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

Country report

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

Country: Croatia

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).

Native and protected breeds of domestic animals are a Croatian heritage with value visible on the economical, social, natural and cultural level. Inherited native breeds of domestic animals have, within their genes, encompassed millenniums of events occurring in their environment, with or without human influence. Native breeds are a living monument to past times and keep the identity of the area. Their genes contain a possible potential for safe food production in future times when the importance of their resistance and adaptability will reach its full extent. Some of the native breeds in the Republic of Croatia arrived from other regions as a consequence of industrialization and globalization of husbandry. They, also need to be under the observation of expert and wider community, thus if the need occurs, protected adequately. Erosion of a part of native breeds of domestic animals in the Republic of Croatia has been present for centuries on the local, regional and global level, putting their existence in question. Main reasons for the disappearance of one part of native breeds in the Republic of Croatia are: globalization, economic power concentration, change of agricultural production systems (industrialization), use of mechanization in agriculture, decrease of available pastures, natural disasters, diseases, inadequate selection, uncontrolled import of exotic breeds, depopulation and urbanization of rural areas. Industrialization of production, market economy and new technologies worked in favor of high productive breeds, mainly to the damage of numerous native breeds of more modest production capacities. However, the very richness of native and protected breeds of domestic animals makes food production safe in the scope of dynamic change of the production environment, especially given the announced and expected climate changes. One should not forget that the native breeds are the very ones which encompass an entire series of direct and indirect benefits. Native breeds are often underestimated in food production, although, especially in economically underdeveloped countries, crucial for sufficient food supply. Adapted to various environments, resistant to different diseases and modest when it comes to their need for food. Native and protected breeds of domestic animals are an incentive for revival of parts of rural areas, ensuring additional income for the local population. They are suitable for use and keeping of pastures, prevention of devastation and succession of habitats (byotope), inclusion in programs of organic (ecological) production and development of recognizable traditional brands. They are a component of the ecosystem upon which numerous other plant and animal species depend. List of Autochthonous and Protected Breeds and Strains of Domestic Animals created on the territory of Croatia (Official Gazette 127/98, 73/03, 39/06, 126/07, 70/09, 80/13) contains following breeds as

native and protected:
1. cattle (Istrian cattle; Slavonian Syrmian podolian cattle; Busa cattle),
2. horses (Croatian Posavina horse; Croatian coldblood horse; Murinsulaner horse; Lipizzaner),
3. donkeys (Istrian donkey; Littoral Dinaric donkey; Northern Adriatic donkey),
4. sheep (Dalmatian pramenka; Cres Island sheep; Ruda sheep; Istrian sheep; Krk Island sheep; Lika pramenka sheep; Pag Island sheep; Rab Island sheep; Tzigai sheep),
5. goats (Croatian spotted goat; Croatian white goat; Istrian goat),
6. pigs (Black Slavonian pig, Turopolje pig),
7. poultry (Zagorje turkey, Croatian hen),
8. bees (Grey bee).

List of Autochthonous and Protected Breeds of Domestic Animals created on the territory of Republic of Croatia is not closed and can be updated with breeds whose origin will be approved.
The strategy of protection of native and protected breeds of domestic animals implemented in the Republic of Croatia is primarily based on the *in situ* models for preservation. Competent authorities are involved in the protection programmes through condition inventorisation, creation of a main register and exterior, genetic and production characterization of breeding. Establishment of breeding organizations of breeders of native and protected breeds was encouraged. Some of these organizations have taken on some obligations. Some breeding organizations encourage the development of a programme of an active self-sustainable protection of native breeds, trying to come up with products on the market that would unite the uniqueness of a genotype, tradition and ecological production. The greatest part of genetic resources on the territory of the Republic of Croatia is included in certain action programmes, yet there is a small number of breeds in the monitoring process for which there are indications that they might be native breeds. The inventorisation of the status of genetic resources is therefore not final and we can expect, should the characterization prove it, more breeds to be added to the List of native and protected breeds of domestic animals. The characterization of breeds that have been proven native needs to be completed with regards to production predispositions, emphasizing the production adaptation to a specific environment. By constantly monitoring trends in populations of native breeds, it is possible to notice problems on time and activate plans for crisis so they could be preserved. Action plans for crisis are periodically coordinated on a national level, taking into account global events and recommendations (diseases, loss of breeding interests, etc.). Establishing and including the gene bank into the existing and new programmed for preservation of the native and protected breeds of domestic animals has a great significance in the sustainability of the total genetic resources in the republic of Croatia. Development of a programme for economic utilization and competitiveness of native breeds is one of basic assumptions of their long-term sustainability. Finding and establishing models for better competitiveness makes the programme less dependent on incentives. One of the strategic guidelines of the Programme for the protection of native and protected breeds is to develop cooperation on a regional level through the exchange of experiences and genetic materials in the framework of programme for preservation of native breeds. By exchanging genetic materials, especially for the critically endangered populations, it is easier to maintain genetic diversity.

II. DATA FOR UPDATING THE PARTS AND SECTIONS OF *THE STATE OF THE WORLD'S ANIMAL GENETIC RESOURCES FOR FOOD AND AGRICULTURE*

FLOWS OF ANIMAL GENETIC RESOURCES

1. Studies of gene flow in animal genetic resources have generally concluded that most gene flow occurs either between developed countries or from developed countries to developing countries. Does this correspond to the pattern of gene flow into and out of your country?

For developed countries, exceptions to the usual pattern would include significant imports of genetic resources from developing countries. For developing countries, exceptions would include significant exports of genetic resources to developed countries, and/or significant imports and/or exports of genetic resources to/from other developing countries.

- (•) yes
- ( ) no
- ( ) yes but with some significant exceptions

1.1. If you answer “no” or “yes but with some significant exceptions”, please provide further details. Please include information on: which species are exceptions and which regions of the world are the sources and/or destinations of the respective genetic material.

2. Have there been any significant changes in patterns of geneflow in and out of your country in the last ten years?

- ○ yes
- ◉ no

2.1. If yes, please indicate whether this view is based on quantified data (e.g. import and export statistics collected by the government).

- ○ yes
- ○ no

2.2. If yes, please provide references (preferably including web links) (if relevant, indicate which types of animal genetic resources are covered).

2.3. Please also describe the changes, indicating the species involved, the direction of the changes, and the regions of the world to and from which the patterns of imports and exports have changed.

3. Please describe how the patterns of geneflow described under Questions 1 and 2 affect animal genetic resources and their management in your country.

Note: Please answer this question even if the pattern of geneflow into and out of your country corresponds to the "usual" pattern described in the first sentence of Question 1 and/or has not changed significantly in the last ten years.

Gene flows aren't significantly influence on status of native and protected breeds of domestic animals. Our breeding strategies are conserving of originality of autochthonous breeds through breeding in pure breed.

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)	medium	medium	Animal product consumption in Croatia is a reflection of consumers' attitude towards animal products, the price of such products, and consumers' purchasing power.
Changing demand for livestock products (quality)	medium	medium	In Croatia, producers that share a common interest, especially the producers of traditional food products, cooperate to increase their market competitiveness.
Changes in marketing infrastructure and access	low	medium	There is an evident increase of interest among food producers in obtaining trademarks, but still only a small number of animal products have got them. Currently, several products are in the process of obtaining trademarks, including Istrian prosciutto, Zagorje turkey and Istrian beef. Their producers face problems such as a lack of interest among producers in forming strong producer groups, insufficient processing capacity, insufficient support of regional administrations, and appropriate marketing management that fails to improve consumer perception of products´ specificity and value.
Changes in retailing	low	low	
Changes in international trade in animal products (imports)	low	low	
Changes in international trade in animal products (exports)	low	low	
Climatic changes	none	none	
Degradation or improvement of grazing land	medium	medium	Native breeds maintain grasslands (Slavonian Syrmian Podolian Cattle in Lonjsko polje Nature Park).
Loss of, or loss of access to, grazing land and other natural resources	medium	medium	Loss of, or loss of access to grazing land is not intensive.
Economic, livelihood or lifestyle factors affecting the popularity of livestock keeping	medium	medium	In Croatia economic factors dominate in livestock keeping.
Replacement of livestock functions	medium	medium	Function of livestock production in Croatia is constant.
Changing cultural roles of livestock	medium	medium	Native breeds have more and more influence as cultural heritage.

Drivers of change	Impact on animal genetic resources and their management over last ten years	Future impact on animal genetic resources and their management (predicted for the next ten years)	Describe the effects on animal genetic resources and their management
Changes in technology	medium	medium	Dynamic of changes or adjustments in animal production are significantly affected by production conditions, structure and quality of available forages or pasture areas. Fragmentation of land used for quality forage production, especially in Mediterranean Croatia, hampers the enlargement of cattle and sheep farms. In the continental part of Croatia, due to availability of arable land for intensive forage and crop production, enlargement of farms with better organized pig, poultry and cattle production has occurred.
Policy factors	medium	medium	Influence of policy factor is positive (subsidies).
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)	3	3
Sheep	10	6
Goats	3	4
Pigs	2	5
Chickens	2	0
Asses	3	0
Horses	4	30

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)	1	1	low	low	low	none	low	medium
Cattle (specialized beef)	8	8	low	none	none	none	low	low
Cattle (multipurpose)	6	6	medium	medium	medium	high	medium	high
Sheep	16	16	medium	medium	low	high	medium	medium
Goats	7	7	medium	medium	low	high	medium	medium
Pigs	5	5	medium	medium	low	high	medium	medium
Chickens	2	2	medium	medium	low	high	medium	medium
Asses	3	3	medium	high	low	high	medium	medium
Horses	8	8	medium	high	medium	high	medium	high

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	high
Infrastructure	medium

	Score
Stakeholder participation	medium
Policies	medium
Policy implementation	medium
Laws	high
Implementation of laws	high

8. Please provide further information regarding your country's capacities in each of the above-mentioned areas of management. If relevant, please indicate what obstacles or constraints your country faces in each of these areas and what needs to be done to address these constraints. You may also provide information on any particular successes achieved in your country in any of these areas and on the reasons for these successes.

	Description
Education	Strengths: government body and public institutions included in preservation, education and research. Weaknesses: insufficient education level of wider population of breeders, insufficient financial assets.
Research	Strengths: functionally developed research institutions, knowledge of methods of characterization and protection of AnGR. Weaknesses: insufficient financial assets.
Knowledge	Strengths: functionally developed knowledge about protection of AnGR. Weaknesses: moderately developed model of knowledge transfer.
Awareness	Strengths: the wider public is interested for animal genetic resources. Weaknesses: insufficiently effective approach to food markets, insufficient financial assets.
Infrastructure	Strengths: infrastructure is well developed. Weaknesses: insufficient financial resources for full engagement of the existing infrastructure.
Stakeholder participation	Strengths: stakeholders participate in activities, the weakness is not equal representation stakeholders by species and breeds.
Policies	National policies are harmonized with the regional (EU) policies.
Policy implementation	National policies are implemented in the fullness.
Laws	National policies are harmonized with the regional (EU) policies.
Implementation of laws	National policies are implemented in the fullness.

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 organizations (associations, unions) actively partake in the implementation of this Programme by representing breeders' interests. They take part in the making and implementing breeding programmes and action plans, cooperate with the bodies of public administration and public institutions, suggest research programmes, promote breeds, develop programme for the economic utilization and cooperate with similar breeding organizations on a national and international level. Breeding organization appoint professional bodies, a head of a breeding programme, commissions for regular evaluation and revision of breeding, selection and evaluation of heads on exhibitions and manifestations. When they fulfill the prerequisites, breeding organizations keep breed books and assist with regular updates of the central data base

managed by the Croatia Agricultural Agency.

BREEDING PROGRAMMES

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

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

10. Who operates breeding programmes in your country?

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

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

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

11. For how many breeds in your country are the following activities undertaken?

Note: Please do not include activities that are only undertaken for experimental purposes, i.e. include only activities that directly serve or involve livestock keepers. However, please include activities even if they do not at present form part of a breeding programme. The intention is to obtain an indication of whether the "building blocks" of a breeding programme are available or being developed in your country. Loc = Locally adapted breeds; Ex = Exotic breeds.

Species	Tools															
	Animal identification		Breeding goal defined		Performance recording		Pedigree recording		Genetic evaluation (classic approach)		Genetic evaluation including genomic information		Management of genetic variation (by maximizing effective population size or minimizing rate of inbreeding)		Artificial insemination	
	Loc	Ex	Loc	Ex	Loc	Ex	Loc	Ex	Loc	Ex	Loc	Ex	Loc	Ex	Loc	Ex
Cattle (specialized dairy)	0	1	0	1	0	1	0	1	0	1	0	1	0	0	0	1
Cattle (specialized beef)	0	8	0	8	0	5	0	5	0	3	0	0	0	0	0	1
Cattle (multipurpose)	3	3	3	3	3	3	3	3	3	3	0	0	3	0	3	3
Sheep	10	6	10	6	6	5	10	6	6	4	2	3	6	0	0	0
Goats	3	4	3	4	2	4	2	4	2	2	2	2	2	0	0	0
Pigs	2	5	2	5	2	5	2	5	2	5	0	0	2	0	0	2
Chickens	2	0	2	0	2	0	2	0	2	0	0	0	2	0	0	0
Asses	3	0	3	0	3	0	3	0	0	0	0	0	3	0	0	0
Horses	4	30	4	12	4	12	4	25	4	12	0	0	4	0	0	4

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

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

Species	Breeding method			
	Straight/pure-breeding only		Straight/pure-breeding and cross-breeding	
	Loc	Ex	Loc	Ex
Cattle (multipurpose)	3	3	0	2
Sheep	10	6	0	3
Cattle (specialized dairy)	0	1	0	1
Cattle (specialized beef)	0	8	0	6
Goats	3	4	0	3
Pigs	2	5	0	5
Chickens	2	0	0	0
Asses	3	0	0	0
Horses	4	20	0	14

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

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

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

Species	Organization of livestock keepers
Cattle (specialized dairy)	medium
Cattle (specialized beef)	low
Cattle (multipurpose)	medium
Sheep	medium
Goats	low
Pigs	medium
Chickens	medium
Asses	low
Horses	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	medium	medium	high	low	none	none	none	none
Animal identification	high	medium	medium	medium	none	none	none	none
Recording	medium	low	medium	medium	low	none	none	none
Provision of artificial insemination services	low	medium	medium	low	medium	low	none	none
Genetic evaluation	medium	high	high	medium	low	none	none	none

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

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

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

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

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

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

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

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

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

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

The protection of native and protected breeds of domestic animals in the Republic of Croatia is complex since it integrates general interests of a public and interests of individuals. National governmental institutions, educational and research institutions, nongovernmental organizations, breeding companies, breeding organizations, breeders and hobbyists are included into the preservation programme. With regards to interests, obligations and authorities, the stated partners take part in the activities of implementation of *in situ* and *ex situ* programmes.
National governmental institutions take part in the creation and implementation of action plans for the protection of native breeds of domestic animals and actively partake in the development of the national Programme for managing genetic resources. The breeders are active participants in the implementation of this Programme in the Republic of Croatia. Breeding organization appoint professional bodies, a head of a breeding programme, commissions for regular evaluation and revision of breeding, selection and evaluation of heads on exhibitions and manifestations. Scientific and educational institutions perform scientific and research tasks, complete cognitions on characteristics of the appearance, productivity and genetic structure of breeds, partake in tasks of population monitoring, perform scientific and professional analyses of programme implementation results, take part in the adjustment of the existent and the formation of new breeding programmes and principles necessary for their efficient implementation. The regional government, local self-government and their institutions take active part in the implementation of this Programme through a direct and indirect support to sustainability of native and protected breeds. NGO are included in the implementation of this Programme in accordance with their interests and rights they acquire.

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

Species	Policies or programmes
Cattle (multipurpose)	yes
Sheep	yes
Goats	yes
Pigs	yes
Chickens	yes
Asses	yes
Horses	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)	In Croatia not exist specialized autochthonous dairy cattle breeds. We have adopted specific breeding programs for exotic dairy cattle breeds (Holstein).
Cattle (specialized beef)	In Croatia not exist specialized autochthonous beef cattle breeds. We have adopted specific breeding programs for exotic beef cattle breeds (Charolais, Limousin, ...).
Cattle (multipurpose)	In Croatia exist conventional and autochthonous cattle breeds. For each breed we adopted specific breeding programs (Busa, Istrian cattle, Simmental, ...).
Sheep	In Croatia exist conventional and autochthonous sheep breeds. For each breed we adopted specific breeding programs.
Goats	In Croatia exist conventional and autochthonous goat breeds. For each goat breed we adopted specific breeding programs.
Pigs	In Croatia exist conventional hybrids of pig and autochthonous pig breeds. For each autochthonous pig breeds we adopted specific breeding programs.
Chickens	In Croatia exist conventional hybrids of poultry and autochthonous poultry breeds. For each autochthonous poultry breeds we adopted specific breeding programs.
Asses	In Croatia exist only autochthonous donkey breeds. We have adopted specific breeding programs for each donkey breeds.
Horses	In Croatia exist autochthonous and exotic horse breeds. For each autochthonous and some exotic horse breeds we design and adopted specific breeding programs.

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

Species	Description of consequences
Cattle (specialized dairy)	The implementation of breeding programs results with better production results.
Cattle (specialized beef)	The implementation of breeding programs results with better production results.
Cattle (multipurpose)	The implementation of breeding programs results with better production results. The implementation of breeding programs for autochthonous breeds improves the conservation of genetic diversity and improved economic reaffirmation of this breeds.
Sheep	The implementation of breeding programs results with better production results. The implementation of breeding programs for autochthonous breeds improves the conservation of genetic diversity and improved economic reaffirmation of this breeds.

Species	Description of consequences
Goats	The implementation of breeding programs results with better production results. The implementation of breeding programs for autochthonous breeds improves the conservation of genetic diversity and improved economic reaffirmation of this breeds.
Pigs	The implementation of breeding programs for autochthonous breeds improves the conservation of genetic diversity and improved economic reaffirmation of this breeds.
Chickens	The implementation of breeding programs for autochthonous breeds improves the conservation of genetic diversity and improved economic reaffirmation of this breeds.
Asses	The implementation of breeding programs for autochthonous breeds improves the conservation of genetic diversity and improved economic reaffirmation of this breeds.
Horses	The implementation of breeding programs results with better results. The implementation of breeding programs for autochthonous breeds improves the conservation of genetic diversity and improved economic reaffirmation of this breeds.

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.

A quality (coordinated) breeding programme serves as a basis for the *in situ* programmes for the protection of native and protected breeds of domestic animals. It is used to maximize the effective size of the population, to minimize genetic pressure and make the protected breed economically active once again. One of the main tasks in managing genetic variations in smaller populations is a reduction of genetic pressure. By monitoring the effective size of a population as well as genetic trends, it is possible to avoid the accumulation of harmful mutations. If the effective size of a population (Ne) is lower than 50, it is necessary to enforce the strictest conservation measures, to reflect on the target introduction of the related genotypes, to elongate the generation interval and to activate the genetic materials from the gene bank, etc.

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)	Improving of production characteristics and fitness of breed.
Cattle (specialized beef)	Improving of production characteristics and fitness of breeds
Cattle (multipurpose)	Improving of production characteristics and fitness of exotic cattle breeds. To preserve the genetic structure of autochthonous breeds. Development of a programme for economic utilization and rise in competitiveness of native breeds is one of basic postulates for a long term sustainability of native and protected breeds of domestic animals in the Republic of Croatia, endangered breeds, in particular.
Sheep	Improving of production characteristics and fitness of exotic sheep breeds. To preserve the genetic structure of autochthonous breeds. Development of a programme for economic utilization and rise in competitiveness of native breeds is one of basic postulates for a long term sustainability of native and protected breeds of domestic animals.
Goats	Improving of production characteristics and fitness of exotic goat breeds. To preserve the genetic structure of autochthonous breeds. Development of a programme for economic utilization and rise in competitiveness of native breeds is one of basic postulates for a long term sustainability of native and protected breeds of domestic animals.
Pigs	To preserve the genetic structure of autochthonous breeds. Development of a programme for economic utilization and rise in competitiveness of native breeds is one of basic postulates for a long term sustainability of native and protected breeds of domestic animals.
Chickens	To preserve the genetic structure of autochthonous breeds. Development of a programme for economic utilization and rise in competitiveness of native breeds is one of basic postulates for a long term sustainability of native and protected breeds of domestic animals.

Species	Description of future objectives, priorities and plans
Asses	To preserve the genetic structure of autochthonous breeds. Development of a programme for economic utilization and rise in competitiveness of native breeds is one of basic postulates for a long term sustainability of native and protected breeds of domestic animals.
Horses	Improving of production characteristics and fitness of exotic horse breeds. To preserve the genetic structure of autochthonous breeds. Development of a programme for economic utilization and rise in competitiveness of native breeds is one of basic postulates for a long term sustainability of native and protected breeds of domestic animals.

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)	high	low	medium
Sheep	high	low	medium
Goats	medium	low	low
Pigs	high	low	medium
Chickens	high	low	medium
Asses	high	low	low
Horses	high	low	medium

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

- (•) yes
- ( ) no

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

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

	Considered in formal prioritization approaches
Risk of extinction	yes
Genetic uniqueness	yes
Genetic variation within the breed	yes

	Considered in formal prioritization approaches
Production traits	yes
Non-production traits	no
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	no	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Private sector	yes	no	no	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	no	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Sheep	yes	no	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Goats	yes	no	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Pigs	yes	no	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Chickens	yes	no	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Asses	yes	no	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Horses	yes	no	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.

Maintaining the native and protected breeds of domestic animals in the Republic of Croatia, in their original environment (*in situ*), is a primary form of protection. By maintaining a constant contact with the environment (habitat, humans), native breeds maintain their own adaptability, they adapt their productivity, nurture bio-diversity of the habitat, maintain the

relationship with humans and become integrated into the activities of rural areas (folklore, tourist, etc.) Factors which should be taken into account when managing genetic variability of populations in *in situ* programmes for the preservation of native and protected breeds of domestic animals in the Republic of Croatia are the following: genetic, age and reproductive structure of populations, the effective size, geographical distribution, conservation programmes and preventive action measures. If necessary, *in situ* programmes for the protection of native breeds which support stabilization of a population and preservation of the population's specific phenotypical and genetic characteristic need to be readjusted.

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.

Development of the *en situ* programmes for the preservation of native and protected breeds of domestic animals in the Republic of Croatia is important for the preservation, especially for the preservation of critically endangered breeds. Including breeds into *ex situ* programmes (gene bank, hobbyist breeders, zoos, etc.) is necessary in the phase when they enter the categories of highly and critically endangered. In order to ensure the preservation of autochthonous and protected breeds in the Republic of Croatia and in accordance with the recommendations of the FAO, ERFP, the EAAP and national research institutions, the necessary quantity of genetic material per breed is as follows:

1. semen of male breeding animals (sperm): minimally 50 male breeding animals/breed; 300 doses/breeding animal; minimally 15000 doses/breed,
2. ova (oocytes): minimally 50 female breeding animals/breed; 4 to 12 ova/female animal; 200 to 600 ova/breed,
3. embryos: minimally 100 embryos/breed,
4. body tissues (blood, somatic cells): minimally 200 animals/breed.

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)	1	1	yes	yes	yes	yes	yes
Cattle (specialized beef)	3	1	no	no	no	no	no
Cattle (multipurpose)	3	1	yes	no	yes	no	yes
Sheep	8	0	no	no	no	no	yes
Goats	2	0	no	no	no	no	yes
Pigs	2	0	no	no	no	no	yes
Chickens	2	0	no	no	no	no	yes
Asses	2	0	no	no	no	no	yes
Horses	2	0	yes	no	no	no	yes

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

Genetic materials should be collected in accordance with priorities. The type and quantity of genetic materials (semen, embryos, eggs, and somatic cells) must be balanced (breeding needs, endangerment status, action plans, genetically interesting animals, etc.) Based on the cognitions regarding the status of endangerment, an action priority list needs to be compiled, which will quantify the optimal size and type of needed genetic materials per breed and species. A gene bank should be used to store different types of genetic material (semen, embryos, eggs, somatic cells). Stored semen constitutes a valuable genetic material which can be used in managing genetic variability in active *in situ* programmes. Tissues stored at the gene bank are a national good and they are at the disposal of the Republic of Croatia.

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.

Primary goal of national Gene Bank is to store and secure national genetic resources, and its operations are determined by legislation. Secondary role is evident in the possibility of the international exchange of the genetic material where attention shall be paid to the regulations which govern the issue of health aspect.

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.

A part of native breeds of domestic animals in the Republic of Croatia is competitive and economically active. The true value of endangered and protected breeds of domestic animals is in their potential economic advantages (adaptability, resilience to diseases, working capabilities) that have not yet been recognized or do not have an adequate level of significance that would bring about economic advantage (profitability). Modern programmes for preservation of native and protected breeds of domestic animals recognize the need for them to be adapted to the market on which native genotypes make up for their lower level of productivity with attributes such as "ecological", "authentic", "traditional" or "original". Additional options are available through implementation of products from native and protected breeds into supplies labelled "protected authenticity", "geographical origin" or "traditional reputation". We have a few good experiences (Istrian cattle, Black Slavonian pig, Zagorje turkey). Istrian cattle - production of durable and semi durable meat products, "Bakin" salami etc., Black Slavonian pig - production of nautre fat, salami and fresh meat, bacon etc., Zagorje turkey - production of fresh meat.

REPRODUCTIVE AND MOLECULAR BIOTECHNOLOGIES

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

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

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

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

A new biotechnological method offers new possibilities for efficient reproduction and Gene Bank management (collecting, storing and reactivating genetic materials from the Gene Bank). Biotechnological methods can be used in different parts of in situ and ex situ models of AnGR management.

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

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

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

30. Please indicate which biotechnologies your country is undertaking research on.

Biotechnologies	Public or private research at national level	Research undertaken as part of international collaboration
Artificial insemination	yes	no
Embryo transfer or MOET	yes	yes
Semen sexing	no	yes
In vitro fertilization	yes	yes
Cloning	no	no
Genetic modification	no	no
Use of molecular genetic or genomic information for estimation of genetic diversity	yes	yes
Use of molecular genetic or genomic information for prediction of breeding values	yes	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.

Cattle (multipurpose)	Ranching or similar grassland -based production systems	Pastoralist systems	Mixed farming systems (rural areas)	Industrial systems	Small-scale urban or peri-urban systems
Artificial insemination using semen from locally adapted breeds	low	low	low	none	none
Artificial insemination using nationally produced semen from exotic breeds	medium	medium	medium	medium	medium
Artificial insemination using imported semen from exotic breeds	medium	medium	medium	medium	medium
Natural mating	medium	medium	medium	low	medium

Cattle (specialized beef)	Ranching or similar grassland -based production systems	Pastoralist systems	Mixed farming systems (rural areas)	Industrial systems	Small-scale urban or peri-urban systems
Artificial insemination using semen from locally adapted breeds	none	none	none	none	none
Artificial insemination using nationally produced semen from exotic breeds	low	low	low	low	none
Artificial insemination using imported semen from exotic breeds	medium	medium	medium	medium	medium
Natural mating	medium	high	medium	medium	medium

Cattle (specialized dairy)	Ranching or similar grassland -based production systems	Pastoralist systems	Mixed farming systems (rural areas)	Industrial systems	Small-scale urban or peri-urban systems
Artificial insemination using semen from locally adapted breeds	none	none	none	none	none
Artificial insemination using nationally produced semen from exotic breeds	medium	low	medium	medium	low
Artificial insemination using imported semen from exotic breeds	high	none	high	high	high
Natural mating	low	low	low	none	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.

National research institutions use their activities to support a more complete characterization of breeds, define standards for the breed and find phenotypical and genetic characteristics of a special economic importance. The latest biotechnological methods enable finding genes of a special economic use or genes that benefit the emergence of hereditary diseases. Studies should, based on gene characterization, productivity or appearance, provide an answer to phylogenetic positioning of breeds, structural indicators for a population (inbreeding, genetic variability), etc. Based on structural indicators for a population, research institutions should help with the coordination of mating schemes in order to achieve maximal conservation effects. Scientific cognitions help define implementation priorities, a more efficient coordination and creation of an appropriate type of cooperation.

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	

	Extent of collaboration	Description
Collaboration in the characterization, surveying or monitoring of genetic resources, production environments or ecosystems	limited	
Collaboration related to genetic improvement	limited	
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	extensive	
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.

Inclusion of native and protected breeds in programmes of threatened habitat Native breeds are suitable for maintaining biodiversity of the habitat, especially in the protected areas, due to their adaptability to the environment they lived in for centuries. A common problem encountered when maintaining habitat's biotope is suppression of desirable plant communities by more aggressive plants (weeds, low, and later, high woody vegetation). So, meadows, grasslands and other areas within protected areas that have been cultivated for centuries and served for food production become devastated. A reasonable way to maintain biodiversity of a habitat is by including native breeds into the system of protected areas management. Such examples were recorded in the management of Nature Park Lonjsko polje (Posavac horse, Slavonian Syrmian podolian cattle). Other native breeds are to be integrated into other protected areas in a similar way in order to maintain biodiversity.

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).

Based on Nature Protection Act (OG 70/05, 139/08) The Strategy and Action Plan of Protection for Biological and Landscape Diversity of Republic of Croatia (OG 81/99) was created. It represents the basic nature protection document which determines long-term goals and guidelines for protection of Biological and landscape diversity and protection of natural values, way of its implementation in accordance with overall economic, social and cultural development of Republic of Croatia. After the analyses of implementation of action plans, goals and guidelines a revision of the Strategy was made (OG 143/08) Domesticated animals - native breeds are also part of Croatian biological diversity. Their protection is under the competence of different state administration bodies and regulated with acts in the area of nature protection, husbandry, veterinary profession, etc. The Nature Protection Act has only recently introduced the category for protected domesticated taxa under which such an endangered inherited animal breed can fall, which was developed as a result of traditional breeding and is a part of Croatian natural heritage. *Strategic goal:* To preserve and enhance the existing genetic diversity of native and threatened domestic animal breeds and cultivated plants by appropriate conservation methods (*in-situ, ex-situ, inter situ*).
Examples: in karst area sheep and goats maintain landscape by grazing, what have impact on reduced numbers of fire accidents, Slavonian Syrmian Podolian cattle is efficient in prevention of degradation of pastures (repression of plant Amorfa).

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).

Several individual revitalisation and conservation programmes were developed and carried out, integrating domesticated taxa and individual habitats in the care for the overall biological diversity.

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.

Traditional production systems are a part of a heritage that becomes complete through connection with native breeds of domestic animals. The adaptability of inherited native and protected breeds becomes prominent when we take a look at traditional production systems. Providing support to traditional production systems serves to preserve the environment, tradition, rural areas and traditional crafts. Traditional production systems can be efficiently integrated into folklore and tourist offer of a region.

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

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

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

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

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

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

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

Please provide further details:

2. Which of the following options best describes your country's progress in implementing phenotypic characterization studies covering morphology, performance, location, production environments and specific features in all livestock species of economic importance (SP 1, Actions 1 and 2)?

- ( ) a. Comprehensive studies were undertaken before the adoption of the GPA
- (●) b. Sufficient information has been generated because of progress made since the adoption of the GPA
- ( ) c. Some information has been generated (further progress since the adoption of the GPA)
- ( ) d. Some information has been generated (no further progress since the adoption of the GPA)
- ( ) e. None, but action is planned and funding identified
- ( ) f. None, but action is planned and funding is sought
- ( ) g. None

Please provide further details:

3. Which of the following options best describes your country's progress in molecular characterization of its animal genetic resources covering all livestock species of economic importance (SP 1)?

- ( ) a. Comprehensive studies were undertaken before the adoption of the GPA
- (●) b. Sufficient information has been generated because of progress made since the adoption of the GPA
- ( ) c. Some information has been generated (further progress since the adoption of the GPA)
- ( ) d. Some information has been generated (no further progress since the adoption of the GPA)
- ( ) e. None, but action is planned and funding identified
- ( ) f. None, but action is planned and funding is sought
- ( ) g. None

Please provide further details:

4. Has your country conducted a baseline survey of the population status of its animal genetic resources for all livestock species of economic importance (SP 1, Action 1)?

Glossary: A baseline provides a reference point for monitoring population trends. Population status refers to the total size of a national breed population (ideally, also the proportion that is actively used for breeding and the number of male and female breeding animals).

- (●) a. Yes, a baseline survey was undertaken before the adoption of the GPA
- ( ) b. Yes, a baseline survey has been undertaken or has commenced after the adoption of the GPA
- ( ) c. Yes, a baseline survey has been undertaken for some species (coverage increased since the adoption of the GPA)
- ( ) d. Yes, a baseline survey has been undertaken for some species (coverage not increased since the adoption of the GPA)
- ( ) e. No, but action is planned and funding identified
- ( ) f. No, but action is planned and funding is sought
- ( ) g. No

Please provide further details:

Regularly conducted a baseline survey of the population status of its animal genetic resources for all livestock species of economic importance.

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:

Institutional responsibilities for monitoring the status of animal genetic resources in Croatia has been established.

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:

Protocols (details of schedules, objectives and methods) has been established for a monitoring programme to the status of animal genetic resources.

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 population status and trends in regard of animal genetic resources for all livestock species of economic importance has been established.

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:

The assessment of threats to the breed is based on a series of indicators of specific population trends and extinction risks. The indicators considered in assessing threats to the breeds are: numerical, geographic, genetic, demographic, market and others. The classification outlined under the National Programme for the conservation of indigenous and protected domesticated animal breeds in the Republic of Croatia is aligned with the FAO/EAAP guidelines for the categorization of breeds into four groups:
Ia: critically endangered, 1. highly endangered, 2. endangered and 3. not endangered.
In categorizing the status of threatened breed, the effective population size (Ne) is considered, along with several other indicators: inbreeding rates, population trends, geographic dispersion of the population, reproductive efficacy, risk of epidemic events, presence of sustainable use programmes and public interest for the breed.

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:

Natural disasters and epidemic diseases can partially and completely (irreversibly) endanger survival of a part or the entire native or protected population of domestic animals. Should a natural disaster or an epidemic spread of a disease occur, the native and protected breeds of domestic animals can acquire a status of being highly endangered, with regards to the size of the population, its distribution (number of herds, area size and density of population in the area) and genetic materials stored at the gene bank. Native breeds from groups *Ia* and *I* are particularly vulnerable, especially if they had not been adequately included into *ex situ* programmes. A wider dispersion of population within the original breeding area should be encouraged and less risky breeding areas (epidemiologically less risky animals) should be preferred. A regular inventorisation and replenishment of genetic materials stored at the gene bank should be conducted. Should there be an emergence of epidemic diseases and natural disasters, in agreement with the competent authorized bodies, an action plan for urgent salvation of animals, their relocation to a safe location and additional collection of genetic materials to a gene bank should be preformed.

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:

Completing the characterization of native and protected breeds in the Republic of Croatia on the levels of appearance, productivity and genetic characteristics is necessary for optimizing a breeding strategy, adjusting the *in situ* and *ex situ* programmes and developing a programme of economic utilization. The characterization should be continuous (interval) in order to correctly assess population trends and success of the protection programme. The characteristics of productivity and qualitative characteristics of the products are determined in order to get to know the production predisposition of breeds, which is necessary to make breeding profiling, programmes for economic utilization and forming recognizable products. A part of characteristics of native and protected breeds important for their productivity can be improved by preserving the desirable genetic structure. The adaptability of the breed versus the environment in which it lives and produces is particularly emphasized. The characterization of genetic characteristics so they could be phylogenetically positioned facilitates setting priorities in the implementation of action plans. Determining genetic forms related to economically important characteristics, resilience to diseases or private alleles is of particular importance.

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:

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

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

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

All breeds of domestic animals in the Republic of Croatia are under constant monitoring, including the imported breeds and breeds that are not classified as endangered. If the imported breeds are existentially endangered in their country of origin or they have a particular economic (production, strategic) significance for livestock production in Croatia, they are included into the Programme.

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:

A lack of economic competitiveness of the programme for the utilization of native breeds is the main reason for their biological endangerment. Due to lower productive efficiency, they were pushed out by more competitive (more productively efficient), most frequently, allochthonous breeds. When a designed programme for the competitive utilization and breeding does not exist, native protected breeds are lost forever. The current economic and social environment opens up new possibilities for the development of the programme for economic reaffirmation (utilization) of native and protected breeds, with respect to market standards (safety, traceability, and authenticity, ethological and ecological norms). It is necessary to promote the development of programmes for economic utilization of native and protected breeds, their promotion and marketing preparation of specific (traditional) products. Within the framework of managing protected areas with the goal of protecting biodiversity of the whole habitat (biotype), it becomes possible to integrate native and protected breeds.

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:

Inclusion of native and protected breeds in programmes of threatened habitat Native breeds are suitable for maintaining biodiversity of the habitat, especially in the protected areas, due to their adaptability to the environment they lived in for centuries. A common problem encountered when maintaining habitat's biotope is suppression of desirable plant communities by more aggressive plants (weeds, low, and later, high woody vegetation). So, meadows, grasslands and other areas within protected areas that have been cultivated for centuries and served for food production become devastated. A reasonable way to maintain biodiversity of a habitat is by including native breeds into the system of protected areas management. Such examples were recorded in the management of Nature Park Lonjsko polje (Posavac horse, Slavonian Syrmian podolian cattle). Other native breeds are to be integrated into other protected areas in a similar way in order to maintain biodiversity.

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:

Breeding programmes for all major species and breeds exist and these programmes are regularly reviewed.

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:

No major barriers and obstacles exist.

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.

a. No exotic breeds are being used for agricultural production

Please provide further details:

Locally adapted breeds are adapted for traditional production systems or local environments. Exotic breeds are dominant in conventional production systems.
Industrialization of production, market economy and new technologies worked in favor of high productive breeds, mainly to the damage of numerous native breeds of more modest production capacities. However, the very richness of native and protected breeds of domestic animals makes food production safe in the scope of dynamic change of the production environment, especially given the announced and expected climate changes. One should not forget that the native breeds are the very ones which encompass an entire series of direct and indirect benefits. Native breeds are often underestimated in food production, although, especially in economically underdeveloped countries, crucial for sufficient food supply. Adapted to various environments, resistant to different diseases and modest when it comes to their need for food.

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:

In the middle 90 of 20th century in Croatia are developed national policy and other measurements for using of AnGR.

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:

Yes, we have constant training and teaching support for breeders of autochthonous breeds.

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

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

Please provide further details:

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

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

Please provide further details:

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

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

Please provide further details:

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

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

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

STRATEGIC PRIORITY AREA 3: CONSERVATION

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

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

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

Please provide further details:

Systematic monitoring system of assess factors leading to the erosion of animal genetic resources in the Republic of Croatia is established (monitoring the population status, trends and risks).

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:

Erosion of a part of native breeds of domestic animals in the Republic of Croatia has been present for centuries on the local, regional and global level, putting their existence in question. Causes and dynamics of native breeds suppression is regionally specific. Main reasons for the disappearance of one part of native breeds in the Republic of Croatia are:

globalization, economic power concentration, change of agricultural production systems (industrialization), use of mechanization in crop rearing, decrease of available pastures, natural disasters, diseases, inadequate selection, uncontrolled import of exotic breeds, depopulation and urbanization of rural areas.

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:

During last several decades, agriculture has turned to more intensified production which favors selected breeds with

distinct desirable production characteristics. Such breeds have proven to be less resistant and sensitive to disease and with higher keeping requirements. Compared to them, native breeds were created throughout centuries of selection work in the environment of origin. They are living monuments to traditional long-term human efforts and influence in the habitat, from waterless Dinaric karst, mountain pastures to flood valleys. As such they are a natural, but, also, cultural value of the area and country of their origin. Preservation, breeding and use of native breeds leads to revival and protection of our landscapes and habitats, wild species and local breeds, tradition and customs of the rural area. Also, their diversity presents a genetic container which can always be used to improve characteristics of other selected breeds. Therefore, the Strategy lays out the following:
1. ensure preservation of critically endangered native domesticated breeds
2. improve the system for support of breeding and use of native domesticated breeds
3. encourage use of domesticated native taxa for maintenance and improvement of status of endangered habitat types.

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:

The *ex situ-in vivo* is a secondary technique of the *ex situ* model for the preservation of native breeds. It implies preservation of animals of the native breeds outside their breeding environment (protected areas, zoos, educational farms, research centres, hobbyists). Example: Slavonian Syrmian Podolian cattle in Nature Park "Lonjsko polje".

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:

Ex situ in vitro conservation measures are implemented in AnGR management in Republic of Croatia. Genetic materials should be collected in accordance with priorities. The type and quantity of genetic materials (semen, embryos, eggs, and somatic cells) must be balanced (breeding needs, endangerment status, action plans, genetically interesting animals, etc.).
In actual time, we collect genetic material from critically an potentially endangered breeds. In future time we would collect genetic material from all native breeds (without the level of endangerment).

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:

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

- (●) a. Yes
- ( ) b. No

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

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

Please provide further details:

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

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

Please provide further details:

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

- ( ) a. Yes, arrangements have been in place since before the adoption of the GPA

- (●) b. Yes, arrangements put in place after the adoption of the GPA
- ( ) c. No, but action is planned and funding identified
- ( ) d. No, but action is planned and funding is sought
- ( ) e. No

Please provide further details:

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

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

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

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

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

Please provide further details:

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

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

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

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

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

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

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

Please provide further details:

Yes, national governmental institutions, educational and research institutions, non-governmental organizations, breeding companies, breeding organizations, breeders and hobbyists are included into the preservation programme. With regards to interests, obligations and authorities, the stated partners take part in the activities of planning of the livestock sector.

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

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

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

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

In March 2010, the Government of the Republic of Croatia adopted the National Programme to conserve indigenous and protected breeds of domesticated animals in the Republic of Croatia.

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:

The Convention on Biological Diversity is a globally recognized basic document on protection of biological diversity. Republic of Croatia is the signee of the Convention and the Croatian parliament adopted the Act on ratification of the Convention on Biological Diversity (Official Gazette - international agreements 6/96), put in power in 1996, based on which the Strategy and Action Plan for the Protection of Biological and Landscape Diversity was created. Consequent to

its duties, the Croatian Parliament has ratified the Strategy and Action Plan for the Protection of Biological and Landscape Diversity of Republic of Croatia in 1999.
In the Republic of Croatia, the main competent institution responsible for the conservation of indigenous breeds is the Ministry of Agriculture. Within the Ministry, the Committee for the drafting of the National Programme and Action Plans to Safeguard Farm Animal Genetic Resources was established in 2009. In March 2010, the Government of the Republic of Croatia adopted the National Programme to conserve indigenous and protected breeds of domesticated animals in the Republic of Croatia.

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:

Preservation of native and protected breeds of domestic animals in the Republic of Croatia is important for economic, cultural and scientific reasons and is strategic priorities. The Government of the Republic of Croatia adopted the National Programme to conserve indigenous and protected breeds of domesticated animals in the Republic of Croatia.

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:

Yes, our country's national data on animal genetic resources has been regularly updated in DAD-IS and EFABIS.

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:

Yes, Republic of Croatia has been established National Advisory Committee (the National Council for the Programme for the preservation of native and protected breeds of domestic animals in the Republic of Croatia) in 2010.
The National Council for the Programme for the preservation of native and protected breeds of domestic animals in the Republic of Croatia (hereinafter referred to as: (NCP) is the central consultative and controlling body responsible for the implementation of the "National Programme for the protection of native and protected breeds of domestic animals in the Republic of Croatia". As an organization, it is a working group appointed by the Minister of the Ministry of Agriculture, Fisheries and Rural Development (hereinafter referred to as: MAFRD). The members of NCP represent ministries, breeding organizations and scientific institutions. The National Coordinator is a member of NCP. NCP members are appointed for four years. NCP meets at least twice a year, offers its opinion on all activities performed within the framework of the "National Programme for the protection of native and protected breeds of domestic animals in the Republic of Croatia", states its recommendations for the improvement of the implementation of particular programmes and legislations and offers guidelines for scientific research. Based on monitoring the indicators for the breed (size, structure and trends), NCP makes decisions on placing the breed in adequate endangerment categories *(Ia, I, II, III),* it orders taking necessary action steps, offers guidelines and amendments to the active programmes for the protection of native and protected breeds, in accordance with the level of endangerment. It consolidates its findings, recommendations and decisions and submits them to MAFRD in the regular Annual Report. NCP coordinates the creation of the "Report on the status of native and protected breeds of domestic animals in the Republic of Croatia, which is renewed every four years.

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

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

Please provide further details:

The protection of native and protected breeds of domestic animals in the Republic of Croatia is complex since it integrates general interests of a public and interests of individuals. National governmental institutions, educational and research institutions, non-governmental organizations, breeding companies, breeding organizations, breeders and hobbyists are included into the preservation programme. With regards to interests, obligations and authorities, the stated partners take part in the activities of implementation of *in situ* and *ex situ* programmes.

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:

The National Contact Point is partly responsible for: promotion and affirmation of native and protected breeds through programmes of protection via sustainable management; support of marketing activities with a goal of promoting products of native and protected breeds; encouraging inclusion of native and protected breeds into folklore, tourist, hobbyist and other programmes; encouraging inclusion of native and protected breeds into management of protected areas; finding material funds for the support of breeding organisations and other non-profitable participants of programmes for the preservation of native and protected breeds.

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:

National Programme for protection of native and protected breeds of domestic animals in the Republic of Croatia (hereinafter: the Programme) takes into consideration the following regulations:
1. Act on Ratification of the Convention on Biological Diversity (OG- International Treaties 6/96);
2. Livestock Act (OG 70/97, 36/98, 156/03 and 132/06)
3. Veterinary Act (OG 41/07)
4. Animal Welfare Act (OG 135/06)
5. Food Act (OG 46/07, 155/08)
6. Act on Designation of Origin, on Geographical Indications and Traditional Specialities Guaranteed of Agricultural
7. Products and Foodstuffs (OG 84/08, 75/09, 107/09)
8. Nature Protection Act (OG 70/05, 139/94 and 08/05)
9. Forest Act (OG 140/05, 82/06, 129/08)
10. Strategy and Action Plan for the Protection of Biological and Landscape Diversity of the Republic of Croatia (OG 81/99, 143/08)
11. Agriculture Act (OG 149/09)
12. Act on State Support in Agriculture and Rural Development (OG 83/09, 153/09)
13. Agricultural Land Act (OG 152/08, 21/10
14. Genetically Modified Organisms Act (OG 70/05, 137/09
15. Ordinance on Recognition Procedure of New Breeds, Strains and Hybrids (OG 164/04)
16. List of Autochthonous and Protected Breeds and Strains of Domestic Animals and their necessity Number (OG 127/98, 73/03, 39/06, 126/07, 70/09)

For the purpose of creating this Programme regulations of Council of Europe and European Commission relating to protection of native and protected breeds of domestic animals have been taken into account:
1. Council Regulation (EC) No 870/2004 of 24 April 2004 - establishing a Community programme on the conservation, characterization, collection and utilization of genetic resources in agriculture and repealing Regulation (EC) No 1467/94)
2. Council Regulation (EC) No 1698/2005 of 20 September 2005 on support for rural development by the European Agricultural Fund for Rural Development -EAFRD
3. Commission Regulation (EC) No 1974/2006 of 15 December 2006 - laying down detailed rules for the application of

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:

Non-governmental organizations are included in the implementation of this Programme in accordance with their interests and rights they acquire.

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:

Scientific and educational institutions perform scientific and research tasks, complete cognitions on characteristics of the appearance, productivity and genetic structure of breeds, partake in tasks of population monitoring, perform scientific and professional analyses of programme implementation results, take part in the adjustment of the existent and the formation of new breeding programmes and principles necessary for their efficient implementation. Should the occasion warrant it, they will take part in commissions for breeding reviews, regular breeding checks, evaluation of heads on

exhibitions and manifestations. Scientific and educational institutions direct suggestions to the bodies of state administration, public institutions, breeding organisations and breeders who partake in the implementation of breeding programmes regarding issues that require a competent position. On the basis of observations, they take part in bringing individual competent decisions during the implementation of breeding programmes. Scientific and educational institutions are included in educating breeders and broader public on particular parts of the Programme.

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:

One of the strategic guidelines of the National Programme for the protection of autochthonous breeds is to develop cooperation on a regional level through the exchange of experiences and genetic materials in the framework of programme for preservation of native breeds. By exchanging genetic materials, especially for the critically endangered populations, it is easier to maintain genetic diversity.

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

Characterization?

- ( ) a. Yes

- (●) b. No

Sustainable use and development?

- (●) c. Yes
- ( ) d. No

Conservation of breeds at risk?

- ( ) e. Yes
- (●) f. No

If yes, please list the international NGOs:

SAVE, DAGENE.

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

- ( ) a. Yes
- (●) b. No

Please provide further details:

National funding for animal genetic resources are established before the adoption of the GPA. They are constant .

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:

Yes, for example: Busa cattle, Pramenka sheep, Murinsulaner horse.

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:

Example: Croatia contributed to the development and implementation of regional in situ conservation programmes for several regional breeds (Busa, Murinsulaner horse).

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

Submit by Email