterize fish genetic resources and their important traits in all water bodies available in the country;

B. Monitor prey-predator balance of water bodies in order to avoid imbalance in the food chain;

C. Prevent extinction and dilution of endemic as well as non-endemic fish species that arise from human mismanagement.

2.4.2. Production and multiplication of fish species

It is important to introduce and multiply fish species into water bodies that showed declined trends in population size, water bodies without fish and aquaculture constructed for fishery purposes. Moreover, is necessary to introduce exotic fish
species, carry our adaptation trial to local environments and distribute promising breeds for wider utilization.

**Policy:-** Different fish species shall be introduced into natural and artificial water bodies suitable for fish production

**Strategies:-**

A. Establish fish production and multiplication center by private investor, producers’ association and as deemed necessary by government body in strategic agro-climatic zones of the country;

B. Multiply suitable and locally adapted fish species and distribute disease free fingerling for wider utilization;

C. Import suitable exotic fish species, carry our adaptation trial, multiply and distribute disease free fingerling for wider utilization;

D. Regulate movement of fish species within the country for breeding purpose;

E. Regulate export of endemic fish species and import of fish in any form is based on the international genetic exchange conventions.

2.5. Bee Races Breeding Policy and Strategy

2.5.1. Selection and genetic improvement of indigenous bee races

Withstanding climate changes, feed resources scarcity and diseases problems, the indigenous bee races have thrived to reproduce and produce honey and other products. Since there are relative genetic variations among different bee races in productivity and other important traits, there is a need to identify the existing bee races, colony size, geographical distribution, and characterize, select, improve and conserve the races for future utilization.
Policy:- The country’s bee races, colony size, geographical distribution and productivity shall be identified, characterized, selected and multiplied for further uses.

Strategies:-
A. Identify geographical locations, colony size and characterize the bee races;
B. Identify bee races with desirable traits, and select, improve and multiply them for wider uses;
C. Conserve selected pure line bee races for further uses.

2.5.2. Establishing of breeding and multiplication centers for selected bee races

Productivities and other necessary traits of indigenous bee races found in different parts of the country are low and the colonies available are insufficient. Therefore, it is important to establish breeding, multiplication and dissemination centers in strategic agro-ecological zones of the country for sustainable bee production.

Policy:- Breeding, multiplication and dissemination centers shall be established for selected bee races that possesses desired traits.

Strategies:-
A. Establish breeding, multiplication and dissemination centers in strategic agro-ecological zones by breeder associations, entrepreneurs and government institutions;
B. Crossbred the races, multiply and distribute more productive once through artificial queen bee breeding techniques.
2.5.3. Safeguarding the wellbeing of indigenous bee races

Importation and free movements of bee species, races and used apiary equipment and machines undoubtedly jeopardize the wellbeing of native bee races and transmit diseases. Moreover, uncontrolled movements of bee species and races in the country will cause genetic erosion of indigenous bee races. Therefore, it is imperative to safeguard the wellbeing of indigenous bee species.

**Policy:** Importations of any bee species, races and used apiary equipment and machines as well as exportation and movements of bee races within the country shall be regulated.

**Strategy:**
- A. Regulate importation and free movements of bee species, races and used apiary equipment and machines in the country.

2.6. Silk worm breeding policy and strategy

2.6.1. Genetic improvement of silk worm

Sericulture technology is a new area of agricultural activities in Ethiopia. It is being undertaken by limited individuals who imported Eri and Mulberry silk worms races. Performance evaluations of sericulture show that the amount of coccon and silk ratio obtained from these races is low and the quality is incompetent to the world market.

Imported silk worms races are hybrid type and there observed declining productivity from generation to generation. Moreover, the supply of these silk worms is scarce. Continuous importation of silk worms is practically difficult to continue with. Therefore, to sustain continuous supply of silk worms, core center/s need to be established with the objective of developing local parental stock so as to breed and multiply the desirable
races/varieties to producers. Moreover, research should be undertaken to develop adaptive and productive hybrid silk worms from the established parental stock.

Policy:- Hybrid silk worm races/ varieties that proved productive and adaptive under the Ethiopian agro-climatic conditions shall be imported, selected, multiplied and used for silk production.

Strategies:-
A. Hybrid silk worms that are suitable under Ethiopian conditions imported and adaption trial undertaken;
B. Selection undertaken among imported and adapted silk worms;
C. Breeding station established by government body and if deemed necessary by private investors to develop parental stock from the adapted and selected silk worm races;
D. Grainage (second tier breeding centers) established by government body and if deemed necessary by private investors to distribute promising hybrid silk worms to producers;
E. Control mechanism established not to export silk worms illegally from the country.

2.7. Equine breeding policy and strategy

2.7.1. Identification and characterization of equine genetic resources and their geographical distributions

Nowadays, the geographical distribution, breeds and character of some of the Ethiopian equine (horse and donkeys) have already been characterized and known. However, there are many more breeds to be identified, characterized and known. Cognizant to this fact, designing of appropriate breeding programs is very crucial.
Policy:- Indigenous equine breeds, agro-climatic distributions and their desirable traits shall be identified and characterized followed by selection, conservation and multiplication for sustainable utilization.

Strategies:-
A. Characterize indigenous equine breed/s and their geographical distribution;
B. Select, multiply and utilize identified equine breeds with outstanding genetic potential;
C. Conserve indigenous equine breed/s with declined population size in their natural habitat and rescue that breed/s facing danger of extinction and/or genetic erosion.

2.7.2. Improving indigenous equine breed/s through crossbreeding

Although the indigenous equine genetic resources of the country are currently identified and characterized, available information is not exhaustive enough. Causal observations show that in some cases the communities improve their equine population by crossbreeding with other superior population. Such indigenous community practices need to be supported with scientific procedures. Moreover, importation of suitable exotic equine breeds and crossbreeding with indigenous equine population would improve their performances.

Policy:- Indigenous equine breeds shall be improved by crossing them with other superior and selected indigenous equine breed/s as well as with imported exotic equines known for their better performances and traits of interest.

Strategies:-
A. Improve the performances of indigenous equine breeds by applying community-based equine breeding program through both natural mating and artificial insemination;
B. Import suitable exotic equine germplasm in the form of live animal, embryo and semen for sustainable utilizations;
C. Implement production system and agro-climatic zone-based crossbreeding program;
D. Develop synthetic equine breed/s through crossbreeding selected indigenous breeding with other inferior indigenous or with exotic equine breeds at research center.

2.7.3. Export of equine genetic material for breeding purpose

Export of equine breeds for breeding purposes in any form (live animals, semen and embryos) need to be regulated and should be according to international germplasm exchange conventions so as to benefit the country from equine export.

Policy:- Export of indigenous equine genetic material for breeding purposes shall be regulated and controlled.

Strategy:-
A. Export of equine genetic materials for breeding purpose, in any form, regulated and should be only from genetic improvement and multiplication center.

2.7.4. Establishing equine genetic improvement and multiplication centers

One of the bottlenecks to equine genetic improvement in Ethiopia is the absence of breed improvement and multiplication centers that can provide elite germplasm for breeding purposes. Cognizant to this fact, it is important to establish centers that can provide improved germplasm in a sustainable manner.
Policy:- Multiplication center/s shall be established for selected indigenous and exotic equine breeds so as to ensure sustainable supply of elite equine germplasm in the country.

Strategies:-
A. Identify breed improvement and multiplication centers in different agro-climatic zones of the country;
B. Establish breed improvement and multiplication centers for indigenous as well as exotic equine breed/s by private investor, producers’ associations and if deemed necessary by the government;
C. Distribute improved equine breed/s to improve community herd;

2.8. Other animals

2.8.1. Identification and characterization of economically important birds (Ostrich, Duck, Guinea fowl etc. Crocodile, Civet cat and other species)

Ethiopia is known to own a number of other economically important but unidentified and uncharacterized types of animals such as different kinds of birds, crocodile, Guinea fowl, civet cat, and many more others that are currently unknown. Despite their huge economic importance, due attentions were not given these species.

As a matter of fact, no development directions and strategies have been designed for these important species. Currently there are an increasingly growing demand and lucrative price for some of the products that obtained from some of these unrecognized species. Therefore, it is important to identify the geographic distribution, population size, economically important traits of some of these species. Moreover, it is important to import exotic forms of some of these species into suitable agro-climatic zones of the country.
Policy:- Geographical distribution, population size and the productivity of indigenous breeds economically important species (Ostrich, Crocodile, Guinea fowl, Civet cat, etc.) shall be identified and characterized and wild species shall be tamed, multiplied and distributed for wider utilization.

Strategies:-

A. Character the indigenous breeds of Ostrich, Crocodile, Civet cat, etc. to identify the type of breeds, geographical distribution, population size and productivity;

B. Identify easily domesticated or adapted breeds, undertake selection, improve genetically, multiply and distribute for wider utilization;

C. Create awareness to the community on these economically important species and assist them participate on their development.
Part 3

3.1. Strengthening of livestock research

It is well perceived that technologies that were generated and disseminated from the livestock research activities are so far limited. However, livestock research play pivotal role in the importation, adaptation of breed/s and generation of appropriate technologies under suitable agro-climates. The livestock researches under different agricultural research centers in the country need to be strengthened to enable them undertake indigenous breed improvement and at the same time generate and distribute new technologies.

**Policy:** Livestock research shall be strengthened to generate new technologies for wider utilization.

**Strategies:**

- **A.** Strengthen livestock research in representative agro-climatic zones of the country and new livestock research center/s in areas where there is/are not livestock research by private investors and by government;
- **B.** Collect and identify indigenous knowledge of animal breeding and enhance them through advanced research;
- **C.** Undertake adaptation and verification trials for imported livestock technologies before wider utilizations;
- **D.** Strengthen the linkage and information exchange among livestock research, breed improvement and multiplication centers, smallholder farmers, pastoralist, agro-pastoralist and extensions;

3.2. Conservation of animal breed/s and germplasm

There are different breeds of animals including different honey bee species in different agro-ecological zones of the country. However, population size of some invaluable breed/s is declining and in some cases some species are threatened to be extinct while
some others are affected by genetic dilution and erosion. Cognizant to these facts, it is important to collect and conserve the genetic diversity of such species in order rescue them from getting extinct.

Policy:- The livestock genetic diversity of the country shall be conserved and for proper utilization.

Strategies:-
A. Carry out in-situ and ex-situ conservation of indigenous animal germplasm for future utilization;
B. Establish gene bank to conserve animal species and germplams;
C. Undertake inventory and periodical livestock population census in order to know the status of breed/s;

3.3. Breed/s standard setting, certification and regulations

The improver breeds/races quality standards can determine the performances of the breed to be improved. The improved breed quality may be affected by operation modality, ill management and other reasons that can potentially affect the genetic materials dispatched may result in less productive animals. Therefore, any institution engaged in animal breeding operations should supply races or breeds that can fulfill the set quality standards to the users.

Policy:- Animal breeds and races quality standards shall be set and regulated for sustainable utilization.

Strategies:-
A. Set quality standards for breeds or races to be released by all breeder companies/associations.
B. Enforce the set standards and regulate as appropriate.
3.4. Establishing National Animal Resources Information System

Different institutions are currently participating in animal breeding activities. However, there is no well-organized and centralized data recording in the country. Thus, there is no pedigree-based selection within and between breeds and exchange and flow of information that are centrally coordinated. Therefore, it is necessary to establish a centralized national data recording and information system for animal genetic improvement.

Policy: Centralized national data recording and information system shall be established.

Strategies:

A. Establish national animal data collection, analysis and dissemination center;
B. Establish national data recording and information system that can enhance systematic breeding programs.
Part 4

4.1. Ensuring participation of community and Women and Youth

4.1.1. Ensuring full community participation and ownership

Over the years, farmers have undertaken in-situ conservation through regular use of animal genetic resources for food and agriculture as a result of which there is great indigenous knowledge in the local community for animal genetic improvement. Furthermore, indigenous communities play an important role in in-situ conservation and development of animal genetic resources, because they keep animal genetic resources that are adapted to the local environments. Thus, it is important to ensure full participation and ownership of the communities in all genetic improvement programs.

Policy: Any genetic development scheme especially under smallholder production system should ensure full participation and ownership of smallholder farmers

Strategies:
A. Empower community associations to oversee the registration of their animals and self-regulation of improvement activities.
B. To allow and promote animal registration by community groups, facilitate the accessibility services such as animal recording and registration to farmers in remote locations.
C. Support in developing environmentally sustainable community production systems, including appropriate animal breeding strategies and husbandry practices, while recognizing traditional knowledge as the basis of these initiatives'.
D. Ensure the participation and benefit of the communities from the genetic development scheme
4.1.2. Women and Youth

Women and youth have an important role in animal breeding, especially at the small holder level. For instance, women contribute the greatest percentage of the labor-force, and work longer hours than men especially in small holder areas, but have limited access to resources such as land, credit facilities and information. Women are play role in selection of animals and in performance data recording. Thus, women and youth need to participate and benefit from animal genetic resources improvement program.

Policy: Full participation and ownership of Women and Youth should be ensured and should also be equally benefited from the resources

Strategies:
- Gender and Youth sensitive genetic development programs will be designed.

4.1.3. Organizing Animal Breeders’ Associations

It is perceived from the experiences of other developed countries that animal breeder associations that involve in animal breeding play key role in genetic improvement programs. Hence, it is necessary to organize producers into animal breeders’ associations so as to ensure ownership and speed up the national genetic improvement of different animal species and breeds.

Policy:- Animal breeders’ association shall be organized for different species, breeds and races.

Strategy:-
A. Encourage and support formation of breeder's associations to involve in the selection, conservation, genetic improvement and production of different animal species, breeds and races.
4.1.4. Supporting Professionals engaged in Animal breeding

It is known that livestock genetic improvement play pivotal roles in the livestock development programs. However, investment takes longer payback period to get returns. Thus, it is unattractive and is not lucrative to private investors and entrepreneurs. On the other hand, livestock professionals lack sufficient funds to invest in livestock breeding and improvement programs. Therefore, special support and encouragements are necessary to attract professionals to play their role in the process.

Policy:— Special support and incentives shall be designed to professionals engaged in animal species, breeds and races multiplication.

Strategies:—
A. Identify key animal breeding areas in which breeders are interested in with assistance given to them;
B. List types of supports and incentives to be provided to professionals engaged in animal breeding.