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

Country report

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

Country: Germany

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).

Advancements in biotechnology with artificial insemination (AI) and embryo transfer (ET), and in animal breeding with data processing, index selection, commercial cross-and hybrid-breeding have led to a rapid improvement of the commercially significant characteristics milk, meat and egg production in intensively managed breeding populations of cattle, pigs and poultry.

Breeding is now focused on a few economically important performance traits of high market value, e.g. meat proportion, milk volume, egg numbers, while many of the characteristics that concern farmers, such as health, fertility or longevity, carry less weight. This market-driven trend has led to an intensive production of a few, sometimes globally used high-output breeds and lines.

At the same time, many of the less productive landraces have lost their importance. As a consequence, their population size continues to decrease and they become endangered. The loss of these endangered landraces comes along not only with the risk that important alleles disappear, but also that stringent selection and global use of ever fewer sires lead to an increase in inbreeding within high-output populations. This in turn means ongoing reduction and potential loss of genetic diversity and of alleles that currently are not thought useful in achieving breeding objectives. It is feared that the use of molecular biotechnology, especially with marker assisted selection, will accelerate this trend.

This trend is intensified by the concentration of demand, which forces producers to offer the expanding consumer industry uniform products of strictly defined quality at falling prices. In an increasingly globalised market, small amounts of regional niche products do not have a chance. The products and thus the producers and their farm animals can only stand their ground if they open specialised markets where the particular characteristics of local products with a higher unit price are appreciated accordingly. This requires not only self-production, but also direct marketing. Thus, the traditional breeding structures of farmers, i.e. breeding associations, are put at risk by globally active breeding companies, which now become the rule for hybrid poultry and pig breeding.

The trend outlined in contemporary industrial societies leads unintentionally to more farm animal breeds being at risk of extinction. The potentially irreversible loss of alleles associated with extinction reduces genetic diversity. For this reason, the conservation of endangered breeds “as the genetic resources of the future” has become a social liability. The use of limited public funds and fundraising from private sponsors for this task requires that, on the one hand, the social importance of the local breeds is pointed out irrespective of their present day market value and that, on the other hand, cost-effective, sustainable and reliable conservation methods are developed and recommended.

Priorities and strategic directions for future actions are identified in of the National Programme on the Conservation and Sustainable Use of Animal Gentic Resources:

1. long term in situ and ex situ conservation of the diversity of animal genetic resources in scientifically sound and cost-effective breeding programmes;
2. enhancing attractiveness of animal genetic resources for sustainable animal production systems by means of description, evaluation, documentation and breeding tests;
3. contributing to the conservation and use of agricultural grassland ecosystems and supporting the utilisation of animal genetic resources in nature and landscape protection areas;
4. supporting all actions concerning the conservation of animal genetic resources and establishing a transparent system of competence and responsibilities between the Federal Government and the Laender, NGOs and private sponsors;
5. promoting co-operation at national, European and international level and exploiting the resulting synergies.

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.

According to the successful breeding efforts esp. in high-performing breeds, there is a high international demand for breeding animals and semen from Germany. In this respect, Germany's geneflow is mainly characterized by exports of breeding animals and semen. Importation of breeding animals occurs in limited extent, e.g. for introgression into related locally adapted breeds.

LIVESTOCK SECTOR TRENDS

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

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

Drivers of change	Impact on animal genetic resources and their management over last ten years	Future impact on animal genetic resources and their management (predicted for the next ten years)	Describe the effects on animal genetic resources and their management
Changing demand for livestock products (quantity)	high	high	
Changing demand for livestock products (quality)	low	low	
Changes in marketing infrastructure and access	high	high	
Changes in retailing	low	low	
Changes in international trade in animal products (imports)	high	high	
Changes in international trade in animal products (exports)	high	high	
Climatic changes	medium	medium	
Degradation or improvement of grazing land	medium	medium	
Loss of, or loss of access to, grazing land and other natural resources	high	high	

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
Economic, livelihood or lifestyle factors affecting the popularity of livestock keeping	medium	medium	
Replacement of livestock functions	high	high	
Changing cultural roles of livestock	high	high	
Changes in technology	high	high	
Policy factors	high	high	
Disease epidemics	medium	medium	

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	1
Cattle (specialized beef)	11	20
Cattle (multipurpose)	12	0
Sheep	24	39
Goats	4	21
Pigs	8	3
Chickens	27	87
Horses	40	76
Buffaloes	0	1
Rabbits	58	42
Geese	7	14
Ducks	8	20
Turkeys	3	0
Guinea fowls	0	1

CHARACTERIZATION

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

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

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

Species	Baseline survey of population size	Regular monitoring of population size	Phenotypic characterization	Molecular genetic diversity studies – within breed	Genetic diversity studies based on pedigree	Molecular genetic diversity studies – between breed	Genetic variance component estimation	Molecular genetic evaluation
Cattle (specialized dairy)	4	4	medium	high	medium	high	high	high
Cattle (specialized beef)	15	15	low	high	medium	high	medium	none
Cattle (multipurpose)	12	12	medium	high	medium	high	medium	none
Sheep	63	63	low	low	medium	low	low	none
Goats	25	25	low	low	medium	low	low	none
Pigs	11	11	low	medium	medium	medium	medium	none
Chickens	114	114	medium	medium	medium	medium	medium	none
Horses	116	116	medium	medium	none	none	medium	none
Buffaloes	1	1	none	low	none	none	low	none
Rabbits	100	100	medium	none	none	none	none	none
Geese	21	21	medium	none	none	none	none	none
Ducks	28	28	medium	none	none	none	none	none
Turkeys	3	3	medium	none	none	none	none	none
Guinea fowls	1	1	medium	none	none	none	none	none

INSTITUTIONS AND STAKEHOLDERS

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

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

	Score
Education	medium
Research	high
Knowledge	high
Awareness	medium
Infrastructure	medium
Stakeholder participation	high
Policies	high
Policy implementation	medium
Laws	high
Implementation of laws	medium

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 sufficient training opportunities including university studies in animal production and breeding.
Research	Research on animal production and breeding occurs mainly for high-performing breeds. However, an extension of research activities would be desirable, esp. in the field of onfarm and field research.
Knowledge	The knowledge of the animal producers and breeders in commercial breeding is often very high. However, some farmers have gaps in knowledge about AnGR management, esp. in endangered breeds. A better understanding of the importance of genetic diversity is needed. The knowledge about the situation of the AnGR is gained and published by a monitoring respectively the national database TGRDEU.
Awareness	The awareness on the AnGR management is focused mainly to the economic importance of intensive breeds. The awareness on the need to conserve endangered breeds is lower. The awareness on the AnGR management is focused mainly to the economic importance of intensive breeds. The awareness on the need to conserve endangered breeds is lower, but the situation is getting better in recent year.
Infrastructure	There is a well developed infrastructure for AnGR management, esp. for intensive production systems and breeds. However, there is a need to improve the infrastructure for the conservation and sustainable use of endangered breeds. Constrains are seen in federalism in relation to the foundation of the National gene bank.
Stakeholder participation	There is a wide range of stakeholders. Their participation is well organized.
Policies	Germany has a national programme on AnGR management, which recommends effective measures for the conservation and sustainable use of AnGR.
Policy implementation	Not all recommended measures of the national programme are implemented yet, i. a. because of financial reasons. In situ conservation programmes can be supported by the state.
Laws	The legislation level concerning animal breeding in the EU and consequently in Germany is generally high.

	Description
Implementation of laws	The EU legislation on AnGR is completely implemented. However, some national rules are not implemented yet.

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).

According to the EU-legislation the animal breeders are organized in breeders' associations. Some activities on phenotypic characterization of breeding animals are subsidized. The establishment of a central herd book for sheep and goat breeds was funded by the Federal Office for Agriculture and Food. Furthermore the Federal Office for Agriculture and Food funds projects of the poultry and rabbit breeding organizations to collect inventory data for poultry and rabbit breeds.
Various NGOs collaborate with the breeding associations e. g. to organize animal fares and exhibitions and international meetings.

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	yes	no	no	no

Species	Government	Livestock keepers organized at community level	Breeders' associations or cooperatives	National commercial companies	External commercial companies	Non-governmental organizations	Others
Cattle (specialized beef)	no	no	yes	no	no	no	no
Cattle (multipurpose)	no	no	yes	no	no	no	no
Sheep	no	no	yes	no	no	no	no
Goats	no	no	yes	no	no	no	no
Pigs	no	no	yes	yes	yes	no	no
Chickens	no	no	no	yes	yes	yes	no
Horses	no	no	yes	no	no	no	no
Buffaloes	no	no	yes	no	no	no	no
Rabbits	no	no	no	no	no	yes	no
Geese	no	no	no	yes	yes	yes	no
Ducks	no	no	no	no	yes	yes	no
Turkeys	no	no	no	no	yes	yes	no
Guinea fowls	no	no	no	no	no	yes	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	1	4	1	4	1	4	1	4	1	2	0	4	1	4	1
Cattle (specialized beef)	11	20	11	20	11	20	11	20	11	20	1	0	11	20	11	20
Cattle (multipurpose)	12	0	12	0	12	0	12	0	12	0	2	0	12	0	12	0
Sheep	24	39	24	39	24	39	24	39	24	39	0	0	24	39	24	39
Goats	4	21	4	21	4	21	4	21	4	21	0	0	4	21	4	21
Pigs	8	3	8	3	8	3	8	3	8	3	0	0	8	3	8	3
Chickens	0	0	27	87	0	0	0	0	0	0	0	0	0	0	0	0
Horses	40	76	40	76	0	0	40	76	40	76	0	0	40	76	40	76
Buffaloes	0	1	0	1	0	1	0	1	0	1	0	0	0	1	0	1
Rabbits	0	0	58	42	0	0	0	0	0	0	0	0	0	0	0	0
Geese	0	0	7	14	0	0	0	0	0	0	0	0	0	0	0	0
Ducks	0	0	8	20	0	0	0	0	0	0	0	0	0	0	0	0
Turkeys	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
Guinea fowls	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0

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

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

Species	Breeding method			
	Straight/pure-breeding only		Straight/pure-breeding and cross-breeding	
	Loc	Ex	Loc	Ex
Cattle (specialized dairy)	4	1	0	0
Cattle (specialized beef)	11	20	0	0
Cattle (multipurpose)	12	0	0	0
Sheep	24	39	0	0
Goats	4	21	0	0
Pigs	0	0	8	3
Chickens	0	0	27	87
Horses	40	76	0	0
Buffaloes	0	1	0	0
Rabbits	0	0	58	42
Geese	0	0	7	14
Ducks	0	0	8	20
Turkeys	0	0	3	0
Guinea fowls	0	0	0	1

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

Species	Training	Research
Cattle (specialized dairy)	high	high
Cattle (specialized beef)	high	high
Cattle (multipurpose)	high	high
Sheep	high	medium
Goats	high	medium
Pigs	high	high
Chickens	high	high
Horses	high	medium
Buffaloes	low	low
Rabbits	low	low
Geese	medium	medium
Ducks	medium	medium
Turkeys	medium	medium
Guinea fowls	low	low

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

Species	Organization of livestock keepers
Cattle (specialized dairy)	high

Species	Organization of livestock keepers
Cattle (specialized beef)	high
Cattle (multipurpose)	high
Sheep	high
Goats	high
Pigs	high
Chickens	high
Horses	high
Buffaloes	high
Rabbits	high
Geese	high
Ducks	high
Turkeys	high
Guinea fowls	medium

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

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

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

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

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

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

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

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

Government: The authorities approve breeders' associations according to EU and national animal breeding legislation. Thus they are involved in the breeders' associations' activities. The legal obligation to animal identification occurs for animal breeding and veterinary purposes for some species. The government controls the proper implementation on these obligations. Concerning genetic evaluation some state funded research and studies exist.

Research organizations: The research organizations provide advice to almost all aspects in question. Esp. genetic evaluations are operated by research organizations.

Breeders' associations: The breeders' associations are the main actors to all aspects in question. However they need the service from research organizations for genetic evaluations.

Individual breeders: The individual breeders are the members of the breeders' associations and decide about the associations activities as a group. Thus each individual breeder has a small impact on the associations' decisions. On the other hand they are the owners of the breeding animals and therefore highly involved in animal identification, recordings and the use of AI services.

Commercial companies: Commercial companies are active in pig breeding and dominate the commercial poultry breeding sector. Within their companies they are almost completely responsible for all aspects in questions. However they do no activities in the breeding of certain species. The situation for national and external companies is the same. But in Germany domestic companies are much more active than external companies.

Non-governmental organizations: Non-governmental organizations provide advice to the government in the frame of stakeholder consultations. But they are also in contact with the private breeding sector and highlight the importance to

conserve endangered breeds. Within their engagement for endangered breeds they also initiate genetic evaluation for certain breeds.

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	yes
Horses	yes
Buffaloes	yes
Rabbits	yes
Geese	yes
Ducks	yes
Turkeys	yes
Guinea fowls	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 EU and the national government provide the legal framework for breeding programmes to harmonize the market of breeding animals for these species within the EU. This legal framework makes no difference between locally adapted and exotic breeds. There are restrictive rules for replacement breeding programmes. The legal framework for breeding programmes does not differ between production systems. But the breeders' associations set up breeding goals, which address the needs of the production systems, which are usual for the respective breeds. Furthermore there is a legal frame work to support phenotypic characterization of the breeds, provided a good animal health is considered within the breeding goals. In addition the National Programme on the Conservation and Sustainable use of Animal Genetic Resources recommends certain measures which may influence the breeding programmes and objectives. The support scheme "GAK" facilitates the characterization and recording of cattle, sheep, goats and pigs, provided the breeding programmes consider animal health significantly. The animal welfare act forbids breeding of animals with characteristics that lead to pain, suffer and damages to the animal.

Species	Description of policies or programmes
Cattle (specialized beef)	The EU and the national government provide the legal framework for breeding programmes to harmonize the market of breeding animals for these species within the EU. This legal framework makes no difference between locally adapted and exotic breeds. There are restrictive rules for replacement breeding programmes. The legal framework for breeding programmes does not differ between production systems. But the breeders' associations set up breeding goals, which address the needs of the production systems, which are usual for the respective breeds. Furthermore there is a legal frame work to support phenotypic characterization of the breeds, provided a good animal health is considered within the breeding goals. In addition the National Programme on the Conservation and Sustainable use of Animal Genetic Resources recommends certain measures which may influence the breeding programmes and objectives. The support scheme "GAK" facilitates the characterization and recording of cattle, sheep, goats and pigs, provided the breeding programmes consider animal health significantly. The animal welfare act forbids breeding of animals with characteristics that lead to pain, suffer and damages to the animal.
Cattle (multipurpose)	The EU and the national government provide the legal framework for breeding programmes to harmonize the market of breeding animals for these species within the EU. This legal framework makes no difference between locally adapted and exotic breeds. There are restrictive rules for replacement breeding programmes. The legal framework for breeding programmes does not differ between production systems. But the breeders' associations set up breeding goals, which address the needs of the production systems, which are usual for the respective breeds. Furthermore there is a legal frame work to support phenotypic characterization of the breeds, provided a good animal health is considered within the breeding goals. In addition the National Programme on the Conservation and Sustainable use of Animal Genetic Resources recommends certain measures which may influence the breeding programmes and objectives. The support scheme "GAK" facilitates the characterization and recording of cattle, sheep, goats and pigs, provided the breeding programmes consider animal health significantly. The animal welfare act forbids breeding of animals with characteristics that lead to pain, suffer and damages to the animal.
Sheep	The EU and the national government provide the legal framework for breeding programmes to harmonize the market of breeding animals for these species within the EU. This legal framework makes no difference between locally adapted and exotic breeds. There are restrictive rules for replacement breeding programmes. The legal framework for breeding programmes does not differ between production systems. But the breeders' associations set up breeding goals, which address the needs of the production systems, which are usual for the respective breeds. Furthermore there is a legal frame work to support phenotypic characterization of the breeds, provided a good animal health is considered within the breeding goals. In addition the National Programme on the Conservation and Sustainable use of Animal Genetic Resources recommends certain measures which may influence the breeding programmes and objectives. The support scheme "GAK" facilitates the characterization and recording of cattle, sheep, goats and pigs, provided the breeding programmes consider animal health significantly. The animal welfare act forbids breeding of animals with characteristics that lead to pain, suffer and damages to the animal.

Species	Description of policies or programmes
Goats	The EU and the national government provide the legal framework for breeding programmes to harmonize the market of breeding animals for these species within the EU. This legal framework makes no difference between locally adapted and exotic breeds. There are restrictive rules for replacement breeding programmes. The legal framework for breeding programmes does not differ between production systems. But the breeders' associations set up breeding goals, which address the needs of the production systems, which are usual for the respective breeds. Furthermore there is a legal frame work to support phenotypic characterization of the breeds, provided a good animal health is considered within the breeding goals. In addition the National Programme on the Conservation and Sustainable use of Animal Genetic Resources recommends certain measures which may influence the breeding programmes and objectives. The support scheme "GAK" facilitates the characterization and recording of cattle, sheep, goats and pigs, provided the breeding programmes consider animal health significantly. The animal welfare act forbids breeding of animals with characteristics that lead to pain, suffer and damages to the animal.
Pigs	The EU and the national government provide the legal framework for breeding programmes to harmonize the market of breeding animals for these species within the EU. This legal framework makes no difference between locally adapted and exotic breeds. There are restrictive rules for replacement breeding programmes. The legal framework for breeding programmes does not differ between production systems. But the breeders' associations set up breeding goals, which address the needs of the production systems, which are usual for the respective breeds. Furthermore there is a legal frame work to support phenotypic characterization of the breeds, provided a good animal health is considered within the breeding goals. In addition the National Programme on the Conservation and Sustainable use of Animal Genetic Resources recommends certain measures which may influence the breeding programmes and objectives. The support scheme "GAK" facilitates the characterization and recording of cattle, sheep, goats and pigs, provided the breeding programmes consider animal health significantly. The animal welfare act forbids breeding of animals with characteristics that lead to pain, suffer and damages to the animal.
Chickens	The National Programme on the Conservation and Sustainable use of Animal Genetic Resources recommends certain measures which may influence the breeding programmes and objectives. The animal welfare act forbids breeding of animals with characteristics that lead to pain, suffer and damages to the animal.
Horses	The EU and the national government provide the legal framework for breeding programmes to harmonize the market of breeding animals for these species within the EU. This legal framework makes no difference between locally adapted and exotic breeds. There are restrictive rules for replacement breeding programmes. The legal framework for breeding programmes does not differ between production systems. But the breeders' associations set up breeding goals, which address the needs of the production systems, which are usual for the respective breeds. Furthermore there is a legal frame work to support phenotypic characterization of the breeds, provided a good animal health is considered within the breeding goals. In addition the National Programme on the Conservation and Sustainable use of Animal Genetic Resources recommends certain measures which may influence the breeding programmes and objectives. The animal welfare act forbids breeding of animals with characteristics that lead to pain, suffer and damages to the animal.

Species	Description of policies or programmes
Buffaloes	The EU and the national government provide the legal framework for breeding programmes to harmonize the market of breeding animals for these species within the EU. This legal framework makes no difference between locally adapted and exotic breeds. There are restrictive rules for replacement breeding programmes. The legal framework for breeding programmes does not differ between production systems. But the breeders' associations set up breeding goals, which address the needs of the production systems, which are usual for the respective breeds. Furthermore there is a legal frame work to support phenotypic characterization of the breeds, provided a good animal health is considered within the breeding goals. The animal welfare act forbids breeding of animals with characteristics that lead to pain, suffer and damages to the animal.
Rabbits	The National Programme on the Conservation and Sustainable use of Animal Genetic Resources recommends certain measures which may influence the breeding programmes and objectives. The animal welfare act forbids breeding of animals with characteristics that lead to pain, suffer and damages to the animal.
Geese	The National Programme on the Conservation and Sustainable use of Animal Genetic Resources recommends certain measures which may influence the breeding programmes and objectives. The animal welfare act forbids breeding of animals with characteristics that lead to pain, suffer and damages to the animal.
Ducks	The National Programme on the Conservation and Sustainable use of Animal Genetic Resources recommends certain measures which may influence the breeding programmes and objectives. The animal welfare act forbids breeding of animals with characteristics that lead to pain, suffer and damages to the animal.
Turkeys	The National Programme on the Conservation and Sustainable use of Animal Genetic Resources recommends certain measures which may influence the breeding programmes and objectives. The animal welfare act forbids breeding of animals with characteristics that lead to pain, suffer and damages to the animal.
Guinea fowls	The animal welfare act forbids breeding of animals with characteristics that lead to pain, suffer and damages to the animal.

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

Species	Description of consequences
Cattle (specialized dairy)	The market of breeding animals is harmonized within Germany and the EU. The breeders set up their breeding programmes aimed at the breeders' requirements.
Cattle (specialized beef)	The market of breeding animals is harmonized within Germany and the EU. The breeders set up their breeding programmes aimed at the breeders' requirements. These breeding programmes must be recognized by the state and are therefore under public control.
Cattle (multipurpose)	The market of breeding animals is harmonized within Germany and the EU. The breeders set up their breeding programmes aimed at the breeders' requirements. These breeding programmes must be recognized by the state and are therefore under public control.
Sheep	The market of breeding animals is harmonized within Germany and the EU. The breeders set up their breeding programmes aimed at the breeders' requirements. These breeding programmes must be recognized by the state and are therefore under public control.

Species	Description of consequences
Goats	The market of breeding animals is harmonized within Germany and the EU. The breeders set up their breeding programmes aimed at the breeders' requirements. These breeding programmes must be recognized by the state and are therefore under public control.
Pigs	The market of breeding animals is harmonized within Germany and the EU. The breeders set up their breeding programmes aimed at the breeders' requirements. These breeding programmes must be recognized by the state and are therefore under public control. However private companies which do not participate to a state recognised breeding programme become increasingly important. Their genetics are exclusively private owned and managed without any public control.
Chickens	The genetics for commercial agriculture are provided exclusively by private companies which do not participate to a state recognised breeding programme. These genetics are exclusively private owned and managed without any public control. Traditional breeds are managed by hobby breeders.
Horses	The market of breeding animals is harmonized within Germany and the EU. The breeders set up their breeding programmes aimed at the breeders' requirements. These breeding programmes must be recognized by the state and are therefore under public control.
Buffaloes	The market of breeding animals is harmonized within Germany and the EU. The breeders set up their breeding programmes aimed at the breeders' requirements. These breeding programmes must be recognized by the state and are therefore under public control.
Rabbits	Traditional breeds are managed by hobby breeders.
Geese	The genetics for commercial agriculture are provided exclusively by private companies which do not participate to a state recognised breeding programme. These genetics are exclusively private owned and managed without any public control. Traditional breeds are managed by hobby breeders.
Ducks	The genetics for commercial agriculture are provided exclusively by private companies which do not participate to a state recognised breeding programme. These genetics are exclusively private owned and managed without any public control. Traditional breeds are managed by hobby breeders.
Turkeys	The genetics for commercial agriculture are provided exclusively by private companies which do not participate to a state recognised breeding programme. These genetics are exclusively private owned and managed without any public control. Traditional breeds are managed by hobby breeders.
Guinea fowls	Traditional breeds are managed by hobby breeders.

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.

For endangered breeds specifically conservation breeding programmes are needed. The constraints to implement this kind of breeding programme are difficulties in the collaboration of the concerned breeders' associations, the additional costs caused by the coordination of such breeding programmes and the low interest because of the lack of short term economic advantages of conservation breeding programmes.

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)	A future objective is the implementation of conservation breeding programmes for endangered breeds.
Cattle (specialized beef)	A future objective is the implementation of conservation breeding programmes for endangered breeds.

Species	Description of future objectives, priorities and plans
Cattle (multipurpose)	A future objective is the implementation of conservation breeding programmes for endangered breeds.
Sheep	A future objective is the implementation of conservation breeding programmes for endangered breeds and the further development of a central herdbook keeping.
Goats	A future objective is the implementation of conservation breeding programmes for endangered breeds and the further development of a central herdbook keeping.
Pigs	A future objective is the implementation of conservation breeding programmes for endangered breeds.
Chickens	A future objective is the implementation of conservation breeding programmes for endangered breeds.
Horses	A future objective is the implementation of conservation breeding programmes for endangered breeds.
Buffaloes	There no plans known.
Rabbits	A future objective is the implementation of conservation breeding programmes for endangered breeds.
Geese	A future objective is the implementation of conservation breeding programmes for endangered breeds.
Ducks	A future objective is the implementation of conservation breeding programmes for endangered breeds.
Turkeys	A future objective is the implementation of conservation breeding programmes for endangered breeds.
Guinea fowls	There no plans known.

CONSERVATION

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

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

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

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

Species	In situ conservation	Ex situ in vivo conservation	Ex situ in vitro conservation
Cattle (specialized dairy)	n/a	n/a	n/a
Cattle (specialized beef)	medium	low	low
Cattle (multipurpose)	medium	low	low
Sheep	medium	low	low
Goats	medium	low	low
Pigs	medium	low	low
Chickens	low	low	low
Horses	medium	none	low

Species	In situ conservation	Ex situ in vivo conservation	Ex situ in vitro conservation
Buffaloes	none	none	none
Rabbits	none	low	none
Geese	low	low	none
Ducks	none	low	none
Turkeys	none	low	none
Guinea fowls	none	none	none

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

- (•) yes
- ( ) no

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

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

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

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

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

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

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

There are several animal products with geographical or other indications of origin. The EU supports these kinds of market differentiation by the state labels “protected destination of origin”, “protected geographical indication” and “traditional specialty guaranteed”. In horse breeding the geographical indication of certain breeds is traditional practice.
For a lot of breeds there are lots of coordinated conservation activities of the breeders. NGOs support private activities and established "ark farms".
The breeders get subsidies for keeping breeding animals of certain endangered breeds.
The breeding organizations and the state spend awards for the most successful breeders (measured on the breeding goals).
Conservation breeding programmes, according to the scientific definition, are not implemented yet.
For endangered breeds an increasing productivity is often an important part of the breeding programmes. However, the increase of productivity of endangered breeds occurs on a lower level than for modern breeds.
A few breeds are very close connected to a certain landscape and look very special. These breeds are often part of

touristic concepts of the concerned landscapes.
To protect and manage less productive grassland areas e. g. in Biosphere reserves the pasturing of these areas is often subsidized by the government. Generally extensive breeds, incl. endangered breeds, are used.
There are a few cultural activities related to AnGR.
The government and its research institutes provide scientific advice to the breeders to improve the breeding management of at-risk breeds.
The public sector and the private sector do a couple of activities (brochures, events, video clips) to inform about the potential of at-risk breeds.
Museums, zoos and others bred endangered breeds, too.

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.

A concept for a German Genebank for AnGR is in developing. The genebank is planned as a genebank network of several partners. The partners are the federal government and the “Bundesländer”, but also private organizations may join the network. Currently the federal government and the “Bundesländer” are in the process to ratify the respective agreement. The objectives of the genebank are:
1. Long-term conservation and storage of genetic material of all local breeds for breeding purposes.
2. Provision of the genetic material for conservation breeding programmes.
3. Provision of the genetic material for research purposes.
4. International exchange of genetic material.
In a first step semen of 25 sires per endangered local breed shall be collected for the genebank.

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	
Embryos	
Oocytes	
Somatic cells (tissue or cultured cells)	
Isolated DNA	

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

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

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

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.

Germany participate in the development of an European Genebank Network
(see http://www.rfp-europe.org/index.php?id=621 and http://www.rfp-europe.org/index.php?id=600).

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 stock of the sheep breed Skudde stabilized because of subsidies for the breeding animals of this breed. Today the breed consists of approximately 3.000 dams and 300 sires. Therefore the Skudde is no longer classified as endangered.

REPRODUCTIVE AND MOLECULAR BIOTECHNOLOGIES

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

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

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

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

Biotechnologies are used for economically important species. There are several legal restriction for the use of biotechnical methods.

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

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.

Most activities are driven by commercial reasons, but less for breeding programmes of endangered breeds.

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	yes	yes
In vitro fertilization	yes	yes
Cloning	yes	yes
Genetic modification	yes	yes
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	yes
Research on adaptedness based on molecular genetic or genomic information	yes	yes

30.1. Please briefly describe the research.

The listed methods are used and investigated by universities, state research institutes, breeding companies and AI centers. Some of these methods are already well established and facilitate the livestock sector and the international exchange of AnGR. Some methods must be improved to get economical relevance. Cloning is exclusively used for research purposes.

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

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

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

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	n/a	low	n/a	n/a
Artificial insemination using nationally produced semen from exotic breeds	low	n/a	low	n/a	n/a
Artificial insemination using imported semen from exotic breeds	low	n/a	low	n/a	n/a
Natural mating	high	n/a	high	n/a	n/a

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	n/a	n/a	high	high	n/a
Artificial insemination using nationally produced semen from exotic breeds	n/a	n/a	low	low	n/a
Artificial insemination using imported semen from exotic breeds	n/a	n/a	low	low	n/a
Natural mating	n/a	n/a	low	low	n/a

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	n/a	none	none	n/a	n/a
Artificial insemination using nationally produced semen from exotic breeds	n/a	none	none	n/a	n/a
Artificial insemination using imported semen from exotic breeds	n/a	none	none	n/a	n/a
Natural mating	n/a	high	high	n/a	n/a

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	n/a	n/a	low	n/a	n/a
Artificial insemination using nationally produced semen from exotic breeds	n/a	n/a	low	n/a	n/a
Artificial insemination using imported semen from exotic breeds	n/a	n/a	low	n/a	n/a
Natural mating	n/a	n/a	high	n/a	n/a

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	n/a	n/a	high	high	n/a
Artificial insemination using nationally produced semen from exotic breeds	n/a	n/a	low	n/a	n/a
Artificial insemination using imported semen from exotic breeds	n/a	n/a	low	n/a	n/a
Natural mating	n/a	n/a	low	low	n/a

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	n/a	n/a	low	n/a	n/a
Artificial insemination using nationally produced semen from exotic breeds	n/a	n/a	medium	n/a	n/a
Artificial insemination using imported semen from exotic breeds	n/a	n/a	medium	n/a	n/a
Natural mating	n/a	n/a	medium	n/a	n/a

Chickens	Ranching or similar grassland -based production systems	Pastoralist systems	Mixed farming systems (rural areas)	Industrial systems	Small-scale urban or peri-urban systems
Artificial insemination using semen from locally adapted breeds	n/a	n/a	none	high	none
Artificial insemination using nationally produced semen from exotic breeds	n/a	n/a	none	low	none
Artificial insemination using imported semen from exotic breeds	n/a	n/a	none	high	none
Natural mating	n/a	n/a	none	low	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 use of reproductive and molecular biotechnologies relates to the economicaly importance of the species/breed. The

more important a species/breed is the more intensive biotechnologies are used for their breeding.

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	
Collaboration in the characterization, surveying or monitoring of genetic resources, production environments or ecosystems	limited	
Collaboration related to genetic improvement	limited	AnGR management is integrated into national Agro-Biodiversity strategy and national rural development policy.
Collaboration related to product development and/or marketing	limited	The monitoring of AnGR is also incorporated into the assessment of the overall biological diversity.
Collaboration in conservation strategies, programmes or projects	limited	The National Programme on Conservation and Sustainable Use of Animal Genetic Resources and the Advisory Committee for Animal Genetic Resources are integrated and connected to the National Strategy for Agribiodiversity and the Scientific Advisory Board on Biodiversity and Genetic Resources for Food and Agriculture.
Collaboration in awareness-raising on the roles and values of genetic resources	limited	In cases where a breed is close connected to the management of a certain landscape (e. g. heath land) the animal breeders collaborate effectively with other sectors of biological diversity in the field of marketing (animal products, tourism).
Training activities and/or educational curricula that address genetic resources in an integrated manner	limited	Some universities offer special lectures on "agricultural biodiversity".
Collaboration in the mobilization of resources for the management of genetic resources	limited	The Information and Coordination Centre for Biological Diversity (IBV) of the Federal Office for Agriculture and Food (BLE) is dealing with all aspects of agro biodiversity and is engaged in mobilization of resources for the management of genetic resources.

2. Please describe any other types of collaboration.

Further collaborations exists on agricultural fares and exhibitions and farm festivals.

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

An intensification of the collaboration among the sectors (e. g. in marketing) could create synergy effect and facilitate the

awareness raising for genetic resources for food and agriculture.

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

Generally common interests and goals are facilitating the collaboration between the different sectors of biological diversity. The main constraints is the partly disconnection of the sectors in the training and the education (completely different lessons for animal breeding, plant breeding, forestry, aquatic resources management and environmental protection) and consequently in the remaining separation in animal, plant, forest, plant and environmental protection sectors.

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

The common goals to protect agro biodiversity must become more visible to the single sectors. This could be facilitated by supplying more interdisciplinary lesson in agricultural training and education.

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.

Several legal and promoting activities for the reduction of environmental problems caused by animal production occur. But they are not part of the AnGR management policy. If such activities shall be implemented into the AnGR management policy, it must be proved before, how the AnGR management can reduce 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.

There are no appropriate examples known.

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.

If the AnGR management shall play an effective role in environmental protection measures, research is needed to show how the AnGR management could do that.

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.

In the frame work for the rural development of the EU agri-environmental measures and corresponding support schemes are addressed. This includes the support for endangered breeds and the management of grassland areas by traditional pasturing methods.

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:

The National Programme on Conservation and Sustainable use of AnGR includes the building of an inventory of AnGR. The National Programme was adopted in the year 2003.

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:

Breeding organizations hold livestock data (description, history etc.) for more than 100 years. Performance data have been collected in testing stations for more than 50 years. Breeding standards are also recorded and images are available for poultry breeds.

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:

Many research projects were undertaken for high-performing breeds. However for endangered breeds such research activities are still pending. In case of chicken the FLI was an active part of the project Aviandiv, Synbreed, where chicken genome was characterized.

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:

Baseline surveys, respectively the implementation of a monitoring, have been undertaken for cattle, pigs, sheep, goats, poultry and rabbits.

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:

The responsibilities are established by the German Animal Breeding Act in the year 2006. The monitoring is undertaken by the Federal Office for Agriculture and Food.

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:

The Federal Office for Agriculture and Food undertakes a census based monitoring for horses, cattle, buffalos, pigs,

sheep and goats since before the adoption of the GPA.

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:

The Federal Office for Agriculture and Food undertakes an annually monitoring for horses, cattle, buffalos, pigs, sheep and goats since before the adoption of the GPA.

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:

see http://tgrdeu.genres.de/default/gefaehrdung/index/?lang=en

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:

For breeds at risk several activities are recommended. However, each of these activities must be decided by the concerned bodies first, before they can be implemented. There is no automatic action cascade related to the risk status of a breed.

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:

For long time this has been a major part of animal breeding research at universities and state research institutes (e. g. FLi) as well as the development of performance data evaluation, estimation of breeding value and variance components.

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

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

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

The main obstacle is that the method to estimate the endangermend of breeds is not clear, yet. Furthermore the networking of the research institutes could be improved.

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

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

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

In addition to the national activities Germany is also engaged in international cooperation in the frame of FAO (CGRFA ITWG on AnGR), ERFP (http://www.rfp-europe.org/) and EAAP. This includes activities related to DAD-IS/EFABIS.

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:

This is addressed in the National Programme on Conservation and Sustainable Use of Animal Genetic Resources (see http://www.genres.de/en/domestic-and-farm-animals/framework/).

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

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

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

Please provide further details:

The AnGR management policy does not address the integration of agro-ecosystem approaches.

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 legal framework for breeding programmes (and their revisions) for the species cattle, buffaloes, equids, pigs, sheep and goats is provided by the German Animal Breeding Act from the year 2006. All other species (e. g. poultry and rabbits) are not concerned by the animal breeding legislation.

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:

The situation differs between the breeds. For some breeds the breeding targets address also the long-term sustainable use. But mainly the breeding targets address **current** economical conditions and are therefore more or less part of short-term breeding strategies.

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:

Because animal breeding is an economic activity the most breeding programmes address the improvement of economy of animal production under **current** conditions. To enhance sustainability in the breeding programmes long-term strategies must be considered in the breeding programmes. This could be facilitated by setting up economic incentives for long-term breeding targets in the breeding programmes.

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

Glossary:

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

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

f. No

Please provide further details:

Exotic breeds are being used in Germany. They are in competition to local (and in most cases endangered) breeds. But an assessment on the long-term impact of the exotic breeds in Germany has not been undertaken until now.

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:

Such structures are established in the frame work of the Animal Breeding Act for cattle, buffaloes, equids, pigs, sheep and goats, but not for poultry and rabbits.

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:

There is some interaction between the scientific community and the animal breeders. E. g. the successful breeding of different horse and cattle breeds and pig and poultry lines is a result of these interactions. Furthermore the German Society for Animal Production and the Advisory Council for Animal Genetic Resources facilitate these interactions.

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:

A lot of information is provided in the German inventory of AnGR since before the adoption of the GPA http://tgrdeu.genres.de/index/index.

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

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

Please provide further details:

Access and benefit sharing in Germany is ruled on a low level by animal breeding-, civil-, trade- and patent law.

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

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

Please provide further details:

The federal government and the “Bundesländer” support the phenotypic characterization of breeding animals of some breeds. Also technical support is provided in some “Bundesländer” e. g. by cryoconservation services.

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:

Priorities are the establishment of a German Genebank for AnGR, the implementation of conservation breeding programmes and the development of sustainable marketing concepts for rare breeds.

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:

Most of these activities are private initiatives. In some cases traditional production systems benefit from the support of local endangered breeds, too.

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:

In Germany the EU - labels PDI and PGI (http://ec.europa.eu/agriculture/quality/schemes/index_en.htm) are used to facilitate the marketing of native breeds.

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

To enhance sustainability long-term strategies must be more considered in the breeding programmes. This could be facilitated by setting up economic incentives for long-term breeding targets in the breeding programmes.

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.

see National Programme on Conservation and Sustainable Use of AnGR, http://www.genres.de/en/domestic-and-farm-animals/framework/; In addition to the national activities, Germany is also engaged in international cooperation in the frame of FAO (CGRFA ITWG on AnGR), ERFP (http://www.rfp-europe.org/) and EAAP.

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:

No regularly assessment is undertaken.

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 factor is the lower competitiveness of some locally adapted breeds compared to a small number of high-performing breeds. Because of economic advantages the breeders and livestock keepers prefer to use the modern breeds. Therefore the demand for (and the stock of) less competitive breeds declines.
Even within the breeds the genetic variation may be endangered. For example in dairy cattle there is huge demand to only a few very competitive bulls. Bulls with lower competitiveness are less used. This may lead to an erosion of gentic variance within breeds and must be considered, too.
More information about the situation for the single species and breeds can be found at http://tgrdeu.genres.de/hausundnutztiere/index.

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:

See http://www.genres.de/en/domestic-and-farm-animals/framework/

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:

The National Programme on Conservation and Sustainable Use of AnGR is regularly reviewed.

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:

Livestock keepers can receive subsidies for breeding animals of certain endangered breeds.

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:

Information on ex situ conservation can be found at http://tgrdeu.genres.de/default/erhaltungundnachhaltigenutzung/index/?lang=en and http://www.g-e-h.de/geh/index.php (in German only). Furthermore some state research institutes keep herds of endangered breeds as ex situ in vivo conservation measure , e. g. the FLI (http://www.fli.bund.de/en/startseite/institutes/institute-of-farm-animal-genetics.html)

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:

One obstacle is the difficult coordination of conservation measures among the Federal Government and the "Bundesländer". Because of the shared responsibilities in animal breeding and the therewith connected division of financial responsibilities the implementation of support schemes is difficult.

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

- ◉ a. Yes
- ○ b. No

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

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

Please provide further details:

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

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

Please provide further details:

Currently the Advisory Council for Animal Genetic Resources is developing a concept to protect rare breeds against animal diseases (incl. possible veterinary actions in case of outbrakes of animal diseases) in accordance with the existing veterinary law.

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

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

Please provide further details:

The National Programme on Conservation and Sustainable Use of AnGR address' the recovery of breeds after disasters with cryoconserved material from the German Genebank for AnGR. Because this genebank is not founded yet, the recovery arrangement is currently not implemented.

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

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

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

This has always been part of research programmes of universities and state research institutes in cooperation with the breeding practice. Some examples are the development of a concept for the national gene bank, management of small population in chicken, maintain the institute's herd of Old German Black and White Cattle, collection and of storing more than 100,000 portions of semen. Protocols for cryo conservation of germ cells of various species have been developed and improved. Quantitative genetics and molecular genetic research is ongoing.

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

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

- ○ e. No

Please provide further details:

The documentation and dissemination of knowledge, technologies and best practices for conservation of AnGR is part of the training and the academic education. But there is no special programme implemented.

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

1. Establishment of the German Genebank for AnGR.
2. Set up an action plan for a better protection of irrecoverable AnGR in case of epizootic disease outbreaks.
3. Implementation of conservation breeding programmes for endangered breeds.
4. Improvement of the support schemes for endangered breeds.
5. Development of sustainable marketing concepts for endangered breeds.

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.

In addition to the national activities Germany is also engaged in international cooperation in the frame of FAO (CGRFA ITWG on AnGR), ERFP (http://www.rfp-europe.org/), EAAP, EFABIS-Net and GLOBAL-DIV. Substantial contributions were delivered to conservation concepts, data bases, including the information network.

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:

The institutional capacity is sufficient. Beside the BMEL there are various institutions and universities which support the livestock sector.

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:

See http://www.genres.de/en/domestic-and-farm-animals/framework/.

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:

See http://www.genres.de/en/agrobiodiversity/

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:

One element of the livestock policy is the German Animal Breeding Act, which address' AnGR
(see http://www.gesetze-im-internet.de/tierzg_2006/; in German only).

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

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

Please provide further details:

See http://tgrdeu.genres.de/hausundnutztiere/index.

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:

The update of the data in DAD-IS is undertaken annually, with the exception for poultry and rabbits, which have been updated in a multi-year interval.

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:

The Advisory Committee for AnGR gives advice and recommendations to the federal government and the "Bundesländer" for all questions concerning the conservation and sustainable use of AnGR (see http://beirat-tgr.genres.de/, in German only).

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

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

Please provide further details:

The National Focal Point is provided by the Information and Coordination Centre for Biological Diversity of the Federal Office for Agriculture and Food, which is in interaction with the stakeholders in the AnGR sector.

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:

see http://www.genres.de/en/domestic-and-farm-animals/ and http://www.genres.de/en/infos-fuer-verbraucher/ (in German only).

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

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

Please provide further details:

The legal framework is the German Animal Breeding Act (see http://www.gesetze-im-internet.de/tierzg_2006/, in German only.

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

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

Please provide further details:

Training and technology transfer related to inventory, characterization, monitoring, sustainable use, development and conservation of AnGR (e. g. specific moduls in universitary agricultural education) occur.

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:

Organizations for sustainable use, breeding and conservation of AnGR exist since decades (GEH for various breeds since 1981, further societies respectiovely one certain breed).

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:

Animal Breeders Federation (Arbeitsgemeinschaft Deutscher Tierzüchter, ADT, http://www.adt.de/home_gb.html); Association for the Conservation of Old and Endangered Breeds (Gesellschaft für die Erhaltung alter und gefährdeter Haustierrassen, GEH, http://www.g-e-h.de/geh/index.php/home, in German only); German Society for Animal Production (Deutsche Gesellschaft für Züchtungskunde, DGfZ, http://www.dgfz-bonn.de/home_gb.html); Federation of German Poultry Breeders (Bund Deutscher Rassegeflügelzüchter, BDRG, http://www.bdrg.de/, in German only); Association of German Rabbit Breeders (Zentralverband Deutscher Rasse-Kaninchenzüchter, ZDRK, http://www.zdrk.de/, in German only).

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:

In addition to the Federal research institute “Friedrich Loeffler Institute” (http://www.fli.bund.de/en/startseite/institutes/institute-of-farm-animal-genetics.html) some universities, state research institutes are also engaged in the field of AnGR.

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.

The BMEL is responsible for AnGR at ministry level. In addition to the national activities Germany is also engaged in international cooperation in the frame of FAO (CGRFA ITWG on AnGR), ERFP (http://www.rfp-europe.org/) and EAAP.

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:

PhD students from several countries were hosted at at several institutions and recieved laboratory training. The DAAD facilitates the international exchange of young scientists.

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:

Non German breeding associations are listed under http://tgrdeu.genres.de/veroeffentlichungvoninformationengemaesstierzuchtrecht/zuechtervereinigungen/part/ZchtervereinigungundZuchtunternehmenmitSitzauerhalbDeutschlands.
The national NGO GEH is the German member of the international NGO SAVE.

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:

The Federal Ministry of Food and Agriculture provided substantial funds for the FAO.

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:

ERFP (incl. Germany) is undertaking several actions to improve the documentation of AnGR in all European Countries in EFABIS/DAD-IS (see http://www.rfp-europe.org/index.php?id=598 and http://www.rfp-europe.org/index.php?id=618)

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:

Germany provided funding for the FAO projects GCP-GLO-287-MUL, GCP-INT-112-GER and GCP-INT-116-GER. Furthermore Germany supports with its ERFP contributions and by providing the ERFP Secretariat in the period 2010 - 2014 several ERFP activities for the implementation of the GPA in European countries.

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

- (●) a. Yes
- ( ) b. No, but action is planned and funding identified

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

Please provide further details:

ERFP (incl. Germany) is undertaking several actions to improve the documentation of AnGR, incl. transboundary breeds, in EFABIS/DAD-IS in all European countries (see http://www.rfp-europe.org/index.php?id=598 and http://www.rfp-europe.org/index.php?id=618).

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

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

Please provide further details:

ERFP (incl. Germany) is undertaking several actions to improve the documentation of AnGR in all European Countries in EFABIS/DAD-IS (see http://www.rfp-europe.org/index.php?id=598
and http://www.rfp-europe.org/index.php?id=618).
Furthermore the German Friedrich Loeffler Institute developed the software Cryoweb, which is becoming increasingly important for the information exchange on cryoconserved genetic material of AnGR on the European level.

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

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

Please provide further details:

ERFP (incl. Germany) is undertaking several actions to improve the documentation of AnGR in all European countries in EFABIS/DAD-IS (see http://www.rfp-europe.org/index.php?id=598 and http://www.rfp-europe.org/index.php?id=618).

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

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

Please provide further details:

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

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

Please provide further details:

ERFP (incl. Germany) is currently preparing a European Genebank Network. (see http://www.rfp-europe.org/index.php?id=597 and http://www.rfp-europe.org/index.php?id=621).

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:

ERFP (incl. Germany) is currently preparing a European Genebank Network. (see http://www.rfp-europe.org/index.php?id=597 and http://www.rfp-europe.org/index.php?id=621). This includes the preparation of an MTA approach for the European Genebank Network. This MTA approach address' *inter alia* ABS requirements. (see http://www.rfp-europe.org/index.php?id=604).

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:

ERFP (incl. Germany) is doing some activities to raise the awareness of the status of AnGR (see http://www.rfp-europe.org/index.php?id=565).

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:

As a member of the EU Germany is involved in setting up the regulatory frameworks relevant to AnGR in the EU.

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

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