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: Bulgaria

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).

The Republic of Bulgaria joined the European Union in 2007, and this was one of the main factors influencing the development of the animal breeding in the country in the recent years. This has changed the organizational and economical environment and forced adaptation to the European policies and regulations for production, marketing and control, which has had impact on the management of animal genetic resources.

The livestock sector was continuously optimized and the production processes improved, this modernization being supported by the "Special Accession Program for Agriculture and Rural Development" - SAPARD, and its follow-up - Rural development program 2007-2013.

Currently, there are more than 80 breeds in the country, which are economically important, or of importance for preservation of the gene pool - 15 cattle breeds, of which 7 locally adapted, 30 sheep breeds (22 locally adapted), 5 goat breeds (4 locally adapted), 8 pig breeds (5 locally adapted), 15 chicken breeds (2 locally adapted), 18 horse breeds (8 locally adapted), 3 locally adapted turkey breeds 6 locally adapted rabbit breeds, 1 locally adapted buffalo breed , 1 locally adapted goose breed, 1 exotic duck breed and 1 exotic Muscovy duck.

Most of the breeds are under the control of one or more breeders' associations. These breeds are phenotypically characterized in detail, and for some of the breeds various performance, inbreeding, and molecular studies were performed. The population size of most of the breeds is monitored annually. However, the studies of the within breed and between breeds diversity utilizing molecular data are insufficient.

A typical trend in the last 10 years is the reduction in the number of farms, from 600 815 in 2003 to 153 500 in 2012, mainly due to closing of farms keeping small number of animals. In the same time there is a clear tendency for enlargement of the farms.

According to data from the Agrostatistics department of the Ministry of Agriculture and Food, in the period 2003-2012 ,

the number of cattle goes down (-27,6%), which is related to decrease in the number of dairy cows (-23,7%). In the sheep the number of animals decreased from 1598556 in 2003 to 1361545 in 2012, and in the goats from 725308 to 293639. The number of the pigs decreased from 1032000 to 531000. Despite the negative trends all the locally adapted breeds were preserved.

This was achieved by optimizing of the organization of the management of animal genetic resources. Following a change in the legislation, the executive director of the Executive agency for selection and reproduction was nominated as National Coordinator for the management of animal genetic resources in the Republic of Bulgaria. The Executive agency was appointed to support the Minister of Agriculture and Food in the management and conservation of genetic resources, the management of the national genebank, the management of the state's AI stations (which are the only AI stations at this moment in the country), etc.
The National Coordinator is supported by the National council for animal genetic resources, including representatives of all breeders' associations in the country. An advisory board operates by the Minister of agriculture and food - the Livestock council, which includes representatives of professional organizations, breeders' associations and scientific institutions. Thus, all the stakeholders are participating in the decision making process in the management of animal genetic resources.

Regarding the education system in the country, there are two main universities training students for the livestock sector - the Agricultural University - Plovdiv and the Thracian University - Stara Zagora, and a number of secondary schools. The universities are also performing part of the studies related to the livestock breeds, but the main research institution is the Agricultural academy, comprising a chain of scientific institutes spreaded around the country. Currently, the Agricultural academy is in critical state, with outdated equipment, and the labor of the scientists is unattractive and underpaid. There is a need for improvement of the quality of the education and the research in the coming years.

In 2010 a national gene bank was established, containing genetic material from 26 cattle breeds, 10 sheep breeds и 4 buffalo breeds.
For safety reasons the gene bank collection was split in 2011 in two depositories at a distance of 300 kilometers. The collection of material from the locally adapted breeds has already started, however the cumulated sampled are insufficient to ensure effective ex situ conservation. There is also a need for further development of ex situ in vivo programs for conservation of endangered breeds.

One of the state's priorities for the next ten years is the stimulation of the animal breeding in the country, in order to overcome the lack of structural balance with other sectors in the agriculture.

There are also plans for integration of the management of the animal genetic resources with the other genetic resources in the agriculture, and amendments in the legislations are under discussion.

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.

The import of exotic genetic material results in insufficient production of breeding males in the country, especially in cattle breeding. The reduced utilization of the local genetic resources in the selection in poultry and pigs is also a result of regular import from abroad. Some of the local breeds, which are not under selection control, are also crossbred with foreign genetic material.

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	During the whole period increase in the demand for meat is observed. Most demanded are the poultry and pig meat, mainly from industrial farms due to the increasing costs of the production in the small family farms. Thus, the industrial poultry meat production is stable with more than 100 industrial farms. The pig production is insufficient, with around 59 large farms keeping the 75% of the pigs in the country. More than 50% of the pig meat is imported. The beef production is marginal.
Changing demand for livestock products (quality)	medium	high	With the increase of the income in part of the population, there is also increase in the demand for quality products. This allows for niche markets of expensive high quality products from small bio farms.
Changes in marketing infrastructure and access	low	low	
Changes in retailing	high	high	The large supermarket chains presents their suppliers with many requirements which cannot be met by the small farmers.
Changes in international trade in animal products (imports)	high	high	The import of cheap low quality products, move aside the local production.
Changes in international trade in animal products (exports)	medium	medium	The loss of traditional export markets leads to decrease in number of animals, for example in the production of sheep meat and beef.
Climatic changes	medium	medium	The increase of average temperatures has several effects on the livestock species. The increased heat in the summer season requires earlier movement of the grazing breeds to the mountain pastures. On the other hand the warm winter allows for early pasture, sparing the food costs of the local cattle, sheep and goat breeds.
Degradation or improvement of grazing land	low	low	
Loss of, or loss of access to, grazing land and other natural resources	medium	medium	The loss of pastures due to the increase of the areas for crop production, presents problems for the breeding of traditional grazing breeds, e.g. sheep.
Economic, livelihood or lifestyle factors affecting the popularity of livestock keeping	medium	medium	The farmers' incomes and the profitability of livestock production are much lower than ones in the plant production and other economical activities. Thus, the number of farms is steadily decreasing in sheep, cattle and pigs breeding.
Replacement of livestock functions	low	low	The mechanization of the agricultural process lead to replacement of horse breeds like the Danubian horse and the Pleven horse, which were used for work in the farms.

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 cultural roles of livestock	low	low	
Changes in technology	medium	medium	With the advances in the technology the number animals kept in industrial farms in cattle, sheep, pig and poultry breeding increases, whereas the number of small family farms decreases.
Policy factors	high	medium	The policy of supporting the local and endangered breeds shows positive results and the controlled populations in most of the breeds are stable or even increasing. One example is the Rhodope Shorthorn Cattle.
Disease epidemics	low	low	There are no significant disease outbreaks in the country, which might lead to extinction of a breed.

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)	4	2
Cattle (specialized beef)	0	4
Cattle (multipurpose)	3	2
Sheep	22	9
Goats	4	1
Pigs	5	3
Chickens	2	13
Buffaloes	1	0
Geese	1	0
Muscovy ducks	0	1
Horses	8	10
Rabbits	6	0
Ducks	0	1
Turkeys	3	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)	5	5	high	low	low	none	medium	low
Cattle (specialized beef)	2	2	high	low	low	none	none	low
Cattle (multipurpose)	2	2	high	low	low	none	medium	none
Sheep	24	24	high	low	low	none	low	none
Goats	4	4	high	none	none	none	none	none
Pigs	8	4	high	none	none	none	none	none
Chickens	15	15	high	none	none	none	none	none
Buffaloes	1	1	high	none	none	none	none	none
Ducks	0	0	medium	none	none	none	none	none
Geese	0	0	medium	none	none	none	none	none
Horses	15	10	high	medium	none	none	none	none
Muscovy ducks	0	0	medium	none	none	none	none	none
Rabbits	0	0	high	none	none	none	none	none
Turkeys	3	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	medium
Awareness	high
Infrastructure	medium
Stakeholder participation	high
Policies	high
Policy implementation	medium
Laws	high
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	There are two universities in the country providing animal breeding education. The management of animal genetic resources is included in the curriculum as a stand alone subject or as a part of another subject. In the Agricultural University - Plovdiv, special master courses are offered, e. g. "Management of genetic resources and production in the sheep breeding". In the area of secondary education several professional schools for animal breeding and veterinary medicine are preparing personnel for the livestock production.
Research	The Agricultural academy, organization for fundamental and applied research in the field of the agriculture and food industry is one of the main driving forces of the the livestock science in the Republic of Bulgaria. The academy includes several institutes dealing with livestock production, inter alia Research Institute of Mountain Stockbreeding and agriculture - Troyan, Institute of Animal Science - Kostinbrod, Agricultural institute - Stara Zagora, Agricultural institute - Shumen, which are also keeping ex situ conservation herds. Research activities related to the animal genetic resources are performed also by the Agricultural University - Plovdiv and Thracian University - Stara Zagora. The main factors hindering the research studies are the lack of financing and the outdated equipment.
Knowledge	The important for the animal breeding information is traditionally well disseminated. Many guidelines were printed on paper in the previous years in order to reach the farmers. The Executive agency for selection and reproduction in animal breeding issues on a regular basis catalogs of the breeds in the country. There are several livestock magazines, both popular and scientific. Nowadays most of the information is exchanged in the Internet, various stakeholders in the livestock sector are managing web sites providing useful information to all participants in the animal breeding process and forums for the farmers to exchange experience. There are also specialized tv programs and a dedicated tv channel for agriculture, which is also available online.

	Description
Awareness	Annually, the breeders' associations, NGOs and the Executive agency for selection and reproduction in animal breeding are organizing livestock exhibitions at regional and national level. At these traditional exhibitions, supported partially by state funds, the national genetic resources are presented to the general public. On these occasions also the problems and success stories of the animal breeding are presented and discussed. In year 2012 Bulgaria presented indigenous livestock animals at world's leading trade for animal production - EuroTier.
Infrastructure	The organizational infrastructure of the management of genetic resources is well developed A dedicated information system for monitoring the local and endangered breeds on individual animal basis was developed and put in operation in 2013. With this web-based system the data is collected from the breeders' associations and the various stakeholders have access to the information, needed for their work. The system provides also data to the general public, keeping the civil society informed about the state of the breeds. There are two AI stations in the country, both state owned. These stations produce genetic material for use in the breeding process and they also supply the national gene bank collection. There is a network of AI technicians who are providing insemination services. In some of the breeds embryo transfer is also used.
Stakeholder participation	The Executive agency for selection and reproduction in animal breeding is entrusted with the management and conservation of the animal genetic resources and its executive director is National Coordinator for management of animal genetic resources. All activities related to the management of genetic resources are discussed and controlled by a National council for genetic resources. The council consists of representatives of NGOs, and all breeders' associations are represented there.
Policies	Bulgaria has long traditions in the management of animal genetic resources and is one of the pioneer countries (80-ies of the previous century), which has provided targeted support for the indigenous breeds and creates reservation areas. At this stage the government is applying a consistent policy for the preservation of the animal genetic resources. The conservation of the AnGR is integrated in the national legislation, and there is also a national strategy for recovering and development of the country's traditional agrarian production and restructuring of certain sectors.
Policy implementation	In the last five years the state was supporting the breeders' associations for keeping of the herdbook records and for the performance control. On a top of it the indigenous breeds have received a specific support.
Laws	The process of harmonization of the national legislation with the European regulations was started even prior to 2007, the year when Bulgaria joined European Union. With the amendment of one of the principal laws - the Animal breeding act, the management of animal genetic resources, their effective utilization for production of animal products, as long as the preservation of the livestock populations, adapted to the various agri-ecological parts of the country, were recognized as main priorities. Since 2011, the Executive agency for selection and reproduction in animal breeding was mandated with the management of animal genetic resources. The Minister of agriculture and food established a National council for animal genetic resources.
Implementation of laws	

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).

In the last 10 years more than 45 breeders' associations were created, or their licenses renewed. The process still continues with new breeders' associations applying for licenses. The representatives of these NGOs are members of the National council for animal genetic resources and they actively participate in the discussions of the various aspects of the management and conservation of AnGR in the country. An advisory board operates by the Minister of agriculture and

food - the Livestock council, which includes representatives of professional organizations, breeders' associations and scientific institutions.

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)	no	no	yes	no	no	no	no
Cattle (specialized beef)	no	no	yes	no	no	no	no
Cattle (multipurpose)	no	no	yes	no	no	no	no
Sheep	yes	yes	yes	no	no	no	no
Goats	yes	yes	yes	no	no	no	no
Pigs	no	no	yes	no	no	no	no
Chickens	no	no	yes	no	no	no	no
Buffaloes	no	no	yes	no	no	no	no
Horses	no	no	yes	no	yes	yes	no
Rabbits	no	yes	no	no	no	no	no
Turkeys	no	no	yes	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)	4	2	3	2	3	2	3	2	1	2	0	0	0	0	4	2
Cattle (specialized beef)	0	4	0	2	0	2	0	2	0	2	0	0	0	0	0	4
Cattle (multipurpose)	3	2	2	0	1	0	2	0	0	2	0	0	0	0	3	2
Sheep	22	8	22	2	22	2	22	2	2	2	0	0	0	0	1	3
Goats	4	1	4	0	4	0	4	0	1	0	0	0	0	0	1	0
Pigs	5	3	5	3	5	3	5	3	5	3	0	0	0	0	1	3
Chickens	2	13	2	13	2	13	2	13	2	13	0	0	0	0	0	0
Buffaloes	1	0	1	0	1	0	1	0	1	0	0	0	0	0	0	1
Ducks	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Geese	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Horses	8	10	8	4	8	10	8	10	8	4	0	0	0	0	8	10
Muscovy ducks	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rabbits	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Turkeys	3	0	3	0	3	0	3	0	3	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
Cattle (specialized dairy)	3	2	0	0
Cattle (specialized beef)	0	2	0	0
Cattle (multipurpose)	2	2	0	0
Sheep	21	2	1	0
Goats	4	0	0	0
Pigs	5	3	0	0
Chickens	2	0	0	16
Buffaloes	1	0	0	0
Ducks	0	0	0	1
Geese	1	0	0	0
Horses	1	10	7	0
Muscovy ducks	0	0	0	1
Rabbits	0	0	6	0
Turkeys	3	0	0	0

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

Species	Training	Research
Cattle (specialized dairy)	high	medium
Cattle (specialized beef)	high	medium
Cattle (multipurpose)	high	medium
Sheep	high	medium
Goats	high	medium
Pigs	high	medium
Chickens	high	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	high
Goats	high
Pigs	high
Chickens	high
Buffaloes	high

Species	Organization of livestock keepers
Ducks	low
Geese	low
Horses	high
Muscovy ducks	low
Rabbits	medium
Turkeys	high

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

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

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

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

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

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

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

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

The breeding programs are submitted by the breeders' associations (usually developed in cooperation with scientists) and are approved by a commission, comprising representatives of the Ministry of agriculture and food, the Executive agency for selection and reproduction in animal breeding and expert scientists. The programs are approved only if they do not present a threat to the existence and development of the breed, or to the performance of the breeding program of already existing breeders' association.

The official institution responsible for the livestock animals identification is the Bulgarian food safety agency. It manages a web-based information system for collecting information about the identified animals, their owners and the registered farms. The identification is performed by veterinarians, which have graduated a special training in the Bulgarian food safety agency. The breeders' associations also put additional ear tags approved by the Executive agency for selection and reproduction in animal breeding. The herdbooks are kept by the breeders' associations, each of them keeping a separate herdbook.

The performance testing is also obligation of the breeders' associations. The executive agency for selection and reproduction in animal breeding supports and controls the breeders' associations in their activities.

There are two AI stations in the country, both of them state owned and managed by the Executive agency for selection and reproduction in animal breeding. Several national and international companies import genetic material in the country.

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

Species	Policies or programmes
Cattle (specialized dairy)	yes
Cattle (specialized beef)	yes
Cattle (multipurpose)	yes
Sheep	yes
Goats	yes
Pigs	yes
Chickens	no
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 state is supporting breeding programmes for preservation of the local endangered breeds and pays specific subsidies (per animal) to the farmers, keeping animals from these breeds.
Cattle (specialized beef)	
Cattle (multipurpose)	The state is supporting breeding programmes for preservation of the local endangered breeds and pays specific subsidies (per animal) to the farmers, keeping animals from these breeds.
Sheep	The state is supporting breeding programmes for preservation of the local endangered breeds and pays specific subsidies (per animal) to the farmers, keeping animals from these breeds.

Species	Description of policies or programmes
Goats	The state is supporting breeding programmes for preservation of the local endangered breeds and pays specific subsidies (per animal) to the farmers, keeping animals from these breeds.
Pigs	The state is supporting breeding programmes for preservation of the local endangered breeds and pays specific subsidies (per animal) to the farmers, keeping animals from these breeds.
Chickens	The state is supporting breeding programmes for preservation of the local endangered breeds.
Buffaloes	The state is supporting breeding programmes for preservation of the local endangered breeds and pays specific subsidies (per animal) to the farmers, keeping animals from these breeds.
Horses	The state is supporting breeding programmes for preservation of the local endangered breeds and pays specific subsidies (per animal) to the farmers, keeping animals from these breeds.

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)	Increase in the number of animals from the supported breeds is observed.
Cattle (specialized beef)	
Cattle (multipurpose)	Increase in the number of animals from the supported breeds is observed.
Sheep	A stable positive growth trend is observed in two of the supported breeds. In most of the breeds, after the initial increase of the number of animals, the population size is going up and down, and in some of the breeds despite the measures the number of animals under control is decreasing.
Goats	Increase in the number of animals from the supported breeds is observed.
Pigs	Despite the measures, the number of animals under control is decreasing.
Chickens	The population size is stable.
Buffaloes	The population size is stable.
Horses	Increase in the number of animals from the supported breeds is observed, most significantly in the Karakachan horses.

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.

Some of the obstacles for the implementation of the breeding programmes includes inter alia insufficient financing, lack of modern equipment and software for performance recording and more precise estimation of the breeding values. Additional obstacle is the lack of united herdbook in breeds controlled by more than one breeders' associations.

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

Species	Description of future objectives, priorities and plans
Cattle (specialized dairy)	
Cattle (specialized beef)	
Cattle (multipurpose)	

Species	Description of future objectives, priorities and plans
Sheep	Development of breeding programmes for breeds, which are currently not under control.
Goats	Development of breeding programmes for breeds, which are currently not under control.
Pigs	
Chickens	

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

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	
Genetic uniqueness	
Genetic variation within the breed	
Production traits	
Non-production traits	

	Considered in formal prioritization approaches
Cultural or historical importance	
Probability of success	

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

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

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

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.

Thirty-four endangered local breeds were included in Measure 214 "Agri-Environmental Measures" for conservation and maintenance of biodiversity by maintaining the local endangered breeds and receive subsidies per animal.
Most of the breeding programs for the local endangered breeds are maintenance programs, where the selection aim is to maintain the within breed diversity and limit the inbreeding depression. Some of the breeding programs includes also improvement strategies, e.g. the breeding program of the White maritza sheep aims at doubling the population size in 10 years and increasing the milk yield.
There are several farms promoting the endangered breeds as a tourist attraction, e.g. "The wild farm" in Gorno Pole village keeping animals from the following breeds: Bulgarian Gray Cattle, Rhodope Shorthorn Cattle, Karakachan sheep;

"The Rare breeds center" in Vlahi village (Karakachan sheep, Karakachan horse, Karakachan dog, Kalofer long-haired goat and Bulgarian Screw-horned long-haired goat).
Annually, several livestock exhibitions and fairs are organized at regional and national level, including inter alia National Livestock Exhibition - Sliven, Regional Buffalo breeding exhibition - Razgrad, National fair Conservation of the Local Bulgarian breeds - Kalofer. In 2013 in the frame of Swiss-Bulgarian project the first Local breeds fair was organized also near the town of Kalofer in Stara Planina mountain. On the occasion of these events the specifics of the local breeds are introduced the general public, students are quizzed about the knowledge of the Bulgarian breeds, farmers exchange experience. The best animals and farmers are recognized and awarded.

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

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

Species	Number of breeds for which material is stored	Number of breeds for which sufficient material is stored	Does the collection include material from not-at-risk breeds?	Have any extinct populations been reconstituted using material from the gene bank?	Have the gene bank collections been used to introduce genetic variability into an in situ population?	Have the gene bank collections been used to introduce genetic variability into an ex situ population?	Do livestock keepers or breeders' associations participate in the planning of the gene banking activities?
Cattle (specialized dairy)	9	0	yes	no	no	no	yes
Cattle (specialized beef)	10	0	yes	no	no	no	yes
Cattle (multipurpose)	7	0	yes	no	no	no	yes
Sheep	10	0	yes	no	no	no	yes
Goats	0	0	no	no	no	no	yes
Pigs	0	0	no	no	no	no	yes
Chickens	0	0	no	no	no	no	yes
Buffaloes	4	0	yes	no	no	no	yes

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.

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.

The Bulgarian gray cattle is one of the ancient indigenous breeds in Bulgaria. It was formed as a result of crossing the shorthorn (Bos taurus brachiceros) with the longhorn cattle (Bos taurus primigenius). The breed is a multipurpose one - for work, meat and milk. Since 1961 the animals from this breed were crossed with imported specialized breeds, thus in the end of XX century only few purebred animals were left in two state farms and several private farms in the mountains. In the beginning of the XXI century a breeders' association was established and a breeding program approved. The members of the association have also started searching for animals from the breed outside the known farms. The breed was included in the supporting measures for the preservation of the population, and within the Special Accession

Program for Agriculture and Rural Development and the Rural development program the farmers were subsidized 200 EUR per cow. The additional state aid for herdbook keeping and performance of breeding activities allowed for the registration of the animals and establishment of the breeding structure. As a result of the effective work of the breeders' association the population size of the Bulgarian Gray Cattle is constantly increasing and in 2013 it is not endangered according to the FAO criteria.

REPRODUCTIVE AND MOLECULAR BIOTECHNOLOGIES

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

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

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

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

In the Republic of Bulgaria the artificial insemination with cryopreserved buffalo and cattle semen is used in the farms under the control of the breeders' associations and in the private households. The artificial insemination with fresh sheep and goat semen is used mainly in the private households. In the transition years, the transformation of the state farms in a private ones limited the farmers access to the embryo transfer methods. Since 2007 the options for restoring the embryo transfer are discussed, as this technology is available now only to a limited number of farmers.

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	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.

The role of the state in the provision of biotechnological services is described in the national legislation and includes inter alia the management of the state AI stations; providing services related to the animal reproduction; management of the National Gene bank; management of 18 semen storage facilities, included in the list of the approved semen collection centers according to the intra-Community trade in and imports of deep-frozen semen of domestic animals of the bovine species (88/407/EEC); organizes AI technician courses and issues respective certificates.

The freedom of move for goods and persons resulted in the establishment of representatives of many foreign companies. There are many importers of foreign genetic material and what has been observed is a chaotic supply of semen to the farms. The imported sexed semen which is offered at the market, results in very few female animals. The potential high productivity of the supplied genetic material, is not realized in the herds. The offspring shows low adaptability and high rate of reproductive problems.

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	yes
Embryo transfer or MOET	yes	yes
Semen sexing	no	no
In vitro fertilization	yes	yes
Cloning	no	no
Genetic modification	no	no
Use of molecular genetic or genomic information for estimation of genetic diversity	yes	yes
Use of molecular genetic or genomic information for prediction of breeding values	yes	no
Research on adaptedness based on molecular genetic or genomic information	no	yes

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

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

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

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

Goats	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	none	none	none	low	low
Natural mating	high	high	high	high	high

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

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

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

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.

The artificial insemination in the cattle breeding is a traditionally used technology, widely used, especially in the large-scale dairy farms where semen from exotic and locally adapted breeds is utilized. The artificial insemination in the beef

cattle is not so intensively used, due to the free keeping of the animals from these breeds.
The artificial insemination is performed by 532 technicians. The courses for training of AI technicians of cattle and sheep take place all year round.
The use of artificial insemination in the sheep breeding is low due to the high costs of the estrus synchronization and the specific anatomy of the female animals. The use of controlled natural mating is limited by the labour-demanding grouping of females with one ram. In the controlled farms most often a combination of artificial insemination with fresh semen from locally adapted breeds and controlled natural service is used. In few herds laparoscopic artificial insemination with frozen semen is used, mainly for experimental purposes. AI with imported semen from exotic breeds is not used, due to the high costs of the material. On the other hand the classical AI method results in low pregnancy rate.
The artificial insemination is rarely used in goats, due to the lack of AI stations for goats.
The artificial insemination in pigs is widespread in the large industrial pig farms, utilizing a semen from exotic breeds produced within the country. The proportion of usage of semen from locally adapted breed is lower. Imported semen from exotic breeds is not used in pigs due to financial reasons.

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	The animal genetic resources are included in the National Biodiversity Conservation Strategy. A working group is appointed by the Minister of Agriculture and Food, to prepare an amendment of the Biodiversity law for integration of the animal genetic resources with the other genetic resources.
Collaboration in the characterization, surveying or monitoring of genetic resources, production environments or ecosystems	limited	
Collaboration related to genetic improvement	none	
Collaboration related to product development and/or marketing	limited	Within the Swiss-Bulgarian project "Linking Nature Protection and Sustainable Rural Development" 12 projects for on-farm processing and direct sales are in preparation for sheep, goat, buffalo and cattle milk, bio honey, fresh fish.
Collaboration in conservation strategies, programmes or projects	limited	Some of the farms participating in conservation programmes for local breeds are also participating in pasture practices for management of ecosystems. For example projects like "New thracian gold" supports the traditional livestock farmers and for the recovery of the traditional for East Rhodope mountains landscape.
Collaboration in awareness-raising on the roles and values of genetic resources	limited	
Training activities and/or educational curricula that address genetic resources in an integrated manner	limited	
Collaboration in the mobilization of resources for the management of genetic resources	limited	

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.

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.

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:

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:

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:

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:

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:

Executive Agency for Selection and Reproduction in Animal Breeding in Bulgaria is responsible for the monitoring of the status of animal genetic resources in Bulgaria.

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:

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:

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:

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:

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

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

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

The lack of interest in these activities amongst farmers and the insufficient technical equipment.

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:

Securing funding for financial support of farmers participating in such programmes and for technical equipment.

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:

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:

The regular revisions commenced after the adoption of the GPA.

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:

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

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

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

The major obstacles are the insufficient modern technical equipment and the lack of funding.

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

Glossary:

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

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

b. Yes, assessments were introduced before the adoption of the GPA.

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:

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:

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:

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:

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:

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:

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:

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:

The main factors leading to the erosion of animal genetic resources are the lower productivity of the local breeds, which results in low interest in the farmers for keeping such breeds. Typical examples are most of the local sheep breeds. The group of the sheep breeds kept for wool is going down in numbers also due to the steady reduction trend in the world production of wool, which has also impact in Bulgaria.
The Danubian horse and Pleven horse breeds which were light draft and riding breeds used for agricultural work are now critically endangered as a result of the mechanization and the replacement of horses with machines.

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:

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:

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:

Lack of interest from the breeding societies in providing donors for the national genebank.

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

- [x] 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
- [x] 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
- [x] 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)?

- [x] 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
- [x] 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:

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:

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:

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:

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:

Makes proposals and advises:
1. when defining the national priorities in the management, conservation and sustainable use of the national animal genetic resources;
2. about the initiatives, the work and the participation of the state in international organizations, related to the management of genetic resources, preservation of the gene pool and the animal biodiversity on the planet;
3. in development of national, transboundary, regional and other international strategies and programmes for preservation and sustainable development of the animal genetic resources in coherence with the national priorities;
4. in development of the legislation, related to the management and conservation of the genetic resources and the breeding activities, making recommendations about their approval, amendment, and abolishment;
5. on activities, related to the planning, organization, management and control of the preservation and sustainable development of the national genetic resources, breeding and other activities related to the improvement of animal breeding effectiveness and prosperity;
6. for the use of economical and financial mechanisms for supporting the national genetic resources, the animal breeding and the whole livestock production sector.

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:

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:

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:

Bioselena (http://www.bioselena.com/)
Semperviva (http://www.save-foundation.net/semperviva/home.htm)
List of the breeders' associations in the Republic of Bulgaria
(http://iasrj.eu/index.php/registri/razvadni-organizatzii/spisak-s-odobrenite-razvadni-organizatzii)

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:

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

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

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

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

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

Characterization?

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

Sustainable use and development?

- (•) e. Yes
- ( ) f. No, but action is planned and funding identified
- ( ) g. No, but action is planned and funding is sought
- ( ) h. No

Conservation of breeds at risk?

- (•) i. Yes
- ( ) j. No, but action is planned and funding identified
- ( ) k. No, but action is planned and funding is sought
- ( ) l. No

Please provide further details:

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:

SAVE FOUNDATION

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

- (•) a. Yes
- ( ) b. No

Please provide further details:

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

- ( ) a. Yes

- (●) b. No
- ( ) c. No, because country generally does not receive external funding

Please provide further details:

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

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

Please provide further details:

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:

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)?

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

Please provide further details:

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

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

Please provide further details:

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

- [ ] a. Yes
- [ ] b. No, but action is planned and funding identified
- [ ] c. No, but action is planned and funding is sought
- [x] 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)?

- [x] 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
- [x] d. No

Please provide further details:

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

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

Please provide further details:

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

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

Please provide further details:

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