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: Ireland

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).

Agriculture and food is one of the most important sectors of the Irish economy and livestock enterprises account for about 80% of Gross Agricultural Output. Consequently AnGR are a very important resource in Ireland. The agricultural industry expanded significantly in the last century and livestock numbers trebled since the 1800's. There has been no documented loss of indigenous AnGR in Ireland in the past century although there have been dramatic changes in the profile of the breeds used in all livestock sectors.

Ireland has the capacities between its public and private sectors to manage the conservation, use and development of AnGR. As a member of the EU, Ireland abides by legislation in place governing the conservation, use and development of AnGR. In addition Ireland has accepted obligations under international conventions on conservation of global diversity. This implies that Ireland subscribes to policies that impact favorably on the conservation of AnGR. Dairy cow numbers have been constrained by quota, but set to increase after 2015. Suckler beef cow numbers are static, but are predicted to decline slightly. Overall livestock numbers are steady, but sheep numbers have declined over the last ten years.

1. Strengths, weaknesses and gaps in capacity to manage animal genetic resources:
Ireland has the capacities between its public and private sectors to manage the conservation, use and development of AnGR.
This capacity is underpinned by an education system that is substantially funded by the State. Numbers in third-level education have grown from 18,500 in 1965 to more than 100,000 at present. This increase reflects increasing retention rates at second level, demographic trends and increasing transfer rates into third-level education. Presently, nearly half of all secondary school leavers advance to third-level, with around half of these taking degree-level programs. Finance is provided through initiatives such as The Scientific and Technological Education (Investment) Fund to meet the current and future needs of research and industry.
As a member of the EU, Ireland abides by legislation in place governing the conservation, use and development of AnGR and has accepted obligations under international conventions on conservation of global diversity. All of these developments imply that Ireland subscribes to policies that impact favorably on the conservation of genetic resources.

Ireland has invested heavily in developing an industry led organization to complete genetic evaluations. Data capture & analysis, IT capacity and Geneticists in ICBF are using the latest technology to implement breeding programs that suit out unique grass based production conditions.
Ongoing work with Breed Societies is needed to increase capacity & expertise.

2. Key Constraints and Challenges with respect to AnGR management:
1. Social, economic and environmental factors have always influenced the use and diversity of AnGR and undoubtedly will continue to do so in the future. Issues such as WTO agreements, decoupling of direct payments on animals, pressure from supermarkets to improve `quality'. This may accelerate trends towards breeds that are economically most efficient and thus impact negatively on genetic diversity. However, there are also likely to be real opportunities for individual producers to devote resources to less common breeds in the context of developing markets for niche products. National policy includes the maintenance of rural communities and associated economic activity. This will also provide opportunities for the exploitation of animal genetic diversity.
2. Lack of strategies to develop markets for products derived from breeds at risk.
3. Food safety is a key concern for consumers, and must be safeguarded at every stage in the food chain. High standards of animal health are necessary in order to guarantee food safety, to protect public health and to maintain consumer confidence in Irish food. Public interest in animal welfare issues will increasingly constrain the intensification of animal production and thus tend to moderate the competitive pressures on indigenous AnGR.
4. Advances in biotechnology continue to emerge and these advances pose enormous challenges and opportunities for the Irish agricultural industry.
5. Increasing concerns about the negative impact agriculture can have on water quality, greenhouse gas omissions, and reduced bio-diversity. These concerns have led to an increased emphasis on sustainable agriculture at national, EU and international levels. This will impact favorably in the context of maintenance of diversity. Breeds efficient under high input systems may not be the most suitable under less intensive systems and thus may be replaced by other breeds. This may provide an opportunity for endangered breeds.
6. Recent trends in breed improvement programs worldwide may provide opportunities for breeds previously marginalized. Type, health and management traits are being included in selection indexes in addition to conventional production traits. These changes may provide opportunities for diverse breeds and should widen the genetic base.
7. Voluntary Nature of Herdbooks maintaining breeds is a challenge in terms of developing and effectively implementing policies especially for breeds at risk.

3. Future priorities for Ireland include:
1. Development of an emergency reaction plan, which can be invoked in the event of a disease epidemic, for all endangered breeds (native and non-native).
2. Engagement with Breed Societies in relation to conservation programs.
3. Modification of the Agri-Environental program for 2014-2020 to encourage greater uptake of Measure supporting the in situ conservation of AnGR.
4. The use of National Parks and State lands as a resource for the maintenance of indigenous breeds as a living genebank should be a priority. This would also increase public awareness of the historical/cultural value of our native breeds and thus support for conservation.
5. Establishment of a national genebank for ex situ conservation where risk analysis indicates there is a necessity.
6. Further genetic and molecular characterization of breeds, especially those breeds that are endangered, with particular reference to disease/health traits should be supported. Utilization of Genomics technology will be critical in this regard.

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

FLOWS OF ANIMAL GENETIC RESOURCES

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

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

- (●) yes
- ( ) no

- ○ yes but with some significant exceptions

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

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

- ○ yes
- ◉ no

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

- ○ yes
- ○ no

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

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

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

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

A key development in Ireland has been the huge progress in Genetic evaluation systems, allowing for a halting of the trend in importing North American dairy Genetics, and the selection of dairy sires from the Irish Holstein Friesian population.

LIVESTOCK SECTOR TRENDS

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

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

Drivers of change	Impact on animal genetic resources and their management over last ten years	Future impact on animal genetic resources and their management (predicted for the next ten years)	Describe the effects on animal genetic resources and their management
Changing demand for livestock products (quantity)	medium	medium	International demand for meat will help sustain current numbers. There is however a long term profitability issue in relation to beef production, which is heavily reliant on EU payments to remain viable.
Changing demand for livestock products (quality)	medium	medium	Increasing demand and supermarket requirements places pressure on at risk breeds.
Changes in marketing infrastructure and access	medium	medium	Very well developed processing sector has evolved, allowing for the majority of meat products to be exported in a processed state, reducing the level of live animal exports.
Changes in retailing	high	high	Increasing demand and supermarket requirements places pressure on at risk breeds, and promoting more efficient breeds live Charolais & Limousin.
Changes in international trade in animal products (imports)	medium	medium	A major increase in imports is not predicted.
Changes in international trade in animal products (exports)	high	high	Dairy production is expected to increase significantly post quota, resulting in an increase in dairy cow numbers, and a corresponding decrease in suckler beef cows.
Climatic changes	medium	medium	Environmental pressures are predicted to become more challenging, however no changes have happened yet in terms of the type of animals kept.
Degradation or improvement of grazing land	low	low	Not regarded as a major issue affecting Livestock production on lowland. Upland/Mountain land is an issue that will need to be addressed in terms of developing appropriate grazing regimes.
Loss of, or loss of access to, grazing land and other natural resources	low	none	Minimal impact.
Economic, livelihood or lifestyle factors affecting the popularity of livestock keeping	medium	high	Many beef farmers are part time, this may decline in time.
Replacement of livestock functions	none	none	No impact.
Changing cultural roles of livestock	none	none	No impact.
Changes in technology	medium	high	New breeding techniques eg Genomics & sexed semen predicted to have an impact.
Policy factors	medium	high	Main policy drivers are from EU.
Disease epidemics	low	low	Island stats means this is not predicted to be an issue.

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)	13	7
Cattle (multipurpose)	0	3
Sheep	9	8
Goats	2	6
Pigs	1	5
Chickens	4	61
Buffaloes	0	1
Deer	4	0
Horses	13	0
Ducks	3	14
Asses	1	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	medium	high
Cattle (specialized beef)	20	20	high	high	high	high	medium	medium
Cattle (multipurpose)	3	3	high	high	high	high	medium	medium
Sheep	17	17	medium	low	low	low	low	low
Goats	8	8	low	low	low	low	low	low
Pigs	6	6	low	low	low	low	low	low
Chickens	65	65	low	low	none	low	low	low
Horses	13	13	high	medium	low	low	low	medium

INSTITUTIONS AND STAKEHOLDERS

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

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

	Score
Education	high
Research	high
Knowledge	high
Awareness	high
Infrastructure	high
Stakeholder participation	high
Policies	high
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	High standard of education in Universities and technical colleges.
Research	High research capability in www.icbf.com, Universities and www.teagasc.ie in this area.
Knowledge	High research capability in www.icbf.com and www.teagasc.ie in this area.
Awareness	Level of awareness is high among all stakeholders
Infrastructure	High level of infrastructure in this area in www.icbf.com and www.teagasc.ie.
Stakeholder participation	High research capability in www.icbf.com and www.teagasc.ie in this area.
Policies	All cattle herdbooks are represented in www.icbf.com which works with all stakeholders to develop policies in this field.
Policy implementation	Implementation of policy depends on so many factors such as ability & education level of breeders which may hinder implementation.
Laws	Traditionally, laws were enacted in this area but over the last 20 years policies developed by the sector have been the main drivers in the area.
Implementation of laws	

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

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

Regular consultation with Herdbooks, Researchers, State Farm Advisory services, Genetic Evaluation providers.

BREEDING PROGRAMMES

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

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

10. Who operates breeding programmes in your country?

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

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

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

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

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

Species	Tools															
	Animal identification		Breeding goal defined		Performance recording		Pedigree recording		Genetic evaluation (classic approach)		Genetic evaluation including genomic information		Management of genetic variation (by maximizing effective population size or minimizing rate of inbreeding)		Artificial insemination	
	Loc	Ex	Loc	Ex	Loc	Ex	Loc	Ex	Loc	Ex	Loc	Ex	Loc	Ex	Loc	Ex
Cattle (specialized dairy)	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0
Cattle (specialized beef)	13	7	13	7	13	7	13	7	13	7	13	7	13	7	13	7
Cattle (multipurpose)	0	3	0	3	0	3	0	3	0	3	0	3	0	3	0	3
Sheep	9	8	9	8	9	8	9	8	9	8	0	0	0	0	0	0
Goats	2	6	0	0	0	6	0	6	6	0	0	0	0	0	0	0
Pigs	1	5	1	5	1	5	1	5	1	5	1	5	1	5	1	5
Asses	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chickens	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Deer	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Horses	13	0	13	0	13	0	13	0	13	0	5	0	5	0	5	0

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

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

Species	Breeding method			
	Straight/pure-breeding only		Straight/pure-breeding and cross-breeding	
	Loc	Ex	Loc	Ex
Cattle (specialized dairy)	0	0	4	0
Cattle (specialized beef)	0	0	13	7
Cattle (multipurpose)	0	0	0	3
Sheep	0	0	9	8
Goats	0	0	2	6
Pigs	0	0	1	5
Horses	0	0	13	0
Asses	0	0	1	0
Chickens	0	0	4	61
Ducks	0	0	3	14

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

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

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

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

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

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

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

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

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

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

Government is reponsible for Animal Identification & Registration, Animal Health. An Industry body (www.icbf.com) which represents herdbooks, AI & Milk Recording companies and farmer representatives completes the breeding program, recording of information & Genetic Evaluations. The AI companies are usually owned by farmer co-operatives.

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

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

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)	Industry led programmes designed in conjunction with Geneticist & Researchers though ICBF www.icbf.com.
Cattle (specialized beef)	Industry led programmes designed in conjunction with Geneticist & Researchers though ICBF www.icbf.com.
Cattle (multipurpose)	Industry led programmes designed in conjunction with Geneticist & Researchers though ICBF www.icbf.com.
Sheep	Industry led programmes designed in conjunction with Geneticist & Researchers though ICBF www.sheep.ie.
Goats	None
Pigs	Commercial companies operate these programs
Chickens	Commercial companies operate these programs
Horses	Breeder organizations and horse sport Ireland (www.hsi.ie) operate these programs.

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

Species	Description of consequences
Cattle (specialized dairy)	All sectors of Industry combine through ICBF (Herdbooks, farmers, breeders, A.I companies, Department of Agriculture, Researchers) to plan a sustainable breeding programme.
Cattle (specialized beef)	All sectors of Industry combine through ICBF (Herdbooks, farmers, breeders, A.I companies, Department of Agriculture, Researchers) to plan a sustainable breeding programme.
Cattle (multipurpose)	All sectors of Industry combine through ICBF (Herdbooks, farmers, breeders, A.I companies, Department of Agriculture, Researchers) to plan a sustainable breeding programme.
Sheep	All sectors of Industry combine through Sheep Ireland www.sheep.ie (Flockbooks, farmers, breeders, Department of Agriculture, Researchers) to plan a sustainable breeding programme.
Goats	Number of animals are very small, difficult to get stakeholder engagement
Pigs	Breeding programs completed by multinational companies for the commercially produced pigs.
Chickens	Breeding programs completed by multinational companies for the commercially produced chickens.
Horses	All sectors of Industry combine through Horse Sport Ireland www.hsi.ie (Studbooks, farmers, breeders, Department of Agriculture, Researchers) to plan a sustainable breeding programme.

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.

Developing sustainable breeding programs for breeds at risk is difficult due to low numbers of animals and getting

effective stakeholder involvement.

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)	Excellent work being completed by ICBF, focus is to continue with this success.
Cattle (specialized beef)	Excellent work being completed by ICBF, focus is to continue with this success.
Cattle (multipurpose)	Excellent work being completed by ICBF, focus is to continue with this success.
Sheep	Excellent work being completed by Sheep Ireland, focus is to continue with this success.
Goats	
Pigs	Envisaged that Commercial companies will continue with their operations in this area.
Chickens	Envisaged that Commercial companies will continue with their operations in this area.
Horses	Excellent work being completed by Horse Sport Ireland, focus is to continue with this success.

CONSERVATION

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

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

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

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

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

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

- (•) yes
- ( ) no

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

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

	Considered in formal prioritization approaches
Risk of extinction	yes
Genetic uniqueness	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	no	no	yes	no	no	yes	yes	yes	yes	yes	yes	yes
Private sector	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	yes
Cattle (specialized dairy)	yes	no	yes	no	yes	no	yes	yes	yes	yes	yes	yes
Cattle (specialized beef)	yes	no	yes	no	yes	yes	yes	yes	yes	yes	yes	yes
Cattle (multipurpose)	yes	no	yes	no	yes	yes	yes	yes	yes	yes	yes	yes
Sheep	yes	no	yes	no	yes	yes	yes	yes	no	yes	yes	yes
Goats	no	no	no	no	no	no	no	no	no	no	no	yes
Pigs	yes	no	no	no	no	no	no	no	no	no	no	no
Chickens	yes	no	no	no	no	no	no	no	no	no	no	no
Horses	yes	no	yes	no	yes	yes	yes	yes	no	yes	yes	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.

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.

Semen, ova and embryos are cryoconserved by private breeders, by the breeding organizations for rare and native breeds and by some artificial insemination/embryo transfer companies. Many of these collections have been funded by the Advisory Committee for Genetic Resources for Food and Agriculture, which funds both the identification of suitable donor animals and the physical collection and storage of genetic material from them. A plan to establish a central, national cryoconservation genebank is currently being developed.

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

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

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

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

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

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

- ○ yes
- ◉ no

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

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

REPRODUCTIVE AND MOLECULAR BIOTECHNOLOGIES

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

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

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

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

Major International on farm trial completed on sexed semen in 2013, anticipating on farm uptake of this technology to increase in Dairy herd over the coming years.

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

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

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

AI and ET provided by Commercial organizations. Research into new technologies provided by State funded organizations such as Teagasc www.teagasc.ie and ICBF www.icbf.com.

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	no
Cloning	no	no
Genetic modification	no	no
Use of molecular genetic or genomic information for estimation of genetic diversity	yes	yes
Use of molecular genetic or genomic information for prediction of breeding values	yes	yes
Research on adaptedness based on molecular genetic or genomic information	yes	yes

30.1. Please briefly describe the research.

Teagasc and ICBF are both involved in National & International research projects in most of the new technologies listed above.

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

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

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

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

Horses	Ranching or similar grassland -based production systems	Pastoralist systems	Mixed farming systems (rural areas)	Industrial systems	Small-scale urban or peri-urban systems
Artificial insemination using semen from locally adapted breeds	low	low	low	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	none

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

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

Ireland has been a world leader in the introduction of Genomics and has used this to manage animal genetic resources. AI is most common in Dairy, Pig and beef production.

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

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

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

	Extent of collaboration	Description
Development of joint national strategies or action plans	limited	Experts in all areas collaborate in the advisory committee; http://www.agriculture.gov.ie/farmerschemespayments/otherfarmersschemes/conservationofgeneticresourcesforfoodandagriculture/advisorycommitteeongeneticresources/ which adjudicates on project submissions received for funding as part of the Genetic resources conservation fund http://www.agriculture.gov.ie/farmerschemespayments/otherfarmersschemes/conservationofgeneticresourcesforfoodandagriculture/geneticresourcesprojects/
Collaboration in the characterization, surveying or monitoring of genetic resources, production environments or ecosystems	none	Experts in all areas collaborate in the advisory committee; http://www.agriculture.gov.ie/farmerschemespayments/otherfarmersschemes/conservationofgeneticresourcesforfoodandagriculture/advisorycommitteeongeneticresources/
Collaboration related to genetic improvement	none	
Collaboration related to product development and/or marketing	none	
Collaboration in conservation strategies, programmes or projects	extensive	Experts in all areas collaborate in the advisory committee; http://www.agriculture.gov.ie/farmerschemespayments/otherfarmersschemes/conservationofgeneticresourcesforfoodandagriculture/advisorycommitteeongeneticresources/
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	limited	Experts in all areas collaborate in the advisory committee; http://www.agriculture.gov.ie/farmerschemespayments/otherfarmersschemes/conservationofgeneticresourcesforfoodandagriculture/advisorycommitteeongeneticresources/

2. Please describe any other types of collaboration.

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

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

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

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

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

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

- ○ yes
- ◉ no

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

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

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

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

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

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

- ◉ yes
- ○ no

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

1. Details of measures: Commonage Framework Plans were first published in 2002, as part of a joint initiative between the Department of Arts, Heritage and the Gaeltacht and the Department of Agriculture, Food and the Marine to ensure sustainable management of common grazing lands in Ireland. Agricultural and ecological assessments were

carried out and subsequently recommendations for the sustainable use of the areas surveyed were then drawn up for all commonage areas.

2. Impact on animal genetic resources management: Where necessary, destocking (removal of some of the stock kept on commonage) was prescribed to ensure recovery of the vegetation. These plans have been implemented supported through various provisions of the Common Agricultural Policy Pillar I and Pillar II Schemes. These support schemes are vital to ensuring the viability of farming in these marginal areas and in so doing aid the conservation of hardier and rarer breeds suitable to these locations i.e. the mountain ewe.

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).

Impact on animal genetic resources management: Where necessary, destocking (removal of some of the stock kept on commonage) was prescribed to ensure recovery of the vegetation. These plans have been implemented supported through various provisions of the Common Agricultural Policy Pillar I and Pillar II Schemes. These support schemes are vital to ensuring the viability of farming in these marginal areas and in so doing aid the conservation of hardier and rarer breeds suitable to these locations i.e. the mountain ewe. EU policy had previously supported over production of sheep in these common areas, but stock levels are now more sustainable.

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).

Future needs: The management of commonages is currently being reviewed to take account of the updated vegetative condition of commonages nationally. Under this review it is envisaged that minimum and maximum number of ewe equivalents required to graze commonage parcels will be set down in order to ensure that they are maintained in good agricultural and environmental condition. Sheep numbers for each commonage area will be dictated by these reviews.

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.

There are many challenges to implementing this type of policy. Close to half of all farmers have participated in an environmental scheme (REPS or AEOS) which promotes environmental efficiency and has a grassland management plan built in for each individual farm. There have always been low numbers of Native breeds in Ireland, which is a challenge.

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

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

No specific plans, but the issue will be monitored.

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:

An inventory of Ireland's farm animal genetic resources was completed prior to the preparation of the Country Report to FAO in 2006.

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:

Funding provided for a range of projects including; http://www.agriculture.gov.ie/farmerschemespayments/otherfarmersschemes/conservationofgeneticresourcesforfoodandagriculture/geneticresourcesprojects/1996-2007/

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:

A large quantity of microsatellite information exists for farm animal breeds in Ireland. Current studies are focusing on the genomic diversity of breeds.

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

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

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

Please provide further details:

This was conducted as prior to the preparation of the 2006 Country Report to FAO.

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:

This is the responsibility of the Department of Agriculture, Food and the Marine (DAFM). Information is provided by the relevant breeding organizations for the particular breed and/or research bodies.

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:

An annual inventory of breeds is conducted. The information for rare and native breeds is published to EFABIS. Inbreeding analysis is conducted on a frequent basis for farm animal breeds.

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:

Trends analysed regularly by the Department of Agriculture.

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

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

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

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

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

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

Please provide further details:

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

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

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

Please provide further details:

For the majority of bovine and sheep breeds, the work of breed evaluation is conducted by the Irish Cattle Breeding Federation (ICBF).
For horse and pig breeds, the work is conducted, in the main, by the organization maintaining the studbook/herdbook for the breeds. In addition, the national Agricultural Research Body, Teagasc, and some Universities are active as collaborators and researchers in scientific fields relating to breed evaluation and molecular methods.

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

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

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

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

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

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

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:

1. Through the National Biodiversity Plan:
http://www.ahg.gov.ie/en/Publications/HeritagePublications/NatureConservationPublications/Actions%20for%

20Biodiversity%202011%20-%202016.pdf

1. Measures adopted as part of the Rural Environmental Protection Scheme and the Agri-Environment Options Scheme:
http://www.agriculture.gov.ie/farmerschemespayments/ruralenvironmentprotectionschemereps/overviewofreps/
http://www.agriculture.gov.ie/media/migration/farmingschemesandpayments/ruralenvironmentprotectionschemereps/ruralenvironmentprotectionschemereps/aeosschemeforms/AEOS2011Specificationsupdated14042011.pdf

3. The National Advisory Committee for Genetic Resources for Food and Agriculture assists and advises in relation to the development of suitable national policies and funding mechanisms:
http://www.agriculture.gov.ie/farmerschemespayments/otherfarmersschemes/conservationofgeneticresourcesforfoodandagriculture/advisorycommitteeongeneticresources/

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 Rural Environmental Protection Scheme (REPS) and Agri-Environment Options Scheme (AEOS) have provided an opportunity for farmers to adopt a number of measures aimed at the conservation of animal genetic resources coupled with the implementation of agri-environmental measures on their lands. The details of these schemes are contained at the links provided above (14).

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:

Breed development programmes are under continuous review to ensure that breeding goals for the main species are in line with the expectations and requirements of producers, purchasers, end users and other stakeholders. This is achieved by means of breed evaluation indexes, consultation with the industry and the inclusion of scientific research findings in breeding scheme design and implementation.

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

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

Please provide further details:

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

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

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

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

Glossary:

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

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

a. No exotic breeds are being used for agricultural production

Please provide further details:

Majority of Beef production comes from locally adapted breeds that were introduced from France (Charolais, Limousin, Simmental) from 1966 onwards. These breeds have allowed for a large increase in beef production, and are no threat to food security.

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:

Large resources have been spent on data recording systems. The Irish Cattle breeding Federation (ICBF) has world leading technology in this area.

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:

The Advisory Committee on Genetic resources is a mechanism that allows stakeholders to interact in this area. ICBF hold regular meetings where stakeholders interact also.

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:

Various resources exist in this area; Teagasc network of advisors throughout the country, ICBF interaction with all Herdbooks, Ministry interaction with stakeholders.

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:

While no specific formal agreements exist, breed evaluation data for the main commercial bovine and ovine breeds are provided freely to the public for their information and use. Similarly equine and porcine organizations provide information freely to the public in relation to the performance of animals under their testing and evaluation regimes.

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:

Department of Agriculture provides funding to ICBF and Teagasc for a range of activities in this area.

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:

Support given through Agri-Environmental programmes and the Kerry Cattle Scheme http://www.agriculture.gov.ie/farmerschemespayments/otherfarmersschemes/conservationofgeneticresourcesforfoodandagriculture/conservationofanimalgeneticresource/.

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:

Key target is to provide funding to breeders & Farmers in the 2014-2020 EU Agri-Environmental programme to allow for breeders to maintain and grow numbers in a sustainable manner. Another priority is maintain funding for Advisory

Committee fund http://www.agriculture.gov.ie/farmerschemespayments/otherfarmersschemes/conservationofgeneticresourcesforfoodandagriculture/grantaidschemeforconservationofgeneticresources/.

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

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

STRATEGIC PRIORITY AREA 3: CONSERVATION

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

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

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

Please provide further details:

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

No particular erosion factors have been identified at this time. However, should changes occur to, or indeed loss of, the financial support mechanisms for rare and native breeds, it could, potentially, result in the populations of these breeds being eroded. Potential erosion factors include for Cattle Breeds; Perceived improved profitability of other imported breeds such as Charolais/Limousin.
Equines: Downturn in economy leading to excess production of all equines and a reduction in customer demand
Ovines: Perceived poor economic performance of Native Galway sheep compared with exotic breeds.

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

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

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

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

Please provide further details:

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

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

Please provide further details:

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

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

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

Please provide further details:

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

Glossary: Ex situ in vivo conservation - maintenance of live animal populations not kept under their normal management conditions - e.g. in zoological parks or governmental farms - and/or outside the area in which they evolved or are now normally found.

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

Please provide further details:

Herds of native and rare breeds are kept in some National Parks, by some County Councils and by private businesses, mainly for the purpose of displaying the animals to visitors and tourists. These activities also assist with the conservation and sustainable use of the breeds involved. These measures have been in place since before the GPA.

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:

Semen, ova and embryos are cryoconserved by private breeders, by the breeding organizations for rare and native breeds and by some artificial insemination/embryo transfer companies. Many of these collections have been funded by the Advisory Committee for Genetic Resources for Food and Agriculture, which funds both the identification of suitable donor animals and the physical collection and storage of genetic material from them. A plan to establish a central, national cryoconservation genebank is currently being developed.

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

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

- ◉ a. Yes
- ○ b. No

Please provide further details:

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

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

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

Barriers include potential loss of funding to conservation activities and funding to farmers from EU Agri-Environmental Programmes, funding for Genebank.

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

- ◉ a. Yes
- ○ b. No

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

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

Please provide further details:

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

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

Please provide further details:

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

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

Please provide further details:

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

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

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

Teagasc & Irish Cattle breeding Federation utilizing latest Genomics Technology to work with all breeds to protect animal genetic resources.

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:

Advisory Committee on Genetic resources has funded various activities in this area: http://www.agriculture.gov.ie/farmerschemespayments/otherfarmersschemes/conservationofgeneticresourcesforfoodandagriculture/geneticresourcesprojects/1996-2007/.
These studies assisted in both the in situ and ex situ conservation efforts by identifying those animals which have the highest levels of genomic diversity within a breed and thus ensuring that genetic bottle-necking is avoided. Once these animals are identified they can be used for breeding by traditional means or by assisted technologies such as artificial insemination or embryo transfer.

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

1. Provision of adequate financial incentives to farmers to maintain animals on farms throughout the country.
2. Maintain adequate financial support for the Advisory committee to support vital research projects.
3. Strengthen co-operation among all stakeholders (Researchers, Geneticists, farmers, breeders, Herdbooks, Government).
4. Establishment of a National Genebank.

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

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

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

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

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

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

Please provide further details:

1. Animal traceability systems, which are in place as required under EU animal identification and traceability regulations,

provide rules for the identification of animals which provides information as to the breeds/species of animals being kept in the country, the locations in which animals are kept within the country and how the animals are used, for example by means of information being returned by slaughter facilities, sales companies, export premises, etc etc. The data generated by these systems can be used to shape future policy in the area of livestock development.
2. The National Genetic Evaluation system for Bovine and Ovine breeds provides information as to the trends in genetic merit of the national herd/flock. The information generated from the genetic evaluation system can indicate how current breeding goals are suited to meeting current/future market needs or production environments/requirements.
3. Conservation strategies and tools, including the provision of mating advice and inbreeding avoidance, have been developed by ICBF, with the support of the National Advisory Committee for Genetic Resources in Food and Agriculture, for native and rare breed organizations.

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

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

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

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

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

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

Please provide further details:

Genetic resources are covered in the National Biodiversity Action plan:
http://www.npws.ie/media/Biodiversity%20Plan%20text%20English.pdf.

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:

DAD-IS is used.

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

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

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

Please provide further details:

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

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

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

http://www.agriculture.gov.ie/farmerschemespayments/otherfarmersschemesWeblinkavailableatconservationofgeneticresouresforfoodandagriculture/advisorycommitteeongeneticresources/. The main functions are: the development and utilization of genetic resources to increase national food security; the identification, evaluation and conservation of unique genetic resources whose survival is being threatened or endangered; the promotion of public awareness and support for genetic resource conservation management strategies and the participation in international and EU programmes aimed at coordinated management of genetic resources.

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:

Co-ordination through various forums such as Advisory Committee, ICBF activities, Teagasc (State Research & Farm Advisory Organization) activities.

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:

1. Publication of animal genetic resources-related news and developments on the EFABIS database.
2. Presentations to seminars, conferences, breeding organization and the general public on the work of the National Focal Point and Advisory Committee.
3. Technical input into the creation of web sites and publications for breeding organizations.
4. Technical input into the creation and publication of lesson plans for distribution to all schools in the country in relation to animal genetic resources.
5. Publication of information on the DAFM web site at regular intervals in relation to genetic resources and the activities of the National Advisory Committee and National Focal Point.
6. The National Focal Point recently collaborated in a project to establish a herd of rare and native cattle and horse breeds at a municipal farm. The farm has an annual footfall of over 200,000 visitors. Printed material and information boards were created with the technical input of the National Focal Point and were made freely available to the public.

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:

Ongoing work in this area with various stakeholders.

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:

Ongoing work, difficulty is the small number of breeds, which hinders progress.

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:

The relevant NGOs in these fields in Ireland are the breeding organizations for the farm animal breeds. These organizations, some of which are voluntary, maintain the herdbooks/studbooks/flockbooks, as appropriate, to record the pedigree details and other relevant information relating to their particular breed(s). They are also active in the areas of characterizing their breeds, through inspection and classification systems; they also advise and assist their members in relation to the conservation and sustainable use and development of their respective breeds. Information on the bodies approved to maintain herdbooks, flockbooks and studbooks can be found here: http://www.agriculture.gov.ie/animalhealthwelfare/approvedestablishmentsintheveterinaryandzootechnicalfieldapprovedlaboratories/.

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:

Research capacity exists in largest University, University College Dublin.

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

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

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

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

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

Characterization?

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

Sustainable use and development?

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

Conservation of breeds at risk?

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

Please provide further details:

1. Active participation and collaboration in the European Regional Focal Point (ERFP), particularly the working groups, task forces and training courses organized both by the ERFP itself and by the participating countries.
2. Active national participation in the EURECA project.
3. Facilitation by the National Focal Point of the collaboration between breeding organizations for breeds native to Ireland and breeding organizations for the same breeds located in other countries, for the purposes of breed conservation and improvement.
4. The funding of international research projects by the Advisory Committee for Genetic Resources in Food and Agriculture which are looking at the genetic diversity of breeds native to Ireland, but which are located in other countries.
5. Active participation by ICBF and Teagasc in Interbull, Interbeef and ICAR consortiums, amongst others.
6. Participation by an Irish native and rare equine breed society in the EQUISAVE project.
7. Participation by Irish researchers, involving the contribution of research on an Irish rare and native sheep breed to the

Sheep Hapmap project.
8. Collaboration in the EFABIS project which resulted in the installation of a national node of the EFABIS database.

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

Characterization?

- ○ a. Yes
- ◉ b. No

Sustainable use and development?

- ○ c. Yes
- ◉ d. No

Conservation of breeds at risk?

- ◉ e. Yes
- ○ f. No

If yes, please list the international NGOs:

SAVE through the ELBARN project.

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

- ○ a. Yes
- ◉ b. No

Please provide further details:

Budgetary pressure exists, meaning support for this area is difficult to get.

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

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

Please provide further details:

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

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

Please provide further details:

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

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

Please provide further details:

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

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

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

None recently, but financial support given to hold the Conference in Interlaken which allowed a number of developing countries to attend.

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:

Contribution to ERFP & DAD-IS.

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:

Contribution to ERFP & DAD-IS.

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

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

Please provide further details:

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

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

Please provide further details:

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

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

Please provide further details:

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

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

Please provide further details:

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

- ○ a. Yes
- ○ b. No, but action is planned and funding identified

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

Please provide further details:

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

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

Please provide further details:

EMERGING ISSUES

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

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