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: Turkey

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).

While population growth rate and economic pressure force the changes in traditional agricultural systems, biodiversity has been reducing rapidly. Farm animal genetic resources (FAnGR), one of the main components of biodiversity, meet the increasing demand on food and agriculture. Farm animals are extremely important national and global resources in terms of food security and economic development. In this respect, the conservation and management of farm animal genetic resources are essential to sustain and improve the quality of life on earth. Turkey is one of the most significant countries in the world in terms of biodiversity and animal genetic resources. Archaeological findings show that sheep, cattle and goat were domesticated in Anatolia or close to this area (Fertile Crescent). The rich genetic diversity of Anatolia results from the accumulated and blended genetic diversity of farm animals belongs to different cultures that lived and ruled in different times. Various environmental conditions that Anatolia's wide geography holds the different needs and preference of livestock breeders also contribute to diversity of farm animal genetic resources. Information which indicates population number, distribution and risk status of farm animal breeds in Turkey is still insufficient. For this reason risk status of the breeds is predicted based on current data such as census information, research outputs and expert evaluation. However it is known that serious losses on animal genetic resources occurred in last the 50 years. Breeding studies, unconscious crossbreedings, importation of exotic breeds and AI implementations especially in cattle resulted in decrease or loss of diversity on animal genetic resources. Moreover, some of the breeds have been lost without characterization and recording.

Considering this, Government of Turkey has shown the intent to put the issue on the priority list of action plans and giving strong emphasis on conservation and sustainable utilization of farm animal genetic resources. The Ministry of Food, Agriculture and Livestock conduct all activities, either *ex situ* or *in situ* conservation, sustainable utilization, characterization, infrastructure and human resources development, and enhancement of public awareness.

In accordance with the policies of the Ministry of Food Agriculture and Livestock (MFAL), the Agricultural Research Master Plan and the Global Plan of Action for Animal Genetic Resources, General Directorate of Agricultural Research and Policy (GDAR) conducts all activities related to characterization, inventory and monitoring of trends and associated

risks, sustainable use and development, conservation, policies, institutions and capacity building of farm animal genetic resources (FAnGR) in Turkey.

AnGR Working Group, one of the organizational units of GDAR, is responsible for the coordination, preparation, monitoring and implementation of the R&D projects related to the management of animal genetic resources. Also the Working Group is responsible for the breed registration, national consultative, advisory and sub-committees' secretariat, National Focal Point of FAO Global Strategy any other business related to the management of FAnGR.

Based on the `Veterinary Services, Plant Health, Food and Feed' Act. (No 5996), two regulations have been published named Conservation of Animal Genetic Resources and Animal Breed Registration. According to these regulations two committees have been established `National Consultative Committee on Conservation of AnGR' and `Animal Breed Registration Committee' that the secretariat charges carried out by GDAR. Identifying objectives and policies on conservation, sustainable utilization, characterization, domestic and abroad utilization, import and export operations are among the duties of National Consultative Committee on Conservation of AnGR.

Key trends and driving forces affecting animal genetic resources management

Population growth rate is 1,37% in 2013, therefore it is assumed that the demand for livestock products will increase within the next decade. Also, it is expected that purchasing power will increase. Turkey possesses extensive lands, differentiated geographical and climatic features. Breed numbers are high in some domestic animal species such as sheep and goat, a large number of small scaled enterprises scattered all around the country. Intensive crossbreeding with exotic breeds results in difficulties of breed definitions. Lack of qualified human and adequate financial resources and coordination among related stakeholders are major barriers and obstacles for executing comprehensive inventory study.

Strengths in capacity to manage animal genetic resources
- Local animal breeds resistance to disease and harsh environmental conditions,
- Special products of local breeds and organic farming can be use for conservation and sustainable utilization,
- Low input small ruminant breeding become important due to changing rearing and climate conditions,
- Public awareness can be enhance via documentary films and booklets of local breeds, TV and radio interviews on AnGR conservation and sustainable utilization

Weaknesses in capacity to manage animal genetic resources
- Long-term stable policies on livestock sector could not be implemented and appropriate animal production models according to ecology and enterprise structures could not be developed,
- Government resources for animal genetic resource conservation are limited,
- Insufficient organization in animal husbandry constitutes a significant obstacle in policy establishment, input provision, marketing and new technology usage.

Key constraints and challenges with respect to animal genetic resources management
- Organizational problems, shepherd shortage, age of livestock keepers, rural depopulation, lack of products standards, product processing and marketing problems, lack of inventory, heavy crossbreedings of local breeds with exotic breeds, lack of high quality pastures, lack of niche marketing of local products.
- Loss of economic importance of the local breeds, limited financial resources for all conservation methods, difficulties of rearing the breeds adapted to different production environment for *ex situ in vivo* conservation, difficulties of finding animals which represent breed characteristics, lack of the willingness for the participation and knowledge of breeders in some locations, and continuous demand for qualified research staff can be considered as major obstacles for conservation activities.

Priorities and strategic directions for future action
1. Characterization, inventory and monitoring of trends and associated risks:
- Taking urgent measures to complete the AnGR inventory which covers all aspects of the livestock sector,
- Enhancement the number of morphologic, physiologic and genetic characterization projects of farm animal breeds,
- Strengthen the animal recording systems, establishing national information system for AnGR

2. Sustainable use and development:
- Improvement of feeding and management conditions in conjunction with genetic improvement of the breeds,
- Consideration of geographical, climatic, socio‐economic, cultural and breed diversity of regions while conducting animal breeding programs,
- Support to use special products of local breeds
- Execution of breeding programmes for low input breeding systems

3. Conservation:
- Expedition and diversification of the current activities on conservation of domestic AnGR,

- Until detailed information available on risk status, conservation of almost all local breeds both *in situ* and *ex situ* methods,
- Duplication of the conservation herds and enhancement of the population sizes in order to eliminate possible health, natural disaster or economic risks which may force the breeders giving up the breeding activities

4. Policies, institutions and capacity building:

- Establishment of an influential collaboration among the research programs, carried out by various institutions and universities,
- Further development of effective legal and organizational framework for the management of AnGR,
- Establishment of breed level breeders organizations and niche market systems,
- Improvement of public awareness on AnGR conservation and sustainable utilization.

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.

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).

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.

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.

Cattle; Crossbreeding of local breeds with exotic cattle breeds continued last decade. Breeding cattle (Holstein, Simmental, Angus and Brown Swiss) have been mainly imported from US, Austria and Germany. And, for semen importation from Germany, US, Canada and France have highest percentage with mainly Holstein, Simmental, Brown Swiss and Jersey breeds.
Water Buffalo; Italy is the only country which water buffalo semen was imported.
Sheep; Bulgaria and Hungary are main countries for importing of breeding sheep. Merino and Tsigai sheep breeds were main breeds imported.
Goats; Australia, Bulgaria, Greece and Hungary are the countries which Saanen goats were imported. Saanen goat semen imported from only France.
Breeding improvement programs for local water buffalo, sheep and goats breeds have been started in last decade and these programmes help preventing the erosion on local breeds.

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)	high	high	Population growth rate is 1,37% in 2013, therefore it is assumed that the demand for livestock products will increase within the next decade. Also, it is expected that purchasing power will increase.
Changing demand for livestock products (quality)	medium	medium	Consumer preferences changed through low fat content of milk and meat. Food safety regulations and EU standards will have positive effects on quality of products
Changes in marketing infrastructure and access	low	none	The access condition of livestock products to markets is improved. The lack of producers' organization for local products causes a decrease of product prices.
Changes in retailing	low	medium	Gross markets dominate over livestock products retailing. This situation results against small and medium scaled enterprises (SMEs), correspondingly local breeds are decreasing.

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
Changes in international trade in animal products (imports)	medium	none	Some of scenarios reflect that SMEs for cattle production will disappear. Beef consumption will be met by poultry meat moreover it is possible that the beef deficit will be compensated by beef import.
Changes in international trade in animal products (exports)	none	none	-
Climatic changes	none	none	-
Degradation or improvement of grazing land	medium	medium	Previous term policies on grazing lands have little positive effects on small ruminant breeding. Pasture improvement and fodder crop production on irrigable lands are planned to meet future demands.
Loss of, or loss of access to, grazing land and other natural resources	none	none	-
Economic, livelihood or lifestyle factors affecting the popularity of livestock keeping	high	high	SMEs are disappearing and rural depopulation results in changing the lifestyle of the public. The numbers of enterprises which perform plant and animal production collectively are decreasing.
Replacement of livestock functions	none	none	-
Changing cultural roles of livestock	none	none	-
Changes in technology	low	low	Besides breeding with genetic markers, economic efficiency of the enterprises which may access technology is increasing, especially for intensive production. Nonetheless the situation differs in small ruminant breeding thus increasing price of inputs results in decreasing of profitability.
Policy factors	high	high	The effect of policy on management of AnGR is very important because of the disease eradication, product price equilibrium and animal importation. These major factors have determined and will determine in effects on management of AnGR
Disease epidemics	medium	medium	While production in marginal land is considered rather safe for AnGR, epidemic risk factors are very high for the production systems close to urban. Also, disease epidemics have negative effects of material transfer to *ex situ* gene bank and conservation herds. Duplication of the *in situ* conservation herds is accepted as insurance for the sustainable management of AnGR.

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	5
Cattle (specialized beef)	0	8
Cattle (multipurpose)	8	7
Sheep	42	4
Goats	13	1
Pigs	0	0
Chickens	5	6
Horses	11	4
Asses	3	0
Turkeys	1	0
Ducks	1	1
Geese	1	0
Rabbits	1	3
Pigeons	5	0

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	medium	none	none	low	medium	none
Cattle (specialized beef)	0	0	none	none	none	none	none	none
Cattle (multipurpose)	0	0	high	low	none	low	medium	none
Sheep	0	0	high	low	none	low	medium	none
Goats	0	0	medium	low	none	low	low	none
Pigs	0	0	none	none	none	none	none	none
Chickens	0	0	high	none	none	low	medium	none
Buffaloes	0	0	high	none	none	low	low	none
Rabbits	0	0	high	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	high
Research	medium
Knowledge	high
Awareness	low
Infrastructure	medium
Stakeholder participation	medium
Policies	medium
Policy implementation	medium
Laws	high

	Score
Implementation of laws	high

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	Agricultural faculties' animal science departments (19), veterinary faculties (17) and many of the agricultural and veterinarian vocational high schools can be considered as highly meet education demand of Turkey for the livestock sector. Also, livestock keepers, breeders' organisation, technical staff, agricultural advisory personnel and other stakeholders have chance to get training services provided by the government.
Research	Research activities are supported by universities, the General Directorate of Agricultural Research and Policy (GDAR), and The Scientific and Technological Research Council of Turkey (TUBITAK). In addition that national and international agricultural research and education centres of Turkey have some programmes for management of AnGR. Research capacities were increased in accordance with the efforts of conservation methods. Researches especially focus on characterisation of AnGR. However, it is obvious that there is need for further efforts to complete Breed Registration lists especially for some areas such as adaptation, genetic characterisations and production environment descriptives (PEDs). Other important research area is revealing the special products of local breeds and their quality standards.
Knowledge	The government take responsibilities in many ways for improving knowledge among scientist, breeders, consumers and other stakeholders.
Awareness	TV interviews, documentary films, seminars and workshops have been conducted to improve awareness on AnGR by government, universities and research institutions. Conservation programmes has positive effects on the level of understanding of the livestock keepers about the importance of their own genetic material. But, these efforts should be continuous and be a part of a long term program. The effects of long term program would be more effective. Awareness on conservation and sustainable utilization of farm AnGR should be enhanced.
Infrastructure	Infrastructure for R&D and *ex situ* conservation programmes was improved. Institutional capacities and human resources were improved. Establishing niche markets and producers' cooperatives will help sustainable utilization of AnGR.
Stakeholder participation	There is still need further motivation for participation of stakeholders on management of AnGR. Breeder organisations, NGOs and other stakeholders are invited to be a part of the government efforts.
Policies	There is strong emphasis has been given for conservation of AnGR by the government. Therefore some short and mid- term policies have been planning.
Policy implementation	It can be said that policies were affected from economic fluctuation and supply and demand responsiveness of livestock sector.
Laws	Adequate legislation is in force arranging utilization, access and benefit sharing of AnGR, breed registration and management of AnGR (advisory committees).
Implementation of laws	Fully operational.

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).

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	no	yes	no	no	no	no
Cattle (specialized beef)	no	no	yes	no	no	no	no
Cattle (multipurpose)	yes	no	yes	no	no	no	no
Sheep	yes	no	yes	no	no	no	no
Goats	yes	no	yes	no	no	no	no
Pigs	no	no	no	no	no	no	no
Chickens	yes	no	no	no	no	no	no

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

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	5	0	3	0	3	0	5	0	1	0	0	0	1	0	13
Cattle (specialized beef)	0	8	0	0	0	3	0	8	0	0	0	0	0	0	0	0
Cattle (multipurpose)	8	7	0	0	0	0	0	7	0	0	0	0	0	0	0	0
Sheep	42	4	23	0	23	0	23	0	23	0	0	0	0	0	0	0
Goats	13	0	13	0	6	0	6	0	0	0	0	0	0	0	0	0
Buffaloes	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
Chickens	5	6	0	6	0	0	0	0	0	0	0	0	0	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
Sheep	23	0	0	0
Goats	5	0	1	0
Cattle (specialized dairy)	0	3	0	0
Buffaloes	1	0	0	1

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

Species	Training	Research
Cattle (specialized dairy)	high	high
Cattle (specialized beef)	medium	medium
Cattle (multipurpose)	low	low

Species	Training	Research
Sheep	high	high
Goats	high	high
Pigs	none	none
Chickens	medium	medium

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)	high
Cattle (specialized beef)	high
Cattle (multipurpose)	high
Sheep	medium
Goats	medium
Pigs	none
Chickens	low
Buffaloes	low

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	high	medium	high	low	medium	none	none	none
Animal identification	high	medium	medium	low	none	none	low	none
Recording	high	none	high	none	none	none	none	none
Provision of artificial insemination services	low	low	medium	low	high	none	medium	none
Genetic evaluation	none	low	high	medium	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	high	high	high	high	none	none	none	none
Animal identification	high	medium	low	none	none	none	none	none
Recording	high	none	high	none	none	none	none	none
Provision of artificial insemination services	none	none	none	none	none	none	none	none
Genetic evaluation	medium	high	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	high	high	high	high	none	none	none	none
Animal identification	high	medium	low	none	none	none	none	none
Recording	high	none	high	none	none	none	none	none
Provision of artificial insemination services	none	none	none	none	none	none	none	none
Genetic evaluation	medium	high	none	none	none	none	none	none

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

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

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.

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	no
Chickens	yes
Buffaloes	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)	The subsidy policy for breeding of exotic breeds and AI implementations with exotic breed semen result in heavy crossbreeding on the local breeds.
Cattle (specialized beef)	
Cattle (multipurpose)	
Sheep	National Sheep Improvement Program is an ongoing program with the aim of improvement of local breeds in farmer condition.
Goats	National Goat Improvement Program is an ongoing program with the aim of improvement of local breeds in farmer condition.
Pigs	-
Chickens	
Buffaloes	National Water Buffalo Improvement Program is an ongoing program with the aim of improvement of Anatolian water buffalo breed in farmer condition.

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)	Exotic cattle breeds with high milk yield have been used for improving milk production level of local breeds. Consequently, the numbers of pure local breeds have been decreased dramatically.
Cattle (specialized beef)	
Cattle (multipurpose)	
Sheep	National Sheep Improvement Program for local sheep breeds started last decade in Turkey.
Goats	National Goat Improvement Program for local goat breeds started last decade in Turkey.
Pigs	
Chickens	
Buffaloes	National Anatolian Water Buffalo Improvement Program for Anatolian water buffalo breed started in 2011 in Turkey.

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.

Organizational problems, shepherd shortage, age of livestock keepers, rural depopulation, lack of products standards, product processing and marketing problems.

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)	
Cattle (specialized beef)	
Cattle (multipurpose)	
Sheep	National Sheep Improvement Program which aims to improve meat and milk yield of local breeds and to strengthen breeders' organisation will be continued.
Goats	National Goat Improvement Program which aims to improve meat and milk yield of local breeds and to strengthen breeders' organisation will be continued.
Pigs	
Chickens	
Buffaloes	National Water Buffalo Improvement Program which aims to improve milk yield of Anatolian Water Buffalo and to strengthen breeder organisation will be continued.

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)	n/a	n/a	n/a
Cattle (specialized beef)	n/a	n/a	n/a
Cattle (multipurpose)	high	medium	medium
Sheep	high	low	low
Goats	medium	low	medium
Pigs	n/a	n/a	n/a
Chickens	none	medium	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	yes

	Considered in formal prioritization approaches
Genetic uniqueness	no
Genetic variation within the breed	no
Production traits	yes
Non-production traits	yes
Cultural or historical importance	yes
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	no	no	yes	no	no	yes	no	no	no	no	yes	yes
Private sector	no	no	no	no	no	no	no	no	no	no	no	no
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	yes	no	no	yes	no	no	no	no	yes	yes
Sheep	no	no	yes	no	no	yes	no	no	no	no	yes	yes
Goats	no	no	yes	no	no	yes	no	no	no	no	yes	yes
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

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.

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.

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	yes
Embryos	yes
Oocytes	no
Somatic cells (tissue or cultured cells)	yes
Isolated DNA	yes

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)	0	0	no	no	no	no	no
Cattle (specialized beef)	0	0	no	no	no	no	no
Cattle (multipurpose)	6	2	no	no	no	no	no
Sheep	14	7	yes	no	no	no	no
Goats	5	3	yes	no	no	no	no

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?
Pigs	0	0	no	no	no	no	no
Chickens	0	0	no	no	no	no	no
Horses	5	0	no	no	no	no	no

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.

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.

Turkey wants to be a hosting country for a regional or subregional in vitro gene bank. Depending upon animal movement legislation, financial and technical capacity, a regional cooperation could be established with some of the European, Balkan, Central Asian, Near East and African countries.

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.

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.

Species	Biotechnologies								
	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)	high	low	low	low	low	low	none	none	none
Chickens	low	none	none	none	none	none	none	none	none

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

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	no	no	yes	yes
Embryo transfer	yes	no	no	no	yes	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.

AI
Public sector; Livestock Central Research Institute and General Directorate of Agricultural Enterprises
Breeders' associations; Cattle Breeders' Association of Turkey
ET

Public sector; Livestock Central Research Institute, East Mediterranean Agricultural Research Institute Ankara, Bursa and Istanbul universities' veterinarian faculties
National commercial companies; two commercial companies are authorized but commercial activities has not been started yet.

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	yes	no
Embryo transfer or MOET	yes	no
Semen sexing	yes	no
In vitro fertilization	yes	no
Cloning	yes	no
Genetic modification	yes	no
Use of molecular genetic or genomic information for estimation of genetic diversity	yes	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.

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	none	none	none	none	none
Artificial insemination using nationally produced semen from exotic breeds	low	low	low	low	low
Artificial insemination using imported semen from exotic breeds	low	low	medium	high	medium
Natural mating	high	high	medium	low	medium

Cattle (specialized beef)	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	none	none	none	none	none
Artificial insemination using nationally produced semen from exotic breeds	none	none	none	none	none
Artificial insemination using imported semen from exotic breeds	high	low	high	high	high
Natural mating	medium	high	low	low	low

Cattle (multipurpose)	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	none	none	none	none	none
Artificial insemination using nationally produced semen from exotic breeds	low	low	low	low	low
Artificial insemination using imported semen from exotic breeds	high	low	high	high	high
Natural mating	medium	high	low	low	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.

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	Management of animal genetic resources integrated with National Biological Diversity Strategy and Action Plan (Goal 3 and Goal 4).

	Extent of collaboration	Description
Collaboration in the characterization, surveying or monitoring of genetic resources, production environments or ecosystems	limited	Limited collaboration between General Directorate of Nature Conservation and National Parks and General Directorate of Forestry in surveying and monitoring Wild Life Improvement Areas, national parks and forest ecosystems.
Collaboration related to genetic improvement	limited	Wild Life Improvement Areas indirectly provide proper environment for improvement of genetic resources of wild animal species such as wild sheep.
Collaboration related to product development and/or marketing	none	
Collaboration in conservation strategies, programmes or projects	limited	Limited collaboration in implementation of National Biological Diversity Strategy and Action Plan of Turkey.
Collaboration in awareness-raising on the roles and values of genetic resources	limited	Participation in workshops and meeting.
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.

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

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

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

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).

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).

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).

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.

Legislative measures to protect meadows, wetland and agricultural ecosystems against environmental pollution and over exploitation.

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).

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).

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.

Weakness of monitoring systems.

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.

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.

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.

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:

A comprehensive list of most of the different breeds in Turkey is prepared. Some of the information systems such as National AnGR Information System (draft version), EFABIS, DAD-IS and recording systems for big ruminants (cattle and water buffalo) and small ruminants (sheep and goats), Animal Registration System of GDAR and breeds catalogues of Turkey are available. Most of the breeds are covered by these systems and lists. Because of the rich genetic diversity especially for sheep breeds of Turkey, some of the breeds' definitions are still arguing among different stakeholders and further efforts should be done.

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:

A comprehensive review which displays and/or evaluates current phenotypic characterization studies for all livestock species of Turkey could not found. On the other hand, personal communications with some of the researchers and general evaluation of animal registration lists to determine the completion level of phenotypic characterization studies reflect the situation. Except for the production environments and specific features, most of the data regarding the morphology, performance and location of AnGR are available.

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:

A comprehensive review which displays and/or evaluates current molecular characterization studies for all livestock species of Turkey could not found. On the other hand, personal communications with some of the researchers and general evaluation of animal registration lists to determine the completion level of genotypic characterization studies reflect the situation. Despite the newly executed individual projects data regarding the molecular characterization can not be considered as sufficient; more efforts should be done to complete overall knowledge.

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:

Due to the continual on farm level studies for *in situ* conservation and improvement projects of AnGR, the research staffs are able to monitor and recognize the breeds more accurately. These activities somehow can be considered as a pre-inventory and/or baseline survey for AnGR. Monitoring of population trends and revealing of population status especially for breeding males and females in Turkey are still a first priority tasks, thus option G was preferred.

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:

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:

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:

For the questions 5, 6 and 7; all these activities will be included in the NSAP of Turkey.

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:

Mainly FAO criteria are used for assessing the risk status of AnGR. Due to the high reduction rate of animal numbers and intensive crossbreedings with other breeds (especially culture breeds), some of the breeds are considered at risk. These breeds are included in the conservation programmes.

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:

Establishment of a map based early warning system which may help for the monitoring risk status of AnGR and taking urgent measures has been started.

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:

Local and improved animal breed, type and lines of Turkey are registered according to phenotypic and genotypic standards prepared by Domestic Animal Registration Committee.

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:

Turkey possesses extensive lands, differentiated geographical and climatic features. Breed numbers are high in some

domestic animal species such as sheep and goat, a large number of small scaled enterprises scattered all around the country. Intensive crossbreeding with exotic breeds results in difficulties of breed definitions. Lack of qualified human and adequate financial resources and coordination among related stakeholders are major barriers and obstacles for executing comprehensive inventory study.

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:

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.

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:

Breed development programmes and establishing breeder organisations, subsidies, establishing the consideration of the impacts of selection on genetic diversity into breeding programmes and develop approaches to maintain the desired variability.

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:

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:

Intensive AI implementation and gene flow of exotic cattle breeds to native cattle breeds via crossbreedings have been continuing since middle 90's. However, breed development programmes have been established for some sheep, goat and water buffalo breeds.

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:

Long-term sustainable use planning for breed development programmes have been established for water buffalo, sheep and goat since 2005 with pure genetic improvement programmes. However, cattle production mainly depends on gene flow and technology transfer from developed countries.

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:

Organizational problems, shepherd shortage, age of livestock keepers, rural depopulation, lack of products standards, product processing and marketing problems, lack of inventory, heavy crossbreedings of local breeds with exotic breeds, lack of high quality pastures, lack of niche marketing of local products.

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:

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:

The recording system and organisational structure for water buffalo, sheep and goat breeds have been established. The organisational work for collaboration of GDAR with universities and breeders' organisation.

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:

The collaboration of the stakeholders (government, universities, breeder organisation) on breed improvement program is an example of the sustainable use of AnGR.

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:

National information system for AnGR will be established to provide all stakeholders of AnGR with information that facilitates their access to AnGR.

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:

Usage and exchange mechanism of FAnGR is determined by the regulation which was published in the TR Official Gazette dated 21st September 2012 and No 28418. The aim of the regulation is to embody the procedures and principles of the necessary actions and processes for utilization and export of the FAnGR. All actions related to FAnGR are conducted by the Ministry of Food Agriculture and Livestock and FAnGR are not allowed to export for any reasons without permission of the Ministry.

Foreign national legal entities should get permission from the GDAR for the utilization of FAnGR for their research activities in Turkey. Also Turkish researchers should get permission from GDAR for the utilization of FAnGR for their research activities abroad. In this context, unregistered FAnGR can not be export except for the research aim. If there is no sufficient information about a certain genotype then exporting is not allowed of the genotype despite the registration. The lists of the impermissible and subject to pre-permission of FAnGR determined by the National Committee and announced by the Ministry of Economy via statement published in TR Official Gazette. With in this scope, endangered and/or under the risk of endangerment FAnGR are not allowed to export with any commercial aim. Moreover, FAnGR which will be used for scientific researches by foreign national legal entities are not allowed to export without necessary document such as application form, permission form and MTA (Material Transfer Agreement). In case of the stocks are limited, requests for the exportation of genetic material from the Gene Banks are not accepted.

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:

The training and technical support programs for the breeding activities have been strengthen during the continual activities for *in situ* conservation and improvement projects of AnGR on farm level.

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:

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:

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:

The advisory committee of sustainable utilisation will be address to promote products derive from native breeds.

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

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:

Factors lead to the erosion of its AnGR will be assessed regularly by implementation of NSAP of Turkey.

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:

Cattle: Nation-wide crossbreeding with exotic breeds, economical factors,
Sheep: Migration of livestock keepers from country side to urban, labour force insufficiency, lower price products, insufficient breeders' organisations or cooperatives, crossbreeding,
Goat: Acceptance as environment predator, locally restricted consumption, migration of livestock keepers from country side to urban, crossbreeding and consumer preferences changing.

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:

I. *In situ* Conservation: According to Committee's discretion, *in situ* conservation subsidies of cattle, sheep, goats, bee, water buffalo breeds possess extinction risks has been continued in their original living areas since 2005. In order to support *in situ* conservation of local breeds projects were prepared and subsidies were given up to 1.000 head for small

ruminants and 1.500 head for big ruminants. In this context, subsidy payment was made to 664 breeders for the purpose of conservation of the total of 13.314 heads belonging to 23 breeds and 9.248 Caucasus bee colonies in 25 cities.
***Ex situ in vivo* Conservation:** AnGR Conservation Project has been carried out by the General Directorate of Agricultural Research and Policy (GDAR), the primary goal was to characterize and conserve the breeds at risk, so descriptive information of these genotypes obtained and they were excluded from the extinction threshold. The conservation program initiated in cattle breeds with high risk of extinction in 1995 and was expanded to cover sheep, goats, buffalo, chicken and silkworm in 1996 and 1997, and bee in 2002.
***Ex situ in vitro* Conservation:** The project called "*In vitro* Conservation and Preliminary Molecular Identification of Some Turkish Domesticated Animal Genetic Resources -I" was executed from 2007 to 2012.

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:

Two regular meetings of NCC, annual program evaluation meeting for AnGR, national workshops and meetings are organised. The advisory committee meeting will be held annually.

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:

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:

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:

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:

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

- ○ a. Yes
- ○ b. No

Please provide further details:

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:

Loss of economic importance of the local breeds, limited financial resources for all conservation methods, difficulties of rearing the breeds adapted to different production environment for *ex situ in vivo* conservation, difficulties of finding animals which represent breed characteristics, lack of the willingness for the participation and knowledge of breeders in some locations, and continuous demand for qualified research staff can be considered as major obstacles for conservation activities.

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:

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:

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:

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:

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:

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

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.

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:

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:

Promoting the management of AnGR in SEC countries (FTPP). The NSAP of Turkey will be finished before the end of 2014.

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:

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:

Agriculture Strategic Plan of Turkey; www.tarim.gov.tr/SGB/Documents/Stratejik%20Plan%202013-2017.pdf (Turkish only).

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:

The national data base is preparing for conservation breeds data including performance and identification records.

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:

EFABIS is used for data entering and updating the records.

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:

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:

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:

TV and radio programs, documentary films about breeds, stamp series, catalogues and brochures.

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:

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:

Training and technology transfer are being made in the systems of research and close collaboration among GDAR research system, universities, government, breeder organisation and private sector.

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:

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:

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:

Gene banks, institutions infrastructure and human resources, phenotypic and genetic characterization.

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.

NSAP preparation is in progress. Legislative works are almost completed. Biotechnology centres are establishing.

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:

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:

Especially for in situ conservation; duplication herds are selected in different locations and animal numbers are enhanced in the project context. Also the gene banks establishment occurred after the adoption of GPA.

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:

Training and education activities with the collaboration of MFAL (Ministry of Food Agriculture and Livestock) and TIKA (Turkish Cooperation and Coordination Agency)

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:

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:

The project called 'Promoting the Management of AnGR in SEC Countries' has been accepted within the frame of FAO Turkey Partnership Programme (FTPP). The project which aims to support countries in preparation of their NSAPs has been conducting.

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:

EFABIS (European Farm Animal Biodiversity Information System)

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:

EFABIS

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:

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:

Depending upon animal movement legislation, financial and technical capacity, a regional cooperation could be established for a regional or subregional in vitro gene bank.

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:

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