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: China

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).

1. Main trends:
From 2006 onwards, China has enacted the *Animal Husbandry Law of the People's Republic of China* (hereinafter referred to as "*Animal Husbandry Law*") and introduced ten supporting regulations, including *Measures for the Examination of Animal Genetic Resources for Entry and Exit and International Cooperative Study* and *Measures for the Management of the Conservation Farms and Gene Bank of Animal Genetic Resources*. It is an important milestone in the legal conservation of animal genetic resources. *Animal Husbandry Law* lays a solid legal foundation for the comprehensive conservation and management of animal genetic resources by clearly stipulating the national conservation system that includes conservation funds in the fiscal budget and the inter-ministerial conference system for the conservation of biological species resources including animal genetic resources. In 2007, the National Commission on Animal Genetic Resources was set up to take charge of the identification and evaluation of animal genetic resources, examination of new varieties and supporting series, and conservation and utilization planning argumentation. Research institutions specializing in the conservation and utilization of animal genetic resources also sprang up in Anhui and Liaoning.

Drivers:
1. The sustainable development of animal husbandry necessitates animal genetic resources. From central to local levels, the conservation of animal genetic resources is considered as an important component of modern animal breeding industry, so the policy support has intensified and capital investment increased significantly. Classified into seed innovation, seed engineering, scientific and technological research, industrial development, the exploration, evaluation, preservation and exploitation of animal genetic resources are all covered in the range of support.
2. Meeting the diverse and quality market needs necessitates conservation of animal genetic resources. As the material and spiritual demand diversifies with the fast economic development and the improvement of people's living standards, the quality demand of animal products is growing. Local animal breeds that feature fresh meat and unique flavor are favored by consumers, stimulating demand and giving rise to a number of local brands of "free-range pork" and "free-range chicken eggs". Moreover, local healthy and medicated animal products also receive greater

popularity, while animal species for entertainment and athletic purposes enrich the spiritual life as pets. The diverse needs create a favorable atmosphere, but also higher requirements for better conservation of animal genetic resources.

2. Strengths, weaknesses and deficiencies in the management of animal genetic resources:

1. Strengths: In accordance with the principle of "hierarchical management and priority protection", Ministry of Agriculture (MOA) revised and released the *Directory of Animal Genetic Resources under Protection* to highlight the protection of 138 precious, rare and endangered animal breeds. Accordingly, the lists of animal genetic resources specific to provinces (autonomous regions and municipalities) are also announced. Ever since the 11th Five-Year Plan was introduced, MOA has implemented sound breeding program and genetic resource protection projects and invested more than RMB 500 million in a number of key conservation farms, reserves and gene banks. From 2006 onwards, MOA has identified 109 conservation farms, 22 reserves and 6 gene banks in two batches at the state level, while province-level facilities are in place in Jiangsu and Fujian among provinces (autonomous regions and municipalities). In this way, an initial conservation system based on conservation farms and supplemented by gene banks has taken shape and helps to rescue a number of endangered animal species and preserve a lot of valuable breeding materials. Now, gene banks also play the due role in strategic reserves, rejuvenating the varieties and enriching the breeds by returning the genetic materials of Yanbian cattle, Luxi cattle, and Xinjiang black bees to place of origin. Innovation in the management and conservation mechanism, manifested in the formation of cooperative groups or cooperatives for animal breeding conservation, changes the resource conservation pattern dominated by state-owned enterprises to one dominated by private enterprises.

2. Weaknesses and deficiencies: Technological innovation lags behind; the theories and methods for animal conservation need to further improve; scientific and effective conservation methods for bees and other waterfowl breeds are to explore; the comprehensive and objective evaluation of the characteristics of animal genetic resources remain absent. These hinder the sustained and healthy development of China's animal husbandry to a certain extent.

3. Main constraints and challenges to animal genetic resources management:

1. The living environment of some animal genetic resources changes. Thousands of families in rural areas have quit animal rearing, while free-range animals are mostly local varieties. The accelerated withdrawal of backyard farmers will inevitably lead to reduction or even extinction of local genetic resources.
2. The conservation system is far from perfect. Although 150 state-level conservation farms, reserves and gene banks have been set up, there are no such facilities for over 30 species listed in the protection list. Backward infrastructure in most conservation units undermines the conservation effect. In addition, an scientific and effective supervision and management mechanism has not yet formed between the Government and enterprises for nonprofit conservation and commercial conservation.
3. Technological innovation lags behind. Animal conservation theories and methods require further improvement; scientific and effective conservation methods for bees and other waterfowl breeds remain to explore; the comprehensive and objective evaluation of the characteristics of animal genetic resources remain absent. These hinder the sustained and healthy development of China's animal husbandry to a certain extent.

4. Priorities and strategic direction for future action (especially in the next decade).

1. Basic principles:
    - 1.1. Protection first before development. *Animal Husbandry Law* should be implemented to facilitate a virtuous cycle of development and protection based on the strengthened conservation of animal genetic resources.
    - 1.2. Priority-highlighted sound system. Based on vivo conservation in conservation farms and reserves, supplemented by genetic material conservation in gene banks, a well-structured conservation system that incorporates national and local vertical linkage and graded responsibility and priorities should be in place to strengthen conservation regulation according to the law.
    - 1.3. Technology-driven mechanism innovation. Relying on innovation, the effective protection and scientific utilization of animal genetic resources should be realized with the increasing scientific and technological level. Management mechanism innovation is encouraged to fully mobilize the enthusiasm of enterprises and individuals, and give to play the role of market in resource conservation and utilization.
    - 1.4. Government-led multi-party participation. The state plays a leading role in the conservation of animal genetic resources, and encourages and supports qualified enterprises and individuals to join in the protection, development and utilization, to create a diversified pattern.

2. Planning objectives:
    - 2.1. To establish a state-level center for dynamic monitoring and assessment of animal genetic resources, 20 provincial centers and 200 monitoring sites to further improve early warning capability.
    - 2.2. To amend the *Directory of Animal Genetic Resources under Protection* according to the realities to provide priority protection to listed precious, rare, and endangered animal genetic resources, so as to protect the species

from loss and reduction of major economic traits and to further strengthen conservation.
2.3. To shape a complete set of animal conservation theories and methods, carry out genetic resource evaluation, and explore excellent features, so as to consolidate the scientific and technological support.
2.4. To cultivate 50 or more new varieties of animals (matching series), expand industrial development to more than 30% of local varieties, and foster a number of animal breeding companies, which further enhances the capacity of high-quality animal production and the competitiveness of breed industry.

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).

We have no statistics available on genetic inflow and outflow modes.

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.

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	Increasing demand for animal products leads to improved intensiveness of livestock production, which imposes threats on local varieties.
Changing demand for livestock products (quality)	high	high	With consumers' improved requirements for livestock quality and flavor, local varieties are well received.
Changes in marketing infrastructure and access	medium	medium	Live poultry deals are gradually decreased, which delivers passive impacts on local varieties.
Changes in retailing	medium	medium	Live poultry deals are gradually decreased, which delivers passive impacts on local varieties.
Changes in international trade in animal products (imports)	medium	medium	Imported animal products are alternatives to local varieties.
Changes in international trade in animal products (exports)	none	none	
Climatic changes	low	low	Grassland degradation caused by climate change has unfavorable impacts on local varieties.
Degradation or improvement of grazing land	medium	medium	Grassland degradation has unfavorable impacts on local varieties.
Loss of, or loss of access to, grazing land and other natural resources	medium	medium	Loss of pastures and other natural resources has unfavorable impacts on local varieties.
Economic, livelihood or lifestyle factors affecting the popularity of livestock keeping	low	low	Gradual reduction of free-range mode has unfavorable impacts on local varieties.
Replacement of livestock functions	medium	medium	Unfavorable to local varieties.
Changing cultural roles of livestock	medium	medium	
Changes in technology	medium	medium	Improvement in genetic characteristics evaluation and conservation technologies is beneficial to sustainable development of local varieties.

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
Policy factors	medium	medium	Local varieties are better-adapted and disease resistance in general.
Disease epidemics	low	low	

OVERVIEW OF ANIMAL GENETIC RESOURCES

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

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

Species	Locally adapted breeds	Exotic breeds
Cattle (specialized dairy)	0	1
Cattle (specialized beef)	0	8
Cattle (multipurpose)	54	2
Sheep	42	8
Goats	58	3
Pigs	80	6
Chickens	107	5

CHARACTERIZATION

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

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

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

Species	Baseline survey of population size	Regular monitoring of population size	Phenotypic characterization	Molecular genetic diversity studies – within breed	Genetic diversity studies based on pedigree	Molecular genetic diversity studies – between breed	Genetic variance component estimation	Molecular genetic evaluation
Cattle (specialized dairy)	0	0	high	high	high	high	high	high
Cattle (specialized beef)	0	0	medium	medium	medium	medium	medium	medium
Cattle (multipurpose)	0	0	high	low	low	low	low	low
Sheep	0	0	high	low	low	low	low	low
Goats	0	0	high	low	low	low	low	low
Pigs	0	0	high	low	low	low	low	low
Chickens	0	0	high	low	low	low	low	low

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	medium
Knowledge	medium
Awareness	medium
Infrastructure	low
Stakeholder participation	low
Policies	high
Policy implementation	medium
Laws	medium
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	Agricultural-related schools universally carry out education on breeding and resources conservation, and livestock technology promotion departments conduct training.
Research	Agricultural-related schools and livestock technology promotion departments universally conduct study on breeding and resources conservation.
Knowledge	Livestock authorities at all levels carry out promotion on the importance of animal genetic resources.
Awareness	Livestock authorities at all levels carry out promotion on the importance of animal genetic resources.
Infrastructure	Governments at all levels have strengthened developing infrastructures for protection of animal genetic resources.
Stakeholder participation	
Policies	Governments at all levels introduce policies related to conservation and utilization of animal genetic resources.
Policy implementation	Relevant policies are put into implementation.
Laws	*Animal Husbandry Law* and supporting regulations are introduced.
Implementation of laws	Relevant laws are enforced.

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

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

BREEDING PROGRAMMES

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

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

10. Who operates breeding programmes in your country?

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

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

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

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

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

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

Species	Organization of livestock keepers
Cattle (specialized dairy)	high
Cattle (specialized beef)	medium
Cattle (multipurpose)	low
Sheep	low
Goats	low
Pigs	medium

Species	Organization of livestock keepers
Chickens	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	high	medium	medium	high	medium	none	none	none
Animal identification	high	medium	medium	medium	medium	none	medium	none
Recording	high	medium	medium	medium	medium	none	medium	none
Provision of artificial insemination services	medium	medium	high	high	high	none	medium	none
Genetic evaluation	high	medium	medium	medium	medium	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	high	medium	low	low	medium	none	medium	none
Animal identification	medium	medium	low	low	low	none	low	none
Recording	medium	medium	low	low	low	none	low	none
Provision of artificial insemination services	medium	medium	medium	medium	medium	none	low	none
Genetic evaluation	medium	medium	low	none	low	none	low	none

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

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

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

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

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

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

Species	Policies or programmes
Cattle (specialized dairy)	yes
Cattle (specialized beef)	yes
Cattle (multipurpose)	yes
Sheep	yes
Goats	yes
Pigs	yes
Chickens	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)	Refer to the text of Q19
Cattle (specialized beef)	Refer to the text of Q19
Cattle (multipurpose)	
Sheep	
Goats	
Pigs	Refer to the text of Q19
Chickens	Refer to the text of Q19

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)	Refer to the text of Q19
Cattle (specialized beef)	Refer to the text of Q19
Cattle (multipurpose)	
Sheep	
Goats	
Pigs	Refer to the text of Q19
Chickens	Refer to the text of Q19

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.

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)	1. General objectives By 2020, registration on Chinese Holstein cattle will have covered the whole country, the scale of cow production performance measurement will be constantly expanded, national joint progeny testing for young bulls will make steady progress and excellent frozen bull semen will have been comprehensively promoted and popularized. At that time, average annual milk output of adult cows will have reached 7,000 kg in the regions with advantaged diary industry; unit output of cows will have increased by 500kg for a single generation in other regions, and cow genetic improvement technology will have been progressively integrated with the world. By 2020, all of these will have laid sound genetic foundation for development of the diary industry. 2. Main task 2.1 Carry out a precise, standardized and systematic individual production performance measurement on cattle to obtain complete and reliable production performance records as well as productivity-related records of reproduction, diseases, management and environment; 2.2 Make registration on excellent cattle based on individual genetic evaluation and type classification; breed and build high-yield cow breeding core groups so as to breed excellent breeding bulls; 2.3 Organize large-scale joint progeny testing for young bulls and select bulls through scientific and rigid heredity breeding to facilitate genetic improvement of cattle; and 2.4 Apply and improve artificial insemination technology among cattle, promote verified excellent frozen bull semen, rapidly spread excellent bull heredity genes and improve production performance of cows.

Species	Description of future objectives, priorities and plans
Cattle (specialized beef)	1. Overall objectives By 2025, we strive to breed 5-8 new varieties, make the coverage of variety registration extend major varieties, realize production performance measurement and genetic evaluation of all breeding bulls of beef cattle. At the same time, we'll improve to over 50% the progeny testing rate for young bulls, ensure self-sufficiency rate of bulls of imported varieties for semen collection up to 80%, ensure frozen semen promoted and almost universal and increase weight of beef cattle carcass slaughtered by 15%-20%, laying genetic foundation for development of beef cattle industry. 2. Main tasks 2.1. Develop selection standards, strictly select national core beef cattle breeding farms and conduct combined breeding, form the main force of carrying out beef cattle breeding and offering excellent bulls. 2.2. Carry out registrations on bulls in national core beef cattle breeding farms, establish and improve archives on pedigree of bulls and improve the system of breeding information records. 2.3. Standardize bull production performance measurement, progeny testing on young bulls, and bull health status and genetic evaluation, obtain complete and reliant production performance records, serving as the basis for seed selection and breeding. 2.4. Make full and reasonable use of existing breeding foundation, carry out scientific planning, develop technical plans of seed selection and breeding, and cultivate new beef cattle varieties. 3. Main indicators 3.1. A total of 8,000 beef cattle used for bull breeding will undergo production performance measurement annually, and by 2025 the amount will exceed 100,000. 3.2. 5000 additional major varieties are required for registration each year, and it will total to more than 60,000 by 2025. 3.3. Based on epidemic disease inspection and purification, over 400 excellent breeding bulls are selected each year through production performance measurement, individual selection and progeny testing; of them, more than 200 verified bulls pass.
Cattle (multipurpose)	
Sheep	
Goats	

Species	Description of future objectives, priorities and plans
Pigs	1. Major tasks: 1.1. Stipulate selection standards and strictly sift core national pig breeding farms as the major force for joint pig breeding. 1.2. Conduct breeding pig registration among core national pig breeding farms and establish complete genealogical files for breeding pigs. 1.3. Regulate and conduct breeding pig production performance measurement so as to acquire complete and accurate production performance records as the basis for variety breeding. 1.4. Carry out genetic communications and centralized genetic assessment among core breeding farms in a well-planned way and constantly improve breeding pigs' production performance through continuous purebred breeding. 1.5. Popularize artificial insemination technology for pigs, rapidly apply semen of fine-bred pigs to the production frontline and improve the pig production level. 1.6. Make full use of the high quality resources of local pig varieties and conduct well-targeted crossbred utilization and new variety breeding (supporting varieties) on the basis of effective protection. 2. Technical indicators: Establish core breeding herds as bases and based on continued improvement of breeding pigs' performance, the core breeding herd is to meet the following performance targets: 2.1 Targeted weight day age is to maintain 2% yearly breeding progress. 100 kilograms day age is to be decreased by 2 days. 2.2 Raise lean meat rate by 0.5% annually and stand at 68% in a stable manner. 2.3 Increase the total farrowing number by 0.15 head annually. 2.4 Lift feed conversion rate by 2% annually.
Chickens	Layer chicken: 1. Overall target: By 2020, breed 8-10 new layer chicken varieties, the commercial generation of national variety accounts for over 50% of the market; improve the quality and utilization rate of introduced variety; further perfect the fine variety expanding propagation and extension system; improve the development level of layer chicken industry and its core competitiveness to form a new pattern of modern layer chicken industry with flexible mechanisms and orderly competition. 2. Main tasks: 2.1 Breed new variety of high-yield laying hen, continuously breed the improved variety, extend the market share; breed new variety with local features, and meet demands of different markets. 2.2 Create a group of “breeding (introduction) propagation and popularization integrated” layer chicken enterprises with great influence at home and abroad, complete layer chicken production technology, regulate layer chicken production management, set up national layer chicken fine breed expanding propagation and popularization base and meet the demands for excellent commercial chicks of layer chicken industry. 2.3 Purify vertical propagation disease like pullorum disease, avian leukosis, etc. in breeding group and expanding propagation group, and regularly check the purification level. 2.4 Formulate and perfect layer chicken production performance measurement technology and management regulation, set up performance measurement system composed of core breeding farm, standardized demonstrative farm and breeding poultry quality supervision and inspection institute. 2.5. Carry out R&D of new layer chicken breeding technology and new variety industrialized production technology and timely collect and analyze information and development trend related to layer chicken industry.

CONSERVATION

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

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

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

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

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

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	yes
Genetic variation within the breed	yes
Production traits	yes
Non-production traits	
Cultural or historical importance	yes
Probability of success	yes

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

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

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

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

- (•) yes
- ( ) no

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

- ( ) yes
- ( ) no

23.2. If yes, please describe the plans.

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

	Stored in national genebank
Semen	yes
Embryos	yes
Oocytes	yes
Somatic cells (tissue or cultured cells)	yes
Isolated DNA	yes

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

Species	Number of breeds for which material is stored	Number of breeds for which sufficient material is stored	Does the collection include material from not-at-risk breeds?	Have any extinct populations been reconstituted using material from the gene bank?	Have the gene bank collections been used to introduce genetic variability into an in situ population?	Have the gene bank collections been used to introduce genetic variability into an ex situ population?	Do livestock keepers or breeders' associations participate in the planning of the gene banking activities?
Cattle (specialized dairy)	0	0	no	no	no	no	no
Cattle (specialized beef)	0	0	no	no	no	no	no
Cattle (multipurpose)	10	10	yes	yes	yes	yes	yes
Sheep	10	10	yes	no	no	yes	yes
Goats	10	10	yes	no	no	yes	yes
Pigs	10	10	no	no	no	yes	yes
Chickens	23	23	no	yes	yes	yes	yes

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

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

- ○ yes
- ◉ no

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

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

REPRODUCTIVE AND MOLECULAR BIOTECHNOLOGIES

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

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

	Biotechnologies								
Species	Artificial insemination	Embryo transfer	Multiple ovulation and embryo transfer	Semen sexing	In vitro fertilization	Cloning	Genetic modification	Molecular genetic or genomic information	Transplantation of gonadal tissue

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

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

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

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

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.

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.

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

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

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

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

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

	Extent of collaboration	Description
Development of joint national strategies or action plans	limited	
Collaboration in the characterization, surveying or monitoring of genetic resources, production environments or ecosystems	limited	
Collaboration related to genetic improvement	limited	

	Extent of collaboration	Description
Collaboration related to product development and/or marketing	limited	
Collaboration in conservation strategies, programmes or projects	limited	
Collaboration in awareness-raising on the roles and values of genetic resources	limited	
Training activities and/or educational curricula that address genetic resources in an integrated manner	limited	
Collaboration in the mobilization of resources for the management of genetic resources	limited	

2. Please describe any other types of collaboration.

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

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

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

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

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

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

- (●) yes
- ( ) no

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

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

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

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

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

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

- ○ yes
- ◉ no

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Please provide further details:

National Center of Preservation & Utilization of Genetic Resources of Animal & Forage (NCAF), affiliated to the National Animal Husbandry and Veterinary Service, has established Database of Genetic Resources of Animal & Forage (www.genebank.cn). This database records the information of more than 200 local animal breeds in China.
Poultry Institute, Chinese Academy of Agricultural Sciences, has established Chinese Poultry Genetic Resources Database www.jpips.org. The database records the information of nearly 100 local poultry breeds in China.
The information includes: names, origins and distributions, population sizes, characteristics, reproductive performances, development and utilization of breeds, along with their performances of main economic indicators. Each breed is

accompanied by photographs of one male and one female animal.
The data stems from Livestock and Poultry Breeds of China and Report on Status of Animal Genetic Resources in China. Breed information in the database will be supplemented and updated, after the publication of Records of Chinese Animal Genetic Resources.

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:

Organized by the Ministry of Agriculture, Chinese Academy of Agricultural Sciences took the first survey on animal genetic resources, and made researches on such phenotypic characteristics as their shapes, characteristics, locations, reproductive environment and specific properties in the 1980s. On such basis, the Academy had written and published Animal Breeds of China.

Under organization of the Ministry of Agriculture, the National Committee on Animal Genetic Resources took the lead in conducting the second national survey on animal genetic resources in 2007, and compiled and published Animal Genetic Resources in China.

In addition to the two national surveys on animal genetic resources, numerous Chinese agricultural universities and research institutes have carried out research for phenotypes of a particular region or a breed. At present, such surveys and studies almost cover all the major local animal breeds in China.

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:

China Agricultural University, Chinese Academy of Agricultural Sciences and NCAF have successively launched research projects such as "Genetic Distance Determination of Chinese Local Pig Breeds", "Genetic Distance Determination of Chinese Local Cattle and Sheep" and "Genetic Diversity of Local Poultry Breeds". Microsatellite markers recommended by the FAO have been used to assess the genetic diversity of animal breeds.
In recent years, a slew of Chinese universities and research institutes have made use of SNP in molecular study of some local breeds.

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:

China has carried out two national baseline surveys on animal genetic resources:
1. Organized by the Ministry of Agriculture, Chinese Academy of Agricultural Sciences took the lead in survey on animal breeds in the 1980s, and has written and published Animal Breeds in China that consisted of five volumes, which recorded more than 270 local breeds of pigs, poultry, cattle, sheep, horses, donkeys and other animals.
2. Under the organization of the Ministry of Agriculture, National Committee on Animal Genetic Resources took the lead in conducting the second national survey on animal genetic resources in2007, and compiled and published Animal Genetic Resources in China that consisted of seven volumes, and recorded more than 500 local breeds of pigs, poultry, cattle, sheep, horses, donkeys, camels, rabbits, deer, fur animals, bees and other livestock.

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:

In accordance with the Animal Husbandry Law of the People's Republic of China, China has established a conservation system for animal genetic resources. The administrative department for animal husbandry and veterinary medicine under the State Council is responsible for organization of investigation on animal genetic resources, publishing reports on the status of national animal genetic resources, and issuing inventory of animal genetic resources. National Committee on Animal Genetic Resources is responsible for identification and assessment of the resources, regularly publishing their status; according to national conservation and utilization planning for animal genetic resources, as well as status of animal genetic resources in their administrative regions, administrative departments for animal husbandry and veterinary at provincial level develop and publish inventory of provincial genetic resources of animals under conservation.

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:

According to the situation of national animal genetic resources, the Ministry of Agriculture issued a Conservation Directory of Animal Genetic Resources in 2007, covering a total of 138 animal breeds. The Ministry of Agriculture promulgated, in two batches in 2008 and 2011 respectively, 137 national conservation farms, protected areas and gene pools for animal genetic resources, implementing priority conservation for animal breeds included in the Conservation Directory.
National Farm Animal Genetic Resources Committee developed conservation programs for the 138 animal breeds included in the Conservation Directory of Animal Genetic Resources in 2011, requiring the conservation institutions to undertake efforts in accordance with the conservation programs.

Most of the provinces, autonomous regions and municipalities have released their conservation directories of animal genetic resources according to their own situation, and have implemented conservation for animal breeds included in the directories.

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 National Committee on Animal Genetic Resources has carried out monitoring on the number and trends of animals included in the Conservation Directory of Animal Genetic Resources.
According to the 12th Five-Year Plan for Conservation and Utilization of Animal Genetic Resources, China will establish a dynamic monitoring and evaluation system for national animal genetic resources, and will expand the scope of monitoring.

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

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

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

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

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

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

Please provide further details:

In accordance with the requirements of the Animal Husbandry Law, China has established a conservation mechanism for animal genetic resources, imposing conservation on genetic resources of rare and endangered animals, but has not established an emergency response system in line with the standards recommended by the FAO.

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:

China has drafted and developed a series of technical standards and specifications for phenotypes of animal genetic resources, molecular characterization, breed review and evaluation, which are undergoing improvement.

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 difficulties include:

1. Large land area, and a large number of animal genetic resources. For areas where local breeds are distributed in remote areas and with special ecological types, it would be huge and heavy tasks to conduct effective screening and monitoring of all animal genetic resources.
2. As agricultural modernization is progressing at the same pace with in-depth industrialization and urbanization in China, increased employment opportunities in rural areas have helped a large amount of surplus labor to transfer to other sectors. As the tradition of rural households keeping backyard livestock and poultry has changed, a lot of households have quitted animal farming, leaving out local breeds, which have been a considerable part of the backyard household animals. The accelerated fading of backyard animal keeping will inevitably lead to the decrease of some of the local genetic resources, and even extinction.
3. China has established 137 national animal conservation farms, protected areas and gene pools, but there are still 37 breeds in the national directory that have not been supplied with national conservation farms or protected areas. The infrastructure in the majority of conservation institutions are lagging behind, affecting the monitoring effects.

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:

The National Center for Dynamic Monitoring and Evaluation on Animal Genetic Resources has been established, which assumes the role of dynamic monitoring and evaluation on national animal genetic resources, and reviews, releases, and warns on the latest resource information. 20 provincial sub-centers have been established in large provinces with animal genetic resources, assuming the role of dynamic monitoring on animal genetic resources in respective provinces, analyzing, reviewing and reporting on animal genetic resources in the provinces. 200 grass-roots monitoring points have been set up in the origins of key animal genetic resources, taking on the work of collection, entry and reporting of such basic information as the number, distribution, performance changes of animal genetic resources around the region. Through developing the database system for national animal genetic resources, constructing an information-sharing platform, and configuring the servers, data storage and upload facilities, such work as data collection, analysis and entry have been carried out, and a dynamic monitoring and early warning system for animal genetic resources has been gradually established. The normal monitoring should be strengthened, including population size of local breeds, change in genetic resources, endangered status, conservation effects, development and utilization, etc., so that it is easy to grasp the changes of resources, and make scientific predictions for short- and long-term development trends.

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.

1. China has improved the legal system for the conservation of animal genetic resources. During the 11th Five-Year Plan period, China promulgated and implemented the People's Republic of China Animal Husbandry Law , introduced 10 supporting regulations. The promulgation and implementation of the Animal Husbandry Law and supporting regulations are important milestones in the establishment of laws and regulations for the conservation of animal genetic resources. The Animal Husbandry Law clearly stipulates that China should establish a conservation system for AnGR, and the funds for such conservation should be included in government budget, thus providing firm legal basis for strengthening the conservation and management of animal genetic resources. The government has also established an inter-ministerial joint meeting system for the conservation of biological species resources, including animal genetic resources. The National Committee on AnGR was established in 2007, which is responsible for the identification and evaluation on animal genetic resources, validation of new animal breeds and supporting series, research and demonstration for conservation and utilization planning of animal genetic resources. In some other provinces, management and scientific research institutions have been set up to specialize in the conservation and utilization of animal genetic resources.

2. China has carried out the second survey on national animal genetic resources. It was in the 1970s and the 1980s when China first carried out a survey on national animal genetic resources. In order to find out the latest status of resources, MoA carried out the 2nd survey.

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:

People's Republic of China Animal Husbandry Law;
12th Five-Year Plan for Conservation and Utilization of Animal Genetic Resources.

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 State Council examined and approved Conservation Strategy and Plan of Action for Biodiversity in China (2011-2030) in 2010. The conservation of animal genetic resources is an integral part of biodiversity conservation.

Ministry of Environmental Protection launched the campaign of "International Year of Biodiversity" in 2010. It was one of the priorities of the campaign to enhance public awareness for the protection of animal genetic resources.

Ministry of Agriculture launched the protection project for agricultural ecological environmental, demonstrated and promoted technologies for energy conservation and emissions reduction in farming, livestock farming and other industries, improving energy efficiency and reducing pollutant emissions.

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 12th Five-Year Plan for Conservation and Utilization of National Animal Genetic Resources has proposed that, with market demand as the orientation and business innovation as the main body, outstanding local breeds with utilization potential should be selected for development, and breeding should be supported to improve the production performance. Support should be provided for the nurturing of 50 new animal breeds (supporting series), forming a breeding system centered on self-development, so that a benign mechanism based on conservation and promoted by development can be gradually established. Relying on characterized breeds, a series of high-quality products should be developed through industrialized procedures, catering to diverse market needs.

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

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

Please provide further details:

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

- ◉ a. Yes
- ○ b. No

- ○ c. No major barriers and obstacles exist. Comprehensive sustainable use and development measures are in place.

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

1. Consumer habits and market demand have changed.
2. Research is inadequate on characteristics of animal genetic resources in local breeds.

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

Glossary:

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

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

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

Please provide further details:

It is stipulated in the People's Republic of China Animal Husbandry Law that, application for import of animal genetic resources from abroad shall be sent to administrative department for animal husbandry and veterinary in provincial people's government; after reviewing the application, the provincial department should submit for approval by administrative department for animal husbandry and veterinary in the State Council. After approval, the ensuing paperwork and quarantine should be conducted in accordance with the relevant provisions of the Law of the People's Republic of China on the Entry and Exit Animal and Plant Quarantine.

If animal genetic resources imported from abroad are found to pose possible hazards against domestic animal genetic resources or ecological environment, the administrative department for animal husbandry and veterinary in the State Council should consult with relevant competent departments to adopt appropriate safety control measures.

The export of, or joint research with overseas institutions and individuals on, animal genetic resources included in the Conservation Directory shall be applied to administrative department for animal husbandry and veterinary in provincial people's government, together with a plan for the share of benefits between China and the foreign country(ies); after reviewing the application, the administrative department for animal husbandry and veterinary shall submit the application for approval to the administrative department for animal husbandry and veterinary in the State Council. For export of animal genetic resources, the ensuing paperwork and quarantine should be conducted in accordance with the relevant provisions of the Law of the People's Republic of China on the Entry and Exit Animal and Plant Quarantine.

The State Council has promulgated the Regulation on Examination and Approval for Import, Export, International Cooperation, Research and Utilization of Animal Genetic Resources.

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

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

Please provide further details:

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

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

Please provide further details:

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

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

Please provide further details:

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

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

Please provide further details:

China's current policy is to encourage and relevant institutions and individuals to pursue the conservation of animal genetic resources. All relevant information is open to farmers.

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

- (●) a. Yes, sufficient programmes have existed since before the adoption of the GPA
- ( ) b. Yes, sufficient programmes exist because of progress made since the adoption of the GPA

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

Please provide further details:

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

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

Please provide further details:

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

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

Please provide further details:

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

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

Please provide further details:

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

China has encouraged the selection and development of local breeding characteristics. After gaining support from the projects, the productive performance of many local breeds has improved significantly. For example, the egg production of the Shanma Duck, Shao Duck and Huoyan Goose and other species have attained leading position in the world, and the yield of Liaoning Cashmere Goat has nearly doubled.
New breeds have been developed based on local breeds through cross-breeding. The dwarf gene (dw) has been exploited successfully on yellow-feathered broiler, achieving grain-saving of 15% to 20% over parent chicken; yellow-feathered broiler has accounted for nearly 50% of the total marketing volume. The wool production performance of the new breed of Angora Rabbit has attained the leading level in the world, achieving self-reliance of genes.

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

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

STRATEGIC PRIORITY AREA 3: CONSERVATION

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

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

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

Please provide further details:

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

1. Change in consumer habits; the livestock and poultry products produced from animal local breeds do not meet the consumption demand of contemporary people.

2. As agricultural modernization is progressing at the same pace with in-depth industrialization and urbanization in China, increased employment opportunities in rural areas have helped a large amount of surplus labor to transfer to other sectors. As the tradition of rural households keeping backyard livestock and poultry has changed, a lot of households have quitted animal farming, leaving out local breeds, which have been a considerable part of the backyard household animals. The accelerated fading of backyard animal keeping will inevitably lead to the decrease

of some of the local genetic resources, and even extinction.

3. The public have not been sufficiently educated about conservation of animal genetic resources, with shortage of emphasis and funding.

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

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

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

Please provide further details:

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

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

Please provide further details:

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

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

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

Please provide further details:

1. China has published Conservation Directory for Animal Genetic Resources, implementing priority conservation for the key breeds included in the Directory.
2. Conservation farms and protected areas have been set up for animal genetic resources in the places of origin. Special funds have been earmarked in the central and provincial government budgets for the conservation of animal genetic resources, offering subsidies on conservation farms and protected areas.

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:

Two national Chicken Gene Pools and two national Waterfowl Gene Pools have been established, providing ex situ in vivo for local breeds of chicken, duck, goose, etc.

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:

China has established a national animal gene pool in Beijing, where the embryos, semen, oocytes, somatic cells and tissue of cattle, sheep, horses, donkeys, etc. are under cryopreservation.

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

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

- ◉ a. Yes
- ○ b. No

Please provide further details:

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

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

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

1. The large number of local breeds, more than 500, would make it a hugely heavy workload if all of them were to be conserved.
2. Some of the local breeds are no longer suitable for consumer demand, with poor economic performances and high cost of conservation.

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

- ◉ a. Yes
- ○ b. No

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

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

Please provide further details:

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

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

Please provide further details:

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

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

Please provide further details:

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

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

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

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

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

Please provide further details:

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

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

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

1. The government has promulgated and implemented the Animal Husbandry Law, and has introduced 10 supporting regulations. The Law clearly stipulates that China should establish a conservation system for animal genetic resources, and the funds for such conservation should be included in government budget, thus providing firm legal basis for strengthening the conservation and management of animal genetic resources.
2. The government has established an inter-ministerial joint meeting system for the conservation of biological species resources. The National Committee on AnGR was established in 2007, which is responsible for the identification and evaluation on animal genetic resources, validation of new animal breeds and supporting series, research and demonstration for conservation and utilization planning of animal genetic resources. In some other provinces, management and scientific research institutions have been set up to specialize in the conservation and utilization of animal genetic resources.
3. MoA has revised and published the National Conservation Directory for AnGR, providing priority conservation for 138 precious, rare and endangered animal species. The provinces have also published provincial conservation directories. Since the "11th Five-Year Plan" was implemented, the Ministry of Agriculture has invested over 300 million yuan on animal seed project, conservation project of genetic resources, etc., constructing a number of key breed.

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

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

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

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

Please provide further details:

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

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

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

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

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

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

Please provide further details:

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

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

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

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

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

Please provide further details:

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

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

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

Please provide further details:

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

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

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

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:

1. Each year, five to eight national symposiums for animal genetic resources and technical training courses are organized.
2. Each year, two to three festivals and promotion events for local breeds are jointly held with local governments, industry associations or farmers' organizations.
3. Ten donations on local breeds were organized throughout China in 2011.
4. The government has translated the First Report on the State of the World's Animal Genetic Resources, and published Records of Animal Genetic Resources in China and other books.
5. The government has also published commemorative stamps for local breeds.

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

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

Please provide further details:

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

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

Please provide further details:

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

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

Please provide further details:

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

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

Please provide further details:

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

Characterization?

- ○ a. Yes
- ◉ b. No

Sustainable use and development?

- ○ c. Yes
- ◉ d. No

Conservation of breeds at risk?

- ○ e. Yes
- ◉ f. No

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

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:

1. The government has promulgated and implemented the Animal Husbandry Law, and has introduced 10 supporting regulations including Regulation on Examination and Approval for Import, Export, International Cooperation, Research and Utilization of Animal Genetic Resources, Management Regulation on Conservation farms and Gene Pools for Animal Genetic Resources, etc. The Animal Husbandry Law clearly stipulates that China should establish a conservation system for animal genetic resources, and the funds for such conservation should be included in government budget.
2. The government has established an inter-ministerial joint meeting system for the conservation of biological species resources, including animal genetic resources. The National Committee on Animal Genetic Resources was established in 2007, which is responsible for the identification and evaluation on animal genetic resources, validation of new animal breeds and supporting series, research and demonstration for conservation and utilization planning of animal genetic resources.
3. Each year, five to eight national symposiums for animal genetic resources and technical training courses are organized. Meanwhile, two to three festivals and promotion events for local breeds are jointly held with local governments, industry associations or farmers' organizations each year.
4. The government has translated the First Report on the State of the World's Animal Genetic Resources, and published Records of Animal Genetic Resources in China and other books. It has also published commemorative stamps for local breeds.

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

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

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

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

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

Characterization?

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

Sustainable use and development?

- ○ e. Yes

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

Conservation of breeds at risk?

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

Please provide further details:

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

Characterization?

- ○ a. Yes
- ◉ b. No

Sustainable use and development?

- ○ c. Yes
- ◉ d. No

Conservation of breeds at risk?

- ○ e. Yes
- ◉ f. No

If yes, please list the international NGOs:

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

- ◉ a. Yes
- ○ b. No

Please provide further details:

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

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

Please provide further details:

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

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

Please provide further details:

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

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

Please provide further details:

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

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

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

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

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

Please provide further details:

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

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

Please provide further details:

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

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

Please provide further details:

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

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

Please provide further details:

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

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

Please provide further details:

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

- ○ a. Yes

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

Please provide further details:

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

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

Please provide further details:

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

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

Please provide further details:

EMERGING ISSUES

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

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