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: Italy

I. EXECUTIVE SUMMARY

Please provide an executive summary (not more than two pages) that will allow national and international stakeholders to gain a quick overview of the content of the country report.
The executive summary should contain information on:

- key trends and driving forces affecting animal genetic resources management in your country;
- strengths, weaknesses and gaps in capacity to manage animal genetic resources in your country;
- key constraints and challenges with respect to animal genetic resources management in your country;
- priorities and strategic directions for future action (focusing particularly on the next ten years).

The protection of biodiversity has a strategic importance at international and national level; Italy is one of 33 "hotspots" of biodiversity in the world because it is particularly rich of microbial, fungal, plant and animal variability. Italy, for its high rate of endemism, ranks among the top places. This enormous richness in biodiversity is largely attributable to: geological history, biogeography, use of bioterritory, its central position in the Mediterranean region and the presence of the Apennine Ridge. Considering the total number of species present in Europe, it is estimated that the Italian biodiversity affects more than 30% in the animal field and nearly 50% in the plant field, although the total area is about 1/30 out of that of the European Continent. In more detail: the fauna is estimated at over 58,000 species, of which about 55,000 are invertebrates (95%), 1,812 are protozoa (3%) and 1,265 are vertebrates (2%), with an overall incidence of endemic species approximately of 30%. The flora consists of more than 6,700 species, of which 5,570 are vascular plants (of which 15% are endemic), 851 species are mosses and 279 are Hepaticae. Regarding Mushrooms, about 20,000 species of Macromycetes and Mixomiceti (visible to the naked eye) are known (see more at: http://www.minambiente.it/pagina/biodiversita#sthash.HbhmBKNF.dpuf). To ensure a real integration between the development objectives of the country and the protection of its priceless heritage of biodiversity, the Ministry of Environment has prepared the National Biodiversity Strategy, adopted in October 2010 by the Permanent Conference for relations among the State, Regions and Autonomous Provinces. Among the various initiatives "Guidelines for the conservation and characterization of plant, animal and microbial biodiversity of agriculture interest" have been published . The work, carried out with the funds of Mipaaf under the program of activities for the implementation of the National Plan for Biodiversity of agricultural interest and with the supervision of the Standing Committee on Genetic Resources in Agriculture, contains operational guidelines addressed the needs of farmers, researchers and various officials with different levels of responsibility. The "State-Regions Conference", pursuant to Article 8, paragraph 6, of the Law n. 131 of 5 June 2003, ratified the agreement on the Guidelines. On 24 July 2012 the Decree of the Minister of Agricultural Policies on the adoption of national guidelines for in-situ, on-farm and ex-situ the conservation of plant, animal and microbial biodiversity of agricultural interest was published on Official Gazette n. 171. Agriculture is one of the sectors most involved in achieving the objective of `Halting the decline of biodiversity' sanctioned by the European Council in Gothenburg and reiterated like an ambitious target for 2020 by the European Council of March 2010, as well as the plan for the implementation of the International Convention

on Biological Diversity defined by resolutions of the tenth Conference of the Parties (CBD, 2010). The Guidelines are a necessary tool for conservation and characterization of species, varieties and local breeds able to completely implement the National Plan for Biodiversity of agricultural interest. This plan is a first concrete response to meet the protection of agro-biodiversity with particular reference to the implementation of the Rural Regional Development programs. A financial evaluation of the enormous genetic and phenotypic potential, of the autochthonous or not National heritage in in progress, in order to identify innovative strategies for biodiversity protection. It should be noted that not all of the strategies implemented so far for the use of production systems responsible for genetic erosion, have contributed to slow down the extinction of native species. These assessments and knowledge are a prerequisite to advance and evolve the overall strategies and individual activities implemented up now for biodiversity conservation in agriculture - and in particular for autochthonous breeds. From 2010, it has been proposed an innovative approach to define conservation strategies adopted so far in Italy. This approach is based, not only on the risk status of the breeds, but also, and especially, on the assessment of their current and future importance in various fields and areas (economic productivity, social, historical, cultural, ecological, landscape, etc.) as well as on their specific characteristics. These characteristics are evaluated through somatic descriptors (to be used, in particular, but not exclusively, for populations not yet listed in the Herd Books or Zootechnical Book) and molecular descriptors. In this way, it is possible to identify, for each breed, specific and differentiated conservation objectives, whose achievement requires the most suitable techniques (in situ, ex situ in vivo, ex situ in vitro) decided with "case by case" approach. These strategies could reduce the risk of extinction. Within the limits of the current knowledge, in Italy, 35 breeds of cattle, 66 of sheep, 52 of goats, 29 of horses, 8 of donkeys and 13 of pigs would be reared. The total rabbit races surveyed in Italy are 46 of which 43 are listed in the Zootechnical Book (only one is italian native, the Leprino of Viterbo) and 3 registered in the Stud Books (Italian White, Italian Silver and Italian Stained). At the local level there are organizations that are facing positive strategies for protection of Autochthonous Genetic Types (TGA) using the provisions of European regulations (2078/92 and 1257/99). With regard to the new Common Agricultural Policy (known as PAC) 2014-2020, 200 millions of euro were allocated for biodiversity.
Websites:
(http://www.aia.it/)
(http://www.anarb.it/)
(http://www.anaborapi.it/)
(http://www.anapri.eu/index.php)
(http://www.anare.it/)
(http://www.anaborava.it/home.html)
(http://www.grigioalpina.it/)
(http://www.razzareggiana.it/)
(http://www.anas.it/)
(http://www.assonapa.it/)
(http://www.anci-aia.it/)
(www.agraria.org)
(http://efabis.tzv.fal.de)
(www.eaap.org)
(http://www.fao.org/dad-is/)
(www.inea.it)
(www.isprambiente.it)

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.

At the international level, flow of animal genetic material is now happening on a large scale, both among developed countries and among them and the developing countries. In Italy, this gene flow is focused on cattle and pig species, in particular, on a limited number of breeds as example the most popular Italian Holstein cattle breed (with 1,130,270 animals registered in LG) and Large White pig breed. Therefore, we can draw some conclusions:

1. Countries and regions have long been interdependent on the use of animal genetic resources;
2. The scale of trade and the speed of processing of animal populations has grown dramatically in recent decades;
3. These transfers of genetic material reduce the local genetic resource base on which the worldwide animal production relies. Consequently, both at national and international level, it is necessary to assess the significance of these processes so that actions can be taken to the sustainable use of genetic resources and, where it is necessary, to identify the endangered resources for their conservation. In Italy, the import and export of genetic material are regulated by:

a) Presidential decree N. 320 of 08.02.1954 (article 1) that lists the infectious and contagious diseases of animals to be reported or notified. Whatever the case, even suspicion, of one of these diseases should be immediately reported to the competent authority in order to implement all the control measures to prevent its spread;

b) Law n. 497 of 30 November 1998, regulations for the implementation of directives 92/117/EEC and 97/22/EC concerning measures for protection against specified zoonoses and specific zoonotic agents in animals and their products.

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).

Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise “Giuseppe Caporale” (IZSAM) is a public health company that contributes to human welfare through constant research and experimentation aimed at the integrated system "welfare and animal health - safety food - environmental protection". The IZSAM work as a technical-scientific instrumental of State and Regions of Abruzzo and Molise, offering services of high added value and high content of knowledge and innovation in Animal and Veterinary Public Health and in Environmental Protection fields for safeguarding the animals and humans health. The main tasks are: experimental research on the etiology and pathogenesis of animals infectious and contagious diseases, livestock hygiene and products; tests for the laboratory diagnosis of animal diseases, chemical and microbiological animal safety food intended for human consumption and animal feed; epidemiological surveillance in animal health, vaccines productions, reagents and immunological products for the prevention and diagnosis of animal diseases; consulting, health information and assistance to farmers for the care and rehabilitation for the development and improvement of animal production hygiene , training and upgrading of veterinarians and other operators of Veterinary Public Health . IZSAM manages the National Data Bank of Livestock Population (BDN) of different animal species. The BDN has been recognized by the European Commission of 13 February 2006. The following link provides access to the tables showing the amounts of animals imported and exported as far as the flow of animal genetic resources affecting Italy: http://statistiche.izs.it/portal/page?_pageid=73,12918&_dad=portal&_schema=PORTAL.

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.

All the changes are reported into the link:
http://statistiche.izs.it/portal/page_pageid=73,12918&_dad=portal&_schema=PORTAL

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.

Developments of the late twentieth century, the increase in demand for animal products in developing countries, the production differences between developed and developing countries, the innovative biotech breeding to facilitate the movement of genetic material and the ability to control the environmental conditions regardless of the geographical area of farming, have led to a new phase in the history of international gene flow. The transport of genetic material at international level is now happening on a large scale, both among developed countries and between the latter and the developing countries. Even in Italy the trade and the transformation speed of animal populations has grown in recent decades and there has been a gradual abandonment of the poly-productive attitudes typical of local breeds in favor of some prevailing specialization typical of the cosmopolitan selected breeds.

LIVESTOCK SECTOR TRENDS

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

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

Drivers of change	Impact on animal genetic resources and their management over last ten years	Future impact on animal genetic resources and their management (predicted for the next ten years)	Describe the effects on animal genetic resources and their management
Changing demand for livestock products (quantity)	low	low	According to survey GFK Eurisko it is possible to highlight: 1. a decrease in purchases of fresh natural meat (-1.2%), especially beef and pork, and processed meat (-1.6%) in particular of swine; 2. an increase in the consumption of processed poultry meat (+ 1.5%), eggs (+0.7%) and dairy products (+0.6%). These slight changes of the livestock product quantity does not significantly influence the management of animal genetic resources of Italy.
Changing demand for livestock products (quality)	low	low	A slight change of consumer attention to products with nutritional, extra-nutritional and health quality, in particular, to DOP (Denominazione di origina protetta) e IGP (Indicazione Geografica Protetta) pruducts is happening. The recognition of DOP and IGP brand by the European Union, protects the typicality of certain foodstuffs. This leads to a slight, but not significant, increase in the number of animals in livestock production from which derive these products.

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 marketing infrastructure and access	low	low	In recent years, we are witnessing a change in the type of forms sale, for instance: the direct sales company, the zero kilometer markets in large cities, the consortiums [the Consortium of Bond Beef Italian Breeds Producers -Consorzio Produttori Carne Bovina Pregiata delle Razze Italiane (CCBI), which promotes and enhances the meat derived from 5 Italian beef breeds (Chianina, Marchigiana, Romagnola, Maremmana e Podolica); corsortium holds this historical brand ("5R") associated with these breeds, this brand is synonymous of quality, security and transparency that has ensured to farmers an add value to the typical productions related to our land and traditions. This brand has 2,700 farmers, 90 slaughterhouses, cutting plants 93, 700 butchers and 200 restaurants located throughout the national territory; this organization is controlled and regulated by the Disciplinary Labelling IT003ET approved by the Ministry, with DM of 9 August 1999 n.22493. Another brand is ITALIALLEVA, a tool created by AIA to guarantee the production chain, the origin and the quality of Italian animal products]. These initiatives are leading some changes on management of Italian animal resource.
Changes in retailing	low	low	Today, the majority of households (67.5%) makes the food shopping at the supermarket, which confirms the prevalent place of purchase. This is causing a slight effect on management of animal genetic resources.
Changes in international trade in animal products (imports)	none	none	The import trend of food products derived from animal genetic resources does not influence their management.
Changes in international trade in animal products (exports)	none	none	The export trend of food products derived from animal genetic resources does not influence their management.
Climatic changes	none	none	
Degradation or improvement of grazing land	none	none	
Loss of, or loss of access to, grazing land and other natural resources	none	none	

Drivers of change	Impact on animal genetic resources and their management over last ten years	Future impact on animal genetic resources and their management (predicted for the next ten years)	Describe the effects on animal genetic resources and their management
Economic, livelihood or lifestyle factors affecting the popularity of livestock keeping	low	low	In the last few years, due to a reduction in employment in various sectors (industry, service industry, etc.) there is a renewed interest by young people for agriculture, evidenced by an increased attention to quality of local product and a growing consideration of environmental issues as well as a recognition of service supply such as farm and the so-called social farming. This could lead to a better utilization of animal genetic resources, to a reinforcement of the livestock sector, greater integration of farming in the territorial context through the activation of services. In our country political strategies are in progress (for example the Rural Development Plans - PSR) to support and encourage the creation, development and structural adjustment of farms managed by young farmers. This is leading some changes on management of Italian animal resource.
Replacement of livestock functions	low	low	Previously, the livestock was used as a labor power and was also a financial investment, but today these two functions have been replaced by the introduction of mechanical means and other forms of financing granted by banks or financial institutions, respectively. This is not causing any effect on animal genetic resources.
Changing cultural roles of livestock	low	low	Currently there is a revaluation of the cultural role of animals both in the context of cultural events and in sport events. In addition, some animals have a central role in the practice of pet-therapy as for example the onotherapy.
Changes in technology	medium	medium	The technology on farms plays an increasingly important role as more advanced systems become available. Technological progress, focused on animal welfare, is applied to: 1. better monitoring and management of the animal nutritional needs, for example, its physiological condition; 2. the production of high quality feed; 3. good health and sanitary practices (avoid the introduction of farm animals with potential health problems and hidden and/or incubating diseases); 4. better management of the number of animals in the herd paying attention to housing conditions (adequate animal density in order to ensure a good satisfaction of physiological, ethological and developmental needs of animals).

Drivers of change	Impact on animal genetic resources and their management over last ten years	Future impact on animal genetic resources and their management (predicted for the next ten years)	Describe the effects on animal genetic resources and their management
Policy factors	medium	medium	Ministry of Agriculture, Food and Forest Policies (MiPAAF), through the provision of funding, has promoted actions to safeguard animal genetic resources by improving the competitiveness of the agricultural and forestry sector, enhancing the environment and countryside through land management, improving the quality of life in rural areas and promoting diversification of economic activities. This strategy, common to the whole European Union, provides a multilevel governance involving the European Commission, the State, the Regions and the Economic and Social Partnership, and is implemented in Italy, through regional development programs (RDP) and program of National Rural Network, on the basis of what is defined in the National Strategic Plan (NSP). In 2010 Italy acquired tools to respond to commitments at global and European level for the conservation of Biodiversity by approving the National Plan on Biodiversity of agricultural interest whose funds are expected in 2015. One of the most important community policies is the Common Agricultural Policy (known as PAC), which represents a set of rules that the European Union should adopt recognizing the centrality of the agricultural sector and that provides the allocation of funds for rural development in the context of the 2014-2020 programming phase. Through the implementation of these programs also animal genetic resources could be positively affected in livestock numbers and in the choice of species and breeds to raise.
Disease epidemics	none	none	

OVERVIEW OF ANIMAL GENETIC RESOURCES

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

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

Species	Locally adapted breeds	Exotic breeds
Cattle (specialized dairy)	4	0
Cattle (specialized beef)	12	3
Cattle (multipurpose)	16	0

Species	Locally adapted breeds	Exotic breeds
Sheep	59	7
Goats	41	2
Pigs	10	3
Chickens	21	1
Buffaloes	1	0
Alpacas	0	2
Rabbits	4	42
Horses	27	2
Asses	8	0
Ducks	3	0
Geese	4	0
Turkeys	6	0
Guinea fowls	7	0

CHARACTERIZATION

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

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

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

Species	Baseline survey of population size	Regular monitoring of population size	Phenotypic characterization	Molecular genetic diversity studies – within breed	Genetic diversity studies based on pedigree	Molecular genetic diversity studies – between breed	Genetic variance component estimation	Molecular genetic evaluation
Cattle (specialized dairy)	4	4	high	high	high	high	high	high
Cattle (specialized beef)	15	15	high	high	high	high	high	high
Cattle (multipurpose)	16	16	high	high	high	high	high	medium

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
Sheep	59	59	high	medium	medium	low	low	none
Goats	42	42	high	medium	medium	low	low	none
Pigs	13	13	high	high	high	high	high	medium
Chickens	22	22	low	low	low	low	none	none
Asses	8	8	medium	medium	medium	medium	none	none
Buffaloes	1	1	high	high	high	high	high	none
Horses	29	29	high	high	high	high	none	none
Rabbits	46	46	high	medium	medium	medium	medium	none

INSTITUTIONS AND STAKEHOLDERS

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

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

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

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	In the field of education, recently the Ministry of Environment in collaboration with the Ministry of Education, University and Research has developed the "Guidelines for Environmental Education and Sustainable Development" as part of a discipline of teaching "Citizenship and Constitution".
Research	The universities and research institutions (including the Consortium for Experimentation, Dissemination and Application of Innovative Biotechniques-FAO Italian National Focal Point-Consorzio per la Sperimentazione, Divulgazione e Applicazione di Biotecniche Innovative National Focal Point Italiano FAO ConSDABI-NFP.I FAO) have conducted typing analysis (genomics, proteomics, lipidomics, cytogenetics etc.) of many native or not animal genetic types (TG) and their products.
Knowledge	At national level, the Italian Breeders Association (AIA) and the various breeds associations, as well as local authorities such as APA (Provincial Breeders Association) and ARA (Regional Breeders Association), provide necessary tools (databases relating to the productive characteristics of the animal genetic resource) for the transmission of information that can serve farmers in the choice of operating strategies to be adopted for the management of their farm, as well as for the choice of the genetic resource to farm.
Awareness	Italy, taking into account the importance of biodiversity and under commitments made at the international level with the ratification of the Convention on Biological Diversity in Rio de Janeiro in 1992, has defined and approved the National Plan on Biodiversity of agricultural interest. The full text of the strategy is downloaded from the website www.minambiente.it, sezione natura/biodiversità.
Infrastructure	Poor construction of infrastructure able to promote adequate protection of biodiversity.
Stakeholder participation	An improvement of collaboration among farmers organizations, universities, public and private research institutes (ConSDABI-NFP.I FAO) and various institutions (Region, Province, City, Mountain Community, consortia, etc.) is in progress to achieve appropriate management strategies of Animal Genetic Resources.
Policies	The institutions are medially interested to promote appropriate interventions for the protection of autochthonous animal biodiversity.
Policy implementation	With some exceptions, normally the lack of funds allocated for serious protection policy does not allow the successful implementation of these programs.
Laws	Currently the lack of a national law for the biodiversity protection does not allow to make appropriate plans for conservation of animal genetic resources. Some exceptions are given by the implementation of some regional laws (Basilicata LR n. 26 of 14 October 2008; Campania article n. 33 of 19 January 2007, n. 1; Emilia Romagna LR n. 1 of 29 January 2008; Friuli Venezia Giulia L.R. n. 11 of 22 April 2002; Lazio L.R. n. 15 of 1 March 2000; Marche L.R. n. 12 of 3 June 2003; Toscana L.R. n. 64 of 16 November 2004; Umbria L.R. n. 25 of 4 September 2001).
Implementation of laws	Some regional bodies (ARSIAL-Regional Agency for Development and Innovation of Agriculture of Lazio) in collaboration with ConSDABI - NFP.I FAO follow sound strategies for the protection of biodiversity, but the available funds are insufficient to implement the provisions of the aforesaid rules.

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

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

In order to reduce the genetic erosion of endangered populations initiatives were encouraged to favor aggregation of farmers and provide them with scientific and operational tools able to achieve appropriate objectives for protection of animal genetic resource respecting the local culture; these objectives are also aimed at obtaining food for humans with characteristics peculiar of the concerned geographical area.

BREEDING PROGRAMMES

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

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

10. Who operates breeding programmes in your country?

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

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

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

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

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

Species	Tools															
	Animal identification		Breeding goal defined		Performance recording		Pedigree recording		Genetic evaluation (classic approach)		Genetic evaluation including genomic information		Management of genetic variation (by maximizing effective population size or minimizing rate of inbreeding)		Artificial insemination	
	Loc	Ex	Loc	Ex	Loc	Ex	Loc	Ex	Loc	Ex	Loc	Ex	Loc	Ex	Loc	Ex
Cattle (specialized dairy)	4	0	4	0	4	0	4	0	4	0	2	0	4	0	4	0
Cattle (specialized beef)	12	3	6	0	12	3	12	3	6	0	0	0	12	3	12	3
Goats	41	2	8	0	41	2	41	2	3	0	0	0	41	2	0	0
Sheep	59	7	17	0	59	7	59	7	2	0	0	0	59	7	0	0
Asses	8	0	0	0	8	0	8	0	0	0	0	0	8	0	0	0
Horses	27	2	0	0	27	2	27	2	0	0	0	0	27	2	27	2
Buffaloes	1	0	1	0	1	0	1	0	1	0	0	0	1	0	1	0
Cattle (multipurpose)	16	0	6	0	16	0	16	0	5	0	0	0	16	0	16	0
Pigs	10	3	4	0	10	3	10	3	4	0	0	0	10	3	4	3

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

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

Species	Breeding method			
	Straight/pure-breeding only		Straight/pure-breeding and cross-breeding	
	Loc	Ex	Loc	Ex
Cattle (specialized dairy)	4	0	0	0
Cattle (specialized beef)	6	0	0	0
Cattle (multipurpose)	6	0	0	0
Sheep	17	0	0	0
Goats	8	0	0	0
Pigs	4	0	0	0
Buffaloes	1	0	0	0

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

Species	Training	Research
Cattle (specialized dairy)	high	high
Cattle (specialized beef)	high	high
Cattle (multipurpose)	medium	medium
Sheep	medium	medium
Goats	medium	medium
Pigs	high	high
Chickens	none	none
Buffaloes	high	high
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)	high
Cattle (specialized beef)	high
Cattle (multipurpose)	high
Sheep	high
Goats	high
Pigs	high
Chickens	low
Buffaloes	high
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	none	high	high	medium	none	none	none	none
Animal identification	none	high	high	medium	none	none	none	none
Recording	none	high	high	medium	none	none	none	none
Provision of artificial insemination services	none	high	high	medium	none	none	none	none
Genetic evaluation	none	high	high	medium	none	none	none	none

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

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

Pigs	Government	Research organizations	Breeders' associations or cooperatives	Individual breeders/livestock keepers	National commercial companies	External commercial companies	Non-governmental organizations	Others
Setting breeding goals	none	high	high	high	none	none	none	none
Animal identification	none	high	high	high	none	none	none	none
Recording	none	high	high	high	none	none	none	none
Provision of artificial insemination services	none	high	high	high	none	none	none	none
Genetic evaluation	none	high	high	high	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 Breeders Associations and individual farmers in collaboration with public and private research institutions, thanks to MIPAAF funding, contribute to the implementation of appropriate genetic improvement programs.

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

Species	Policies or programmes
Cattle (specialized dairy)	yes
Cattle (specialized beef)	yes
Cattle (multipurpose)	yes
Sheep	yes
Goats	yes
Pigs	yes
Chickens	yes

16.1. Please describe these policies or programmes, indicating whether or not they include any measures specifically aimed at supporting breeding programmes for locally adapted breeds or any measures specifically aimed at supporting breeding programmes for exotic breeds (including breed-replacement programmes). Please indicate whether different types of programme are promoted in different production systems (and describe the differences).

Species	Description of policies or programmes
Cattle (specialized dairy)	Over the years, the selection of Italian Holstein has followed a course shared by farmers, dairy industry, consortiums and universities, with the assistance of technical central Commission (http://www.anafi.it/Regolamenti/RegolamentoLG_Vigore.htm) as a supreme authority to decide about targeting approaches : 1. beginning of the National Programme of progeny tests, 1985; 2. involvement of farmers through the Provincial Breeders Association (APA) and the race sections; 3. involvement of the dairy industry and consortiums; 4. involvement of universities and research institutes; 5. involvement of artificial insemination centres. link: http://www.agricoltura24.com/bovini-da-latte-le-tendenze-del-miglioramento-genetico/0,1254,26_ART_3186,00.html In general, for the 4 breeds registered in the Herd Books (LG) policies and programs of genetic improvement are provided and managed by the respective national race associations according to the diagrams reported in the specifications of the LG. http://www.anarb.it/Disciplinari/ http://www.anafi.it/ http://www.razzareggiana.it/PaginaWeb.asp?TipoInclude=DISCNORMTEC.

Species	Description of policies or programmes
Cattle (specialized beef)	For the 6 breeds registered in the Herd Books (LG) policies and programs of genetic improvement are provided and managed by the respective national race associations according to the diagrams reported in the specifications of the LG. National race associations shall finalize the selection criteria. The implementation of these programs is the result of concerted action among the breed associations, research organizations and MiPAAF. http://www.anabic.it/libro_genealogico/disciplinare%20libro%20genealogico.pdf http://www.anabic.it/indici_genetici/2012/marchigiana.pdf http://www.anaborapi.it/index.php?option=com_content&view=article&id=75:norme-tecniche&catid=12:norme-regolamenti&Itemid=14 For breeds registered in the Zootechnical Book (RA), coupling plans are in progress to limit inbreeding in order to protect the breed. The RA is managed by AIA that, therefore, examines the programs provided for these races.
Cattle (multipurpose)	Policies and programs of genetic improvement are only provided for the 6 breeds registered in the Herd Books (LG) according to the diagrams reported in the specifications of the LG and managed by the respective national race associations. Only for the Pinzaguer breed, LG is managed by AIA. For more information, we suggest the following sites: http://www.grigioalpina.it/it/s_03_caratteristiche.html http://www.anapri.eu/index.php?option=com_content&view=article&id=71&Itemid=100 http://www.anare.it/pagina/?59 http://www.aia.it/CMSContent/Aia%20Website/Disciplinare%20Libro%20Genealogico%20razza%20Pinzaguer.pdf http://www.anaborava.it/selezione.html. For the 10 breeds registered in the RA, mating plans are in progress to limit inbreeding in order to protect the breed. The RA and the coupling planes are managed by AIA.
Sheep	The breeding programs are implemented only for breeds recognized at LG (http://www.assonapa.it/norme_ecc/Indexnorme.asp) by selection schemes listed in the specification of the LG and managed by the National Pastoralist Association (ASSONAPA). For breeds registered in RA, conservation plans are implemented to preserve the purity of breed limiting the inbreeding level, these programs are implemented by ASSONAPA.
Goats	The breeding programs for goats are implemented in the same way as sheep, therefore please refer to the link www.assonapa.it.
Pigs	The Italian Herd Book is an essential tool for the production system. The Herd Book is assigned to ANAS (National Pigs Breeders Association) with Law 30/91 and is supervised by MiPAAF. The technical projects and activities were established by Technical central Committee that is a body composed of representatives of public administration, researchers and farmers. This ensures authoritativeness, reliability, continuous innovation and transparency to the activity of genetic improvement led by ANAS. Thanks to the Italian Herd Book, consortia of the two most important ham (Parma and San Daniele) were able to draw the rules of production of DOP hams, providing that the boars belonged to the breeds of the Italian selection. Source: http://www.agricoltura24.com/suino-pesante-con-anas-razze-italiane-migliorate/0,1254,26_ART_6248,00.html The selection is made only for the 4 breeds (Italian Large White, Italian Landrace, Duroc and Pietrain) registered in the Herd Book. The objectives of selection for breeds registered in LG are given in the specification (www.anas.it).
Chickens	The drafting of standards for the Italian autochthonous breeds of poultry is in progress.
Buffaloes	The Herd Book of the Buffalo species was established by Ministerial Decree of June 23, 1980 and was given at AIA until 2000. In the same year MiPAAF, with Ministerial Decree 20154 of 11 February, has entrusted the management of the Book directly to ANASB (National Buffalo Breeders Association). In the same year another decree (DM 201 992 of July 5, 2000) recognized Buffalo enrolled in LG belonging to their own race, the "Italian Mediterranean". The breeding programs are listed in the link http://www.anasb.it/home.htm.

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 effects of the presence in Italy of breeding policies and programs have resulted in an improvement of the qualitative and quantitative productive aspects, with particular regard to dairy quality of milk.
Cattle (specialized beef)	In Italy, the effects of the presence of breeding policies and programs have resulted in an improvement of the qualitative and quantitative aspects of production, with particular regard to the meat nutraceutical properties.
Cattle (multipurpose)	For "dual-purpose" breeds, the breeding has resulted in a simultaneous optimization of milk and meat production.
Sheep	The objectives of breeding have resulted in: 1. improvement of the chemical quality and nutritional value of milk; 2. greater resistance to diseases such as mastitis; 3. animal selection for scrapie resistance; 4. obtaining niche products.
Goats	Genetic selection has led to the increase in production performance (quantitative and qualitative) ensuring the robustness and adaptability characteristics of the breed to the typical area where it is farmed.
Pigs	The genetic selection concerns traits such as: growth rate, fat reduction, the increase of the reproductive efficiency, improvement of the feed conversion index.
Chickens	Breeding of poultry considers the qualitative aspects of production, including meat yield, fat cover. In laying hens the selection programs aim to increase the deposition and weight of eggs.

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.

The main problems encountered in breeding programmes are: poor financial availability, low cultural level of farmers, lack of sensitivity of the political class (with some exceptions) that underestimates the importance of the livestock productive performance. To reduce the negative effects of these constraints it is necessary a greater availability of public funds since that the effects on the economy, especially agriculture, are remarkable. Also, it is important to have an intense training in schools at all levels to highlight and disseminate the importance of the animal genetic resources.

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)	With regard to dairy cattle the objectives will improve animal welfare that translates into longevity and fertility, with a consequent reduction of production costs of the unit product obtained from the single subject. This objective is achieved through research of: genetic markers related to animal welfare; new genes that control disease resistance and content of metabolites that influence the human health.
Cattle (specialized beef)	More attention will be given to longevity and fertility as functional traits of greatest economic impact, so they must be focuses of study in suitable selective programmes. In addition, the Italian research, based on implementation and integration between quantitative genetics and results and information of molecular genetics, must be focused on the analysis of genes involved in meat quality.

Species	Description of future objectives, priorities and plans
Cattle (multipurpose)	The objectives of selection can be summarized as follows: to increase the milk yield and milk quality maintaining somatic cell count and mastitis resistance at current levels; to improve the meat purpose through the acquisition of animals showing high growth rate with presence of adequate muscleness with particular reference to valuable cuts; to enhance the breast conformation (this is a primary objective) and "milkability" of the cows. These lead to a lower operating costs and positive effects on animal health and welfare.
Sheep	The objectives of the sheep breeding are aimed at: improving milk chemical and nutritional value; enhancing mammary morphology and adaptability to mechanical milking; increasing the resistance to diseases such as mastitis and scrapie. The development of new molecular genetic technologies is changing the selective approach and the possibility to select through traits excluded until now.
Goats	Genetic selection of goat is aimed at: increasing productive (quantitative and qualitative) performance and conserving genetic variability; studying and evaluating, through the molecular genetics, of the main milk qualitative characteristics (milk more suitable for cheese-making or for direct consumption depending, for example, on the presence of genetic variants associated to a high k-casein level or to the presence of particular peptides). It is necessary to implement breeding programs aimed at preventing, controlling and eradicating scrapie through the identification of resistant genotypes.
Pigs	The objectives of pig breeding are: rapidity of growth, fat reduction, increase of reproductive efficiency (number of piglets/weaned/sow/year), improvement of feed conversion index, improvement of adaptation to intensive farming conditions and stress.
Chickens	Breeding of specialized meat poultry is aimed at increasing the growth rate to obtain the reduction of the age at slaughter (1 day for every year); furthermore, it has also considered the qualitative aspects including meat yield, fatness and meat quality. In the layers the selection programs aim at: increasing the deposition and the egg weight, modifying the shell characteristics and increasing disease resistance.

CONSERVATION

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

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

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

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

Species	In situ conservation	Ex situ in vivo conservation	Ex situ in vitro conservation
Cattle (specialized dairy)	n/a	n/a	high
Cattle (specialized beef)	high	low	high
Cattle (multipurpose)	high	low	high
Sheep	medium	low	low
Goats	medium	low	low
Pigs	medium	low	low
Chickens	low	low	low

Species	In situ conservation	Ex situ in vivo conservation	Ex situ in vitro conservation
Buffaloes	high	high	high

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

- (•) yes
- ( ) no

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

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

	Considered in formal prioritization approaches
Risk of extinction	yes
Genetic uniqueness	yes
Genetic variation within the breed	yes
Production traits	yes
Non-production traits	yes
Cultural or historical importance	yes
Probability of success	yes

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

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

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

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
Cattle (multipurpose)	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Sheep	yes	yes	yes	yes	no	yes	yes	yes	yes	yes	yes	yes
Goats	yes	yes	yes	yes	no	yes	yes	yes	yes	yes	yes	yes
Pigs	yes	yes	yes	yes	no	yes	yes	yes	yes	yes	yes	yes
Chickens	yes	yes	yes	yes	no	no	yes	yes	no	yes	yes	yes
Buffaloes	yes	yes	yes	yes	no	no	yes	yes	no	yes	no	no

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

On 28 October 2004, through ministerial decree n. 705, an amendment of art. 9 of the Constitution was approved stating that the Italian Republic, in addition to cultural heritage, has to protect the environment, ecosystems and animals: "... it safeguards the environment and ecosystems, also in the interest of future generations. It protects biodiversity and promotes animal respect". In Italy, the safeguard of endangered livestock biodiversity is performed through: *(i)* Zootechnical Book for species managed by AIA and its Associates (L. 30 January 15, 1991 and successive changes; www.politicheagricole.it/flex/cm/pages/ServeBLoB.php/L/IT/IDPagina/2687); *(ii)* I.NFP established by ministerial decree n. 499 December 23,1999, including also in situ conservation activity of some different breeds belonging to bovine, goat, ovine, pig, ass and equine species, an example of in situ conservation activity is given with the figure of custodian breeders foreseen by PSR. Moreover, I.NFP promotes various activities in order to increase the public awareness and the value of AnGR: *(i)* studies and research; *(ii)* increase of value of the animal products through the *'Labelled Typified Local Product'* (Prodotto locale tipizzato etichettato, PLTE); *(iii)* dissemination of knowledge toward schools of each order and level; *(iv)* organization of Congresses, workshops, fairs and exhibitions, etc..

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.

In Italy a national bank of genetic material does'n exist, but there are several centers that conserve and commercialize the genetic material cryopreserved, for example: ConSDABI - NFP.I FAO, the Institute of Biology and Agricultural Biotechnology (IBBA-CNR) and the DIVET Department at University of Milano. It is in progress the implementation of a virtual Cryobank (CRIONET-IT) which have already included: the University of Milano; National Association of Reggiana Breeders; the Cryobanks of Lombardia, IBBA-CNR and ConSDABI - NFP.I FAO; Mountain Community of 'Valli del Verbano'; Burlina genetic reserve; Provincial Breeders Association of Treviso; Cabannina genetic reserve; Provincial Breeders Association of Genova.

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)	4	4	yes	no	yes	yes	yes
Cattle (specialized beef)	15	15	yes	no	yes	yes	yes
Cattle (multipurpose)	16	16	yes	no	yes	yes	yes
Sheep	23	17	yes	no	yes	yes	yes
Goats	27	8	yes	no	yes	yes	yes
Pigs	13	7	yes	no	yes	yes	yes
Chickens	0	0	no	no	no	no	no
Buffaloes	1	1	no	no	yes	yes	yes

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

www.consdabi.org; www.inseme.it; www.anasb.it; www.ibba.cnr.it/; www.aia.it/; www.lgscr.it; www.assonapa.it;

www.anas.it.

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.

CRIONET-IT, the virtual Bank of germplasm, was created by the Institute of Biology and Agricultural Biotechnology of National Research Council (IBBA-CNR) and by the Department of Veterinary Sciences and Public Health of the Faculty of Veterinary Medicine of the University of Milano (DIVET-UNIMI), in collaboration with Italian Breeders Association (AIA) and Italian National Focal Point (NFP.I-FAO) in order to

- share, with a virtual bank, the information relating to the cryo-preserved genetic material of local livestock of economic interest for genetic reserve purpose;
- create a network of research institutions, farmers associations, artificial insemination centers and conservation organizations, engaged in cryopreservation of genetic material of local breeds;
- promote collaboration among all those involved in the cryopreservation of animal genetic resources;
- contribute to the preservation of Italian local breeds.

These actions include the development of: common storage protocols; sharing of the collection and storage programs; joined actions.

Partners:

- National Reggiana Breeders Association - Gene Bank;
- Lombard Bank of Animal Genetic Resources - LABank;
- Mountain Community of `Valli del Verbano';
- Cryobank of Animal Germplasm “Giuseppe Rognoni” - IBBA-CNR;
- Burlina genetic reserve - Provincial Breeders Association of Treviso;
- Cabannina genetic reserve - Provincial Breeders Association of Genova.

The sharing of the information about the genetic material from this virtual bank is achieved using the CryoWEB software (http://cryo-devel.tzv.fal.de/). This software has been installed in the following countries: Austria, Estonia,Finland, Georgia, Iceland, Ireland, Netherlands, Slovakia, Slovenia, Switzerland, Germany, Greece, Croatia, Cyprus, Italy, Poland.

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.

In Italy, some cases exist where endangered breeds were recovered by an increase in population size. An example is the Ancient Autochthonous Genetic Type (AAGT) Donkey of Viterbo, considered extinct until 2011. Thanks to a recovery plan (Law of 1 March 2000 n.15, http://www.arsialweb.it/cmsindex.phpoption=com_content&task=view&id=16&Itemid=27) based on the census and monitoring of regional genetic resources implemented by ARSIAL (Regional Agency for Development and Innovation of Agriculture of Lazio) in collaboration with ,currently, 163 subjects of AAGT Donkey of Viterbo were surveyed and recorded in the Zootechnical Book of Equine and Asinine breeds at limited diffusion, stated with Ministerial Decree of 7.5.2012 n.0009742 of MiPAAF.

REPRODUCTIVE AND MOLECULAR BIOTECHNOLOGIES

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

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

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

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

In recent years, the introduction and application of reproductive and molecular biotechnology in the field of breeding has significantly increased because these techniques can improve reproductive efficiency of animals. The biotechiques introduced allow to have a very positive impact on the development of breeding programs concerned in our country. In addition, these technologies can be applied to eliminate some undesirable traits related to the animal health or fertility and increase productivity, as well as to obtain economic benefits.

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

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

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

Public organizations such as research institutes and universities are interested in proposing projects to test and develop ad hoc protocols for these technologies exploiting the advantages and limit of their use. The breeders associations have a central role in the recording any type of information related to reproductive biological material and addressing farmers to a correct use of this material. For example, AIA in collaboration with companies such as INSEME, implements breeding programs and commercializes high quality semen. In addition, this material is distributed with efficiency and punctuality. At the national level there are other companies that deal of sample collection, storage, evaluation and trade of semen. Furthermore, it is possible to buy semen from abroad after the authorization by the MiPAAF.

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

Biotechnologies	Public or private research at national level	Research undertaken as part of international collaboration
Artificial insemination	yes	yes
Embryo transfer or MOET	yes	yes
Semen sexing	yes	yes
In vitro fertilization	yes	yes
Cloning	yes	yes
Genetic modification	yes	yes
Use of molecular genetic or genomic information for estimation of genetic diversity	yes	yes
Use of molecular genetic or genomic information for prediction of breeding values	yes	yes
Research on adaptedness based on molecular genetic or genomic information	yes	yes

30.1. Please briefly describe the research.

Numerous public and private research institutions are involved in reproductive biotechnology research concernig, for example:

- in vitro fertilization;

- duplication (splitting) of embryos;
- nuclear transplantation;
- cloning;
- lOvum pick up (OPU).

Research projects focused on fertility and embryo development of the livestock species are in progress in order to improve dairy cattle fertility, progressively reduced in recent decades. The main goals will be to investigate the metabolic and genetic causes of this decline through a multidisciplinary approach involving multiple operational units; this approach will take into account the different reproductive stages, from oocyte development to the embryo implantion in uterus. Particular emphasis will be given to the identification of new biological markers of infertility related to major metabolic pathways and to related candidate genes implicated in the control of fertility. The knowledge developed in this field will be validated with in vitro tests, and the results obtained will be used to improve farming management, to promote genomic selection programs and to improve reproductive technologies (from in vitro maturation to optimization of embryo culture).

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

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

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

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

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

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

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

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

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

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

At national level there is a framework law (Law n. 30 of 15 January 1991) who defined the various aspects concerning the animal selection and reproduction. In particular, the law characterizes the importance of sire identification through LG

and RA and identifies the organizations that have their management, as well as emphasizes the importance of the authorization to use the sire. The reproduction management is delegated to a Regulation which saw its first publication in 1994 (DM172/94) and the second in 2000 (DM 403/2000). The supervisory of reproductive aspects is entrusted to the Italian expertise Regions, supported by the Institute for Animal Disease Prevention for sanitary aspects and by Italian Istituto Sperimentale "Lazzaro Spallanzani" (DM of 12/27/94) for aspects related to the official control of semen (performed on a sample of all batches of frozen semen imported or produced in Italy).

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	none	
Collaboration in the characterization, surveying or monitoring of genetic resources, production environments or ecosystems	none	
Collaboration related to genetic improvement	none	
Collaboration related to product development and/or marketing	none	
Collaboration in conservation strategies, programmes or projects	none	
Collaboration in awareness-raising on the roles and values of genetic resources	none	
Training activities and/or educational curricula that address genetic resources in an integrated manner	none	
Collaboration in the mobilization of resources for the management of genetic resources	none	

2. Please describe any other types of collaboration.

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

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

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

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

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

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

- (•) yes
- ( ) no

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

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

Ecosystem services are characterized by public goods and it is necessary a strong capacity of governance of environmental resources from public institutions to defend and strengthen them. This action of governance must be based on criteria and indicators of economic efficiency (Boyd and Banzhalf, 2005). The document is organized into three parts: the first part is theoretical and a general framework is present for the analysis of ecosystem services, according to the Millennium Ecosystem Assessment (MA, 2005). In this analysis particular attention is given to the relationship between ecosystem services, policies and specific measures of assistance, focusing on the issue of payments for environmental services. The second part describes the condition of ecosystem services and the analysis has highlighted the key role of policies in regulating ecosystem services and in activating mechanisms for payments of environmental services. In the third part, the analysis is more purposeful and the attention is focused on some discrepancies between the general principles of reference and practical application of environmental policies in the Italian context, highlighting the main lines of action that such policies should be adopted to the protection of ecosystem services. http://www.minambiente.it/sites/default/files/archivio/allegati/biodiversita/TAVOLO_7_SERVIZI_ECOSISTEMICI_completo.pdf

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).

Please refer to question 6.1

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).

Please refer to question 6.1

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.

Please refer to question 6.1

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).

Please refer to question 6.1

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).

Please refer to question 6.1

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.

Please refer to question 6.1

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.

http://aspa.unitus.it/matassino/91_/91.%20testo%20Matassino%20et%20al..pdf

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

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

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

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

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

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

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

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

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

Please provide further details:

The inventory of Italian Animal Genetic Resources (AnGR) is made yearly on DAD-IS. The updating was carried out until 2012 even if it is possible visualize data up to 2011 due to a technical problem. The updating for 2013 is in progress.

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:

The worthy and very valid research carried out in Italy by numerous Experimentation Centres and Breeders Organizations are still far from characterizing adequately the Italian populations included in Italian livestock census. A typing activity is in progress on populations not yet included in Italian livestock census for their registration in Zootechnical Book and Voluntary Book of each Italian region. Sometimes, the inadequacy is the result of the dynamic knowledge evidencing that the animal is a carrier of still unknown molecular information especially due to the complexity of the genome structure and function, also on the basis of the importance ascribed to subatomic components and to dynamics of biophysical phenomena. A profitable multidisciplinary collaboration is required to achieve a better characterization.

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:

On populations at limited diffusion included in Italian livestock *census*, as well as on populations not yet included in Italian livestock *census,* the survey of further information is in progress. For populations registered in Herd Book or in Zootechnical Book, it is possible to visit websites of AIA and its Associates (www.aia.it/aia-websit).

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:

Ministry of Agriculture, Food and Forest Policies (MiPAAF) has the institutional responsibility and acts through: (i) AIA and its associates; (ii) ConSDABI - NFP.I FAO; (iv) National Plan on Agriculture Biodiversity (Piano Nazionale sulla Biodiversità di Interesse Agricolo, PNBIA) (Decree 6214 10/03/2009).

6. Have protocols (details of schedules, objectives and methods) been established for a programme to monitor the status of animal genetic resources in your country (SP 2)?

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

Please provide further details:

7. Are the population status and trends of your country's animal genetic resources being monitored regularly for all livestock species of economic importance (SP 1, Action 2)?

- (•) a. Yes, regular monitoring commenced before the adoption of the GPA
- ( ) b. Yes, regular monitoring commenced after the adoption of the GPA
- ( ) c. Yes, regular monitoring is being undertaken for some species (coverage increased since the adoption of the GPA)
- ( ) d. Yes, regular monitoring is being undertaken for some species (coverage not increased since the adoption of the GPA)
- ( ) e. No, but action is planned and funding identified
- ( ) f. No, but action is planned and funding is sought
- ( ) g. No

Please provide further details:

You can see `further details' concerning the question 1, area IV.

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:

FAO criteria are integrated by European Union rules (Council Regulation EC N. 1257/1999; www.dps.tesoro.it/documentazione/qcs/regolamenti/regolamento_1257_1999.pdf.

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

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

Please provide further details:

10. Is your country conducting research to develop methods, technical standards or protocols for phenotypic or molecular characterization, or breed evaluation, valuation or comparison? (SP 2, Action 2)

- (•) a. Yes, research commenced before the adoption of the GPA
- ( ) b. Yes, research commenced after the adoption of the GPA

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

Please provide further details:

More information is available from national projects concerning genetic and productive characterization of breeds as well as on authentication and traceability of the animal product origin; this information is also condition to define protection and management strategy for biodiversity development.

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:

Although the National Plan on Biodiversity of Agricultural Interest (PNBIA) was draft and the Standing Committee on Genetic Resources (Decree 6214 of 10/03/2009) was established by Mipaaf, the main obstacle is the lack of funds supporting characterization and monitoring activities of animal genetic resources.

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.

Initiatives are in progress in order to individuate the trend of the risk status also in collaboration with several institutions: AIA and its associates, Universities, public [e.g. National Research Council (CNR)] and private (e.g. ConSDABI) research institutes, as well as various institutions (Italian Regions, Provinces, Communes, Mountain Communities, Cooperatives, etc.) and also in collaboration with international Bodies.

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:

For further information, it is possible to visit the following websites:
www.politicheagricole.it;
www.regione.lazio.it;
www.regione.umbria.it;
www.regione.fvg.it;
www.regione.marche.it,
www.regione.veneto.it;
www.regione.toscana.it;
www.regione.liguria.it;
www.regione.emilia-romagna.it;
www.unicattolica.it;
www.dsa.unipd.it;
www.ibba.cnr.it;
www.consdabi.org;
www.dps.tesoro.it/documentazione/QSN/docs/PO/In%20adozione/PO_Italia_Slovenia_FESR_SFC2007.pdf.

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

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

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

Please provide further details:

The specific regulations promulgated by the Italian regions represent the only institutional / legal example in Europe in the field of protection of genetic resources of agricultural interest, which seeks to combine the development of land with the conservation of biodiversity whose role is essential for the support of agro ecosystems.

16. Do breeding programmes exist in your country for all major species and breeds, and are these programmes regularly reviewed, and if necessary revised, with the aim of meeting foreseeable economic and social needs and market demands (SP4, Action 2)?

- (●) a. Yes, since before the adoption of the GPA
- ( ) b. Yes, put in place after the adoption of the GPA
- ( ) c. For some species and breeds (coverage has increased since the adoption of the GPA)
- ( ) d. For some species and breeds (coverage has not increased since the adoption of the GPA)
- ( ) e. No, but action is planned and funding identified
- ( ) f. No, but action is planned and funding is sought
- ( ) g. No

Please provide further details:

The development programmes are regularly or constantly revised thanks to the addresses defined by: Mipaaf, Central Technical Committee (CTC) for breeds and species, Rural Developmental Plans (Piani di Sviluppo Rurale, PSR).

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

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

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

Please provide further details:

The National Strategy for Biodiversity, adopted by Italy for the first time in 2010, is an updated instrument to face the most recent commitments at global and European level for the conservation of biodiversity by 2020 and beyond. This strategy is implemented for 2011-2020 period and provides a system of regular monitoring based on a set of indicators that will enable to estimate the effectiveness of the policies undertaken, the achievement of specific objectives through the priorities for action for the achievement of strategic objectives. By 2020, the biodiversity conservation will be integrated into economic and sector policies, as well as opportunities for new employment and social development.

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

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

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

The conservation of populations usually less productive and not-competitive with cosmopolitan breeds must be adequately supported by direct public interventions directed firstly to farmers and, secondly, to local institutions. The conservation of animal populations is much more expensive and complex than plant varieties and the risk of gene pool and variability loss is higher due to the reduced number of heads. Consequently, the support to farmers also should take into account the initial population and associated risks. Often the essential services for conservation by public and / or research Institutions able to assist conservation with appropriate technical and scientific support are absent. So, it is urgent to build a national network involving reference or excellence research centres to assist farmers in activity of conservation (population typing, conservation plans, etc.) protection of smaller populations (collection and storage of semen, oocytes, embryos, etc.) and product valorisation (especially nutraceutical products).

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

Glossary:

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

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

f. No

Please provide further details:

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

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

- ○ g. No

Please provide further details:

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

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

Please provide further details:

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

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

Please provide further details:

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

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

Please provide further details:

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

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

Please provide further details:

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

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

Please provide further details:

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

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

Please provide further details:

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

- ◉ a. Yes, sufficient measures have been in place since before the adoption of the GPA
- ○ b. Yes, sufficient measures are in place because of progress made since the adoption of the GPA
- ○ c. Yes, some measures are in place (and were established or strengthened after the adoption of the GPA)
- ○ d. Yes, some measures are in place (but no progress has been made since the adoption of the GPA)

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

Please provide further details:

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

It would be necessary: *(i)* to evidence a relationship between bio-territory and AnGR; *(ii)* to increase the value of PLTE (Prodotto locale tipizzato etichettato); *(iii)* to satisfy the consumer demand; *(iv)* to guarantee products with nutritional, and health quality, hence with nutraceutical quality, independently on Protected Designation of Origin (PDO), Protected Geographical Indication (PGI), Traditional Speciality Guaranteed (TSG) labels; (*v*) to safeguard landscape.

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.

Please refer to the questions 11 and 17, area IV.

STRATEGIC PRIORITY AREA 3: CONSERVATION

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

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

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

Please provide further details:

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

Main factors responsible for genetic erosion are: (a) economic and market factors; (b) cultural factors; (c) operational factors; (d) loss of breeding environment. The effect of these factors is variable due to the presence on Italian bioterritory of more than 300 autochthonous genetic types. Many Genetic Types [especially poultry (turkey, goose, duck, etc.), rabbits, etc.] are yet to be surveyed. Concerning chickens is currently drafting the specification of the Zootechnical Book. However, initiatives are in progress by Mipaaf-AIA to reduce, as much as possible this gap.

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:

MIPAAF coordinates national actions to safeguard animal genetic resources at risk through the management of the National Plan on Biodiversity. Individual Italian regions enact specific laws for the conservation, protection and enhancement of the AnGR: the Lazio Region, through ARSIAL and ConSDABI, has initiated a census and constant monitoring of regional genetic resources which so far has allowed to catalog and protect 12 new animal genetic resources of Lazio Region, 6 of which were recorded in the respective Zootechnical Book.

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:

The safeguard of endangered livestock biodiversity is performed through: *(i)* Zootechnical Book for species managed by

AIA and its Associates (L. 30 January 15, 1991 and successive changes; www.politicheagricole.it/flex/cm/pages/ServeBLoB.php/L/IT/IDPagina/2687; *(ii)* RGV in italian called 'Registro Volontario Regionale' (regional volunteer book); *(iii)* custodian breeders foreseen by rural development plans (know as PSR). These measures were performed before the adoption of the GPA.

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:

`Mipaaf - NFP.I.' agreement in the context of L. 499 December 23,1999, before the adoption of the GPA, includes the `ex situ' `in vivo' conservation activity of some different breeds belonging to bovine, caprine, ovine, swine, asinine and equine species.

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

Glossary: Ex situ in vitro - conservation, under cryogenic conditions including, inter alia, the cryoconservation of embryos, semen, oocytes, somatic cells or tissues having the potential to reconstitute live animals at a later date.

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

Please provide further details:

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

The Italian Regions give, under request of authorization, proper Centres for the cryoconservation of embryos, semen, oocytes, somatic cells or tissues, etc.. (http://www.genrescryonet.unimi.it/)

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:

Please refer to the `further details' of question number 11.

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:

Please refer to question number 35.

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:

Since years '70, Italy [Mipaaf, AIA and its Associates, CNR, University, public and private Research Centres, local Institutions (Italian Regions, Province, City, Mountain Community, etc.) started research about the development of innovative methods for `in situ' and `ex situ' conservation of AnGR. Different farming systems (housed, wild state and half-wild state) with various defence systems (net, electric band, etc.) as well as innovative reproductive biotechniques [Ovum Pick up (OPU), `in vitro' fertilization, embryo sexing, embryo transfer, etc.] were experimented especially in cattle, horse, sheep, pig and rabbit. Moreover, guidelines were established to individuate and preserve AnGR, such as: ethnographical atlas of livestock reared in Italy (CNR, 1983) online atlas (www.biozootec.it; www.sozooalp.it; www.agraria.org).

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:

- Coordination at national level to avoid the redundancy of the initiatives;
- assignment of funds for research about genetic typing of AnGR to establish when a population has to be safeguarded;
- support to the `custodian breeders' to find funds for their safeguard activities;
- increase of know-how transfer from scientific community to `custodian breeders' community;
- promotion of initiatives to favour the union among the `custodian breeders' concerning the AnGR that has to be safeguarded;
- enhancing the drawing up of educational material about the civil utility of the endangered AnGR safeguard;
- amplification of initiatives to favour the educational system toward sustainability.

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

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

In order to favour conservation activity, Italy [Mipaaf, AIA and its Associates, CNR, University, Public and Private Research Centres, local Institutions (Italian Regions, Province, City, Mountain Community), etc.] promotes national initiatives as well as participates in international initiatives favouring and supporting them, with particular reference to those of Mediterranean area and other Regions.

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

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

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

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

Please provide further details:

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

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

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

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

www.aia.it

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:

www.statoregioni.it codex n. 4.18/2008/21.

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

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

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

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

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

Please provide further details:

In 1985, MiPAAF established the Zootechnical Book of the autochthonous cattle populations and ethnic groups at limited diffusion and it entrusted AIA with its management according to Law 30/91. In 1990 MiPAAF funded the *'collection, catalog, characterization and conservation programme of italian livestock genetic resources to coordinate, at national level, the actions of safeguard of animal genetic resources'*. With Law 3 August 1999, n. 280, MiPAAF entrusted ASSONAPA (National Association of Pastoralism), ANAS (National Association of Pig Breeders) and AIA with the keeping of Zootechnical Book of the sheep/goats, pigs and asses/horses, respectively.

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:

ConSDABI - NFP.I FAO annually updates the database of European Farm Animal Biodiversity Information System (EFABIS) in association with APA (Provincial Breeders Association), ARA (italian Regional Breeders Association), ANA (National Breeders Association), ASSONAPA and ANAS.

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

- (●) a. Yes, established before the adoption of the GPA
- ( ) b. Yes, established after the adoption of the GPA

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

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

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

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

Please provide further details:

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

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

Please provide further details:

I.NFP promotes various activities in order to increase the public awareness and the value of AnGR: *(i)* studies and research; *(ii)* increase in value of the animal products through PLTE; *(iii)* dissemination of knowledge toward schools of each order and level *(iv)* organization of Congresses, workshops, fairs and exhibitions, etc..

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

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

Please provide further details:

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

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

Please provide further details:

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

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

Please provide further details:

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

Characterization?

- ◉ a. Yes
- ○ b. No

Sustainable use and development?

- ◉ c. Yes
- ○ d. No

Conservation of breeds at risk?

- ◉ e. Yes
- ○ f. No

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

www.aia.it
www.consdabi.org
Various cooperatives

60. Has your country established or strengthened research or educational institutions in the field of animal genetic resources management (SP 13, Action 3)?

- ◉ a. Yes, adequate research and education institutions have existed since before the adoption of the GPA
- ○ b. Yes, adequate research and education institutions exist because of progress made since the adoption of the GPA
- ○ c. Yes, research and education institutions exist but still require strengthening (progress made since the adoption of the GPA)

- ○ d. Yes, research and education institutions exist but still require strengthening (no progress made since the adoption of the GPA)
- ○ e. No, but action is planned and funding identified
- ○ f. No, but action is planned and funding is sought
- ○ g. No

Please provide further details:

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

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

Italy, through DDLL n. 752 of 6.11.1986 and n. 201 of 10.7.1991, has legislated on biodiversity before Rio de Janeiro Convention (1992) with rules on agricultural biodiversity safeguard comprehensive of zootechnical one. It also funded projects (e.g. "Safeguard of livestock genetic resource") and some multiple structures aimed at satisfying the strategic priorities of Area 4.

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:

Participation in:
- Some ResGen projects, amongst which: 'European gene banking project for pig genetic resources'; 'Towards a

strategy for the conservation of the genetic diversity of European cattle';
- Various Intergovernamental Technical Working Group on AnGR taken place in Rome at FAO from 2001 to 2006;
- Several ERFP Working Group established in coincidence with NC's Workshop from 2003 to 2010 [An European Farm Animal Biodiversity Information System (EFABIS)]'; 'An integrated network of decentralized country biodiversity and gene bank databases' EFABIS net; `Implementation of the GPA'; `European Cryoconservation of Heritage Sheep Breeds'; `Development of guidelines for cryoconservation of AnGR in Europe'; 'Various aspects and possible evolution of in-situ conservation in Europe'; 'A Global view of livestock diversity - GLOBALDIV';
- Some projects funded by European Community: 'Analysis of Genetic Diversity to Preserve Future Breeding Options'; 'Gene Bank'; 'Towards self-sustainable of EUropean REgional CAttle breeds' (EURECA); 'Characterization of the indigenous and improved Podolic cattle breeds and identification of threats for extinction in global challenges'; 'European livestock breeds ark, rescue net' ELBARN; European Pig Biodiversity; 'Next generation methods to preserve farm animal biodiversity by optimizing present, future breeding options';
- Interreg initiatives such as: Italy-Switzerland: 'Genetic characterization of autochthonous sheep and goats breeds of nord Piedmont';
- TaurOs project: 'Uro (*Bos progenius primigenius*) reconstitution by breeding-back using cattle breeds, genotipically and phenotipically close to Uro after their genetic typing '
- ECONOGENE Consortium;
- Cattle Biodiversity European Consortium;
- Sequencing of the buffalo genome.

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:

- International Committee for Alps protection (Commissione Internazionale per la Protezione delle Alpi - Cipra - (www.cipra.org)
- Safeguard for agricultural varieties in Europe - SAVE Fundation -(www.sozooalp.it).
- Society for Study and Valorisation of Livestock Systems - Società per lo Studio e la Valorizzazione dei Sistemi Zootecnici (www.sozooalp.it).

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

- ( ) a. Yes
- (●) b. No

Please provide further details:

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

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

Please provide further details:

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

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

Please provide further details:

- EU (D.G.XII) INCO-DC programme: ' La race Somba: caractérisation et recherches en ue de son amélioration et sa conservation'
- CEE: 'Establishing scientific bases for control and improvement of sensory quality of dry-cured hams in Southern European countries. Production trait and meat quality of autochthonous Italian pig breeds'
- CEE funding 5B: 'Environmental and livestock saving of Malga Coot'.

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:

- EU (D.G.XII) INCO-DC programme: ' La race Somba: caractérisation et recherches en ue de son amélioration et sa conservation;
- Milano Commune - `Defence and valorisation of biodiversity in Niger by Programmes of environmental education and operational strategies';
- BENIN/BURKINA FASO/NIGER/TOGO.

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:

http://www.marcbal.eu/UserFiles/File/MECONI%20reduced%202.pdf
http://www4.ti.ch/fileadmin/DT/temi/piano_direttore/osservatorio_sviluppo_territoriale/contributi/10_Cooperazione_transfrontaliera.pdf

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:

http://efabis.tzv.fal.de/

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:

The technical rules and standards for the characterization and monitoring of animal genetic resource are those listed in the Zootechnical Book.

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:

www.politicheagricole.it/flex/cm/pages/ServeBLOB.php/L/IT/.../305

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:

www.politicheagricole.it/flex/cm/pages/ServeBLOB.php/L/IT/.../305

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:

http://www.salute.gov.it/imgs/C_17_pubblicazioni_1337_allegato.pdf

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