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

Country report

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

Country: Switzerland

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).

Switzerland is a mountainous grassland country. The Livestock Sector is therefore very important and accounts for a large share of the domestic agricultural sector. Switzerland has a very strong cattle sector and the variety of Animal Genetic Resources (AnGR) is important in comparison with its size. Among the 66 reported cattle, sheep, goat and pig breeds, more than half (36) are locally adapted breeds, whereas the rest are exotic breeds. The proportion of locally adapted breeds is however much smaller for horses and chicken (17 resp. 650+ breeds).

During the last decade, there has not been any important change with regards to trends and driving forces affecting AnGR management in Switzerland. The country exports Animal Genetic Resources (mostly cattle) both to developing and developed countries. It also imports genetic material mostly from developed countries, although there are some exceptions (goats). Imports of Animal Genetic Resources allow improvement of performances and they are necessary in order to avoid inbreeding problems. Nevertheless, Breeding Programs do exist for all locally-adapted breeds, and the proportion of foreign genetic material in traditional Swiss breeds remains very low. Breeding programs are developed and implemented by breeders organizations, which are independent from the government. Most breeders organizations benefit from financial support from the Swiss government.

In order to complete the Country Report to the Second State of the World Animal Genetic Resources, the Swiss Federal Office for Agriculture (FOAG) conducted an extensive survey among Swiss breeders organizations. The purpose of this survey was to identify trends, as well as key challenges and constraints with regards to AnGR management in Switzerland.

Breeding organizations have been active for several decades. They are very strong and highly organized with high knowledge in breeding and management of AnGR. Some organizations with very small populations have more problems in adapting to new scientific breeding techniques. Breeding organizations described political and institutional factors as affecting greatly the management of Animal Genetic Resources in Switzerland. Several farmers depend heavily on public contributions in order to pursue their activities. Targeted contributions can thus have positive or negative effects on AnGR

management depending on the orientations of public funding policies. Several Breeders organizations reported increasing political support in the previous years and hope to benefit from new programs directed to conservation and sustainable use of traditional breeds. Moreover, cultural factors and changes in livelihood and in technology were also reported to affect positively the livestock sector to a lesser extent.

Change in international trade (imports) and trade liberalization were identified as key challenges for the management of Animal Genetic Resources. Indeed, there is more import of animal products from neighbor countries affecting prices in Switzerland. Hence, Trade has a direct impact on the economical sustainability of some breeds. On the other hand, increase in demand for livestock products (quantity and quality) are considered as an opportunity for the Swiss livestock sector. Swiss breeders organizations are also mildly preoccupied by consequences of Climate Change, as well as loss of access to or quality of grazing land.

With regards to capacity, respondents estimated that Switzerland has very good capacities in dealing with Animal Genetic Resources. Education, infrastructures and public policies are excellent, and stakeholder participation is very high. Knowledge in breeding organizations is also very good. Some efforts could be undertaken to reinforce awareness in the society and research programs on Animal Genetic Resources management could be further developed.

The priorities for the following years is the finalization and adoption of an exhaustive National Action Plan (NAP) aiming at establishing a general framework for the sustainable use and conservation of animal genetic resources. Although several conservation and sustainable use projects have been taking place during the last decades in Switzerland, this Plan will serve as an overarching instrument. It will provide a strategic vision as well as clear objectives in line with the FAO's Global Plan of Action. This NAP will also allow to strengthen coordination among different actors and will contribute to further funding.

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.

Geneflow patterns in Switzerland correspond to the trends described in question 1 for most of the Breeds and Species. However, significant exceptions exist. Two goat breeds (Boer Goat and Anglo Nubian Goat) actually originate from South Africa.
Other exceptions include species/breeds that have their main gene pool outside of Switzerland, such as the Yak or other exotic species/breeds that are increasingly popular in Switzerland, although still marginal.

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).

Swiss Impex gives an overview on exchange of Livestock https://www.swiss-impex.admin.ch/ as well as the following: www.sbv-usp.ch/statistik/

For the Cattle sector, there is more export of genetic material than 10 years ago. Precise figures can be found on http://www.swissgenetics.ch/Zahlen-Fakten.803.0.html or on www.selectstar.ch.

Cattle (beef): Import statistics can be found on http://www.mutterkuh.ch/fileadmin/user_upload/domain1/FLHB/Herdebuchbericht_2012.pdf page 22. Imports of animals are constant.

Horses: Swiss import statistics show that there are over 120 breeds imported. Trend increasing.

Pigs: there is an increase in imports of semen from developed countries. These exchanges affect especially local breeds by importing breeds such as Duroc or Pietrain that are not traditional or locally adapted breeds.

Goats, sheep, chicken: No significant change in geneflow trends. Specificities are described under question 2.3.

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.

Cattle (beef): No significant changes.
Cattle (dairy and multipurpose): There is more export of genetic material (mainly semen) than 10 years ago.
Milk breeds are continuously developed on the basis of foreign genetic material. However, the proportion of imported breeds remains very small in traditional Swiss breeds (less than 1%) but it can be relatively high for exotic breeds (Holstein). The fact that co-ancestry is important in Holstein breed might be dangerous in the future.

Horses: Increase in the import of exotic horse breeds for activities like leisure and different specific sports. Most of these imports originate from Europe, as well as from South and North America.

Goats: Imports of Goat genetic resources from South Africa almost completely stopped since the gene pool in Switzerland is sufficient for the reproduction of the breeds. However, Switzerland currently exports goats to Algeria. Around 480 goats were exported to Algeria in 2012 and 320 in 2013. This trade required a bilateral treaty between Switzerland and Algeria. Moreover the Swiss Goat Breeder Association, in collaboration with the Swiss Agency for Development and Cooperation, exported 217 goats to North Korea in 2004.

Pigs: for pigs there is an increase in imports of semen from developed countries. Genepool of Swiss local breeds is strongly affected by exotic breeds such as Duroc or Piétrain that are not traditional or locally adapted breeds.

Chicken / sheep: no significant changes in geneflow patterns.

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.

Cattle (beef): there is no significant change in the geneflow patterns observed during the last decades. Nevertheless, all exotic breeds reduce the number of animals within locally adapted breeds.

Cattle (dairy and multipurpose): The general tendency observed is that breeders and companies tend to export more material and import less material from foreign countries. Several breeders associations reported that, in comparison with 10 years ago, they rely more on the national gene pool for management of their breeds and breed improvement. For example, the population of Braunvieh cows has increased significantly during the last decades. As a consequence, breeders rely much more on indigenous material, whereas in the past there has been an important influence of US genetic material.

Sheep: Swiss farmers and breeders do not import or export significant quantities of genetic material and aren't therefore under much pressure due to new breeds.

Goats: The number of breeding goats has been decreasing during the last 10 years and new breeds like the Boer goats, which is a meat-oriented breed, have been imported. The increasing Boer goat population may have affected the traditional Swiss "dual" (milk and meat) breeds such as e.g. Nera Verzascagoat. Imports of Boer goats may have thus contributed to the decline of traditional breeds such as Nera Verzascagoat. But this assertion cannot be further documented yet.

Horses: The large number of imported exotic horse breeds decreases the number of animals of local breeds within a Herdbook and makes management of breeding programs difficult and therefore higher danger of inbreeding. More collaboration with international databases.

Chicken: no significant evolution witnessed during the last decade.

Pigs: no relevant influence on management of breeding programs due to imported exotic breeds.

LIVESTOCK SECTOR TRENDS

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

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

Drivers of change	Impact on animal genetic resources and their management over last ten years	Future impact on animal genetic resources and their management (predicted for the next ten years)	Describe the effects on animal genetic resources and their management
Changing demand for livestock products (quantity)	medium	medium	There was an increase in demand for livestock products of locally adapted breeds. For some products, increase in demand was higher than population growth, especially in the sheep / goat sector.
Changing demand for livestock products (quality)	medium	high	On a similar note, demand for high-quality products increased significantly. This trend especially benefited to some traditional and locally adapted breeds (sheep, goats).The sector was also affected by the increasing importance of organic production (especially the cattle sector). Increasing demand in organic animal production and high quality products strengthen the domestic livestock sector and thus indirectly locally-adapted breeds that can benefit from new "niche" markets.
Changes in marketing infrastructure and access	low	low	The goat and sheep sectors reported that they benefited from better marketing structures and market access.
Changes in retailing	medium	medium	Changes in the Swiss retailing system impacted the breeding sectors because of new labels and indication of origin.

Drivers of change	Impact on animal genetic resources and their management over last ten years	Future impact on animal genetic resources and their management (predicted for the next ten years)	Describe the effects on animal genetic resources and their management
Changes in international trade in animal products (imports)	medium	medium	International commercial agreements (free-trade agreements with EU and other countries) affected the livestock sector. These increase in imports had a strong influence on the prices of animal products in Switzerland. This trend especially impacted the Milk and Dairy sectors, but it also had an influence on horse, sheep and goat sectors and to a lesser extent the pig sector.
Changes in international trade in animal products (exports)	low	low	
Climatic changes	low	medium	Some sectors (cattle, sheep, goats) are mildly preoccupied by potential consequences of climate change. Future evolutions of climate may have an important impact on rainfalls and grasslands, especially in mountain areas. Some farmers also fear potential increase in the cost for fodder. Breeders association such as the "Braunvieh association", noted that, in some cases, climate change could positively affect traditional breeds because of their higher adaptation and their resistance to heat.
Degradation or improvement of grazing land	low	low	In some cases, there are concerns on the decline of grazing land in mountains areas due to increasing shrub expansion into alpine pastures.
Loss of, or loss of access to, grazing land and other natural resources	low	medium	Livestock sectors depending on grazing land are preoccupied by more and more land being used for new buildings and therefore lost for agriculture.
Economic, livelihood or lifestyle factors affecting the popularity of livestock keeping	medium	medium	In the cattle sector there are some concerns on the price of milk, which has strongly affected the sector in the past and might continue to do so in the future. On the other hand, several traditional breeders associations (goat, sheep, chicken) also noticed that changes in lifestyle and livelihoods might positively affect rare traditional and locally adapted breeds, because of part-time farming and "Hobby"-farming. On the other hand people living in the countryside are less willing to accept the bad odors produced by livestock.
Replacement of livestock functions	low	low	
Changing cultural roles of livestock	low	low	It is noted that the survivability of some sectors (Eringer cow, goats) depends a lot on their cultural significance and presence in the traditional/cultural/ folkloric fields (tourism, events, exhibitions).

Drivers of change	Impact on animal genetic resources and their management over last ten years	Future impact on animal genetic resources and their management (predicted for the next ten years)	Describe the effects on animal genetic resources and their management
Changes in technology	medium	medium	Improved technology in production systems might be developed in the future in sectors like cattle and sheep. Furthermore, breeders benefited from new information and communication technologies (internet, social networks etc.).
Policy factors	high	high	Agricultural policies in Switzerland are widely considered as being a very important factor affecting the management of Animal Genetic Resources through the distribution of contributions to farmers. Several Breeder organizations reported stronger policy support for local and traditional breeds (chicken, pigs) and other hope to benefit from contributions linked to the conservation of animal genetic resources in the near future. There is also an influence of other bills and acts, including bills on animal protection and on animal welfare.
Disease epidemics	low	low	Disease and epidemics created or might create problems in some sectors, e.g. the proliferation of CAE (Caprine arthritis encephalitis) for goats. The chicken sector is mildly worried by possible Epizootics, although they note that Swiss breeders might be less affected than breeders from neighboring European countries, because of the relatively small-size of Swiss farms, a slightly better geographic distribution and more severe legislation. There is no big concern regarding disease epidemics in most sectors.

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)	6	2
Cattle (specialized beef)	2	11
Cattle (multipurpose)	6	0
Sheep	9	10
Goats	10	3

Species	Locally adapted breeds	Exotic breeds
Pigs	3	3
Chickens	10	400
Horses	7	150

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)	8	8	high	high	medium	high	high	high
Cattle (specialized beef)	13	13	high	none	high	none	low	none
Cattle (multipurpose)	6	6	high	medium	high	medium	medium	medium
Sheep	19	19	high	low	high	low	medium	none
Goats	13	13	medium	low	high	low	low	low
Pigs	6	6	high	low	high	low	high	low
Chickens	10	3	low	none	low	none	medium	none
Horses	50	50	medium	low	low	low	low	low

INSTITUTIONS AND STAKEHOLDERS

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

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

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

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

	Description
Education	Despite very good agronomy/farming education programs in Switzerland (Zollikofen, ETH Zurich), education in Management of animal genetic resources could be reinforced.
Research	On a similar note, although Switzerland is a very dynamic country and rich in research institutions there is a lack of emphasis on Animal Genetic Resources in the research agenda of these institutions.
Knowledge	Breeders association remain the most important knowledge-holders for their breeds in Switzerland.
Awareness	Awareness on the question of the importance of Animal Genetic Resources remains limited in the civil society, although it is high in agricultural sector. Awareness raising activities linking the question of AnGR to biodiversity and ecosystem services might be strengthened in the future.
Infrastructure	Good infrastructures (database, gene banks etc.) do exist. The Swiss system is decentralized and mostly private-oriented.
Stakeholder participation	Breeders organizations are together with their breeders responsible for breeding programmes of their breeds and for Animal Genetic resources conservation programmes. They benefit from support for zootechnical measures from the Federal Office for Agriculture. Past experiences have proven that this system works very well.
Policies	Stakeholders have a good perception of existing policies. Some recognize that additional measures / funding could be provided, especially in the field of genetic resources.
Policy implementation	Although existing policies are implemented, they do not always seem to change the trends of decline observed for some traditional breeds.
Laws	There is a complete and satisfactory legal framework.
Implementation of laws	Laws are well implemented in collaboration with breeder organizations.

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).

Breeders organizations have a long history in Switzerland. Some of them have existed for more than hundred years. A lot of these organizations, especially for rare and traditional breeds, are supported financially by the Swiss government through the Federal Office for Agriculture (FOAG) for their conservation activities. FOAG supports conservation of rare breeds through specific projects that are, in most cases, directly implemented by breeder organizations.

The foundation of ProSpecieRara was another important step forward. This transversal NGO is active in the field of conservation of genetic resources for agriculture (both plants and animals). It conducts various conservation projects and organizes national-wide meetings and awareness-raising events on the importance of Genetic Resources.

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	yes	no	no	no	no

Species	Government	Livestock keepers organized at community level	Breeders' associations or cooperatives	National commercial companies	External commercial companies	Non-governmental organizations	Others
Chickens	no	no	yes	no	yes	no	no
Horses	no	no	yes	no	no	no	no

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

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

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

Species	Tools															
	Animal identification		Breeding goal defined		Performance recording		Pedigree recording		Genetic evaluation (classic approach)		Genetic evaluation including genomic information		Management of genetic variation (by maximizing effective population size or minimizing rate of inbreeding)		Artificial insemination	
	Loc	Ex	Loc	Ex	Loc	Ex	Loc	Ex	Loc	Ex	Loc	Ex	Loc	Ex	Loc	Ex
Cattle (specialized beef)	2	11	2	11	2	11	2	11	2	11	2	5	2	11	2	11
Cattle (specialized dairy)	6	2	6	2	6	2	6	2	6	2	5	2	6	2	6	2
Cattle (multipurpose)	6	0	6	0	6	0	6	0	6	0	4	0	6	0	6	0
Sheep	9	10	9	10	9	10	9	10	9	5	0	0	9	5	3	2
Goats	10	3	10	3	10	3	10	3	10	3	0	0	10	3	3	0
Pigs	3	3	3	3	3	3	3	3	3	3	3	0	3	3	3	3
Chickens	6	10	6	10	6	10	6	10	0	10	0	0	6	10	10	100
Horses	7	100	7	100	7	100	7	100	7	50	2	20	7	100	3	10

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 beef)	0	0	2	11
Cattle (specialized dairy)	6	2	0	0
Cattle (multipurpose)	0	0	6	0
Sheep	0	0	9	10
Goats	10	3	0	0
Pigs	0	0	3	3
Chickens	0	0	6	10
Horses	0	0	7	100

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

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

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

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

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

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

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

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

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

This question is difficult to answer, given the complexity of breeding matters within species (rare breeds vs other breeds) and the number of actors involved.

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.

Breeding goals: Breeders organizations (BO) set breeding goals and objectives of breeding programmes.
Animal ID: Government involved in ID and registration in central data base: individual (for cattle, horses) or flocks/groups (pigs and chicken).
ID/Registration: Individual breeders identify animal and set earmarks. Information goes to BOs for recording, database where all animals (individual for cattle, horses) or flocks/groups for pigs and chicken must be registered.
Results of performance tests are recorded by commercial sport organizations and data is delivered to BOs if horse is registered.
Cattle, pigs and horses: semen is imported and external commercial companies are therefore involved indirectly in recording, provision of artificial insemination services and gen. evaluation.
Goats: Swiss goats must go to France for semen collection, semen comes back to Switzerland. Therefore, artificial insemination services are provided from external comp. but no national or external company is involved on Swiss territory. No semen is imported.
Semen production: some recording takes place externally for all cattle types (e.g. semen produced in Canada exported to Switzerland, recording of bulls is done in Canada). But no recording is done by external commercial companies on Swiss territory. Same applies to pigs.
Horses: some recording is done by foreign breeding companies on Swiss territory.
Sheep: no national or external commercial company involved in breeding matters.
Chicken: Swiss federations involved in all matters for Rare Swiss breeds. For commercial chicken breeds (Leghorn), national and external companies are involved in all matters.
Artificial insemination services are provided by private companies such as Swissgenetics, Select Star and others.
Genetic evaluation is mostly conducted by research institutions, in collaboration with BOs and private companies (VIT Verden and others) (see questions 28-32 for further details).

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	no
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)	Agricultural Act, breeding ordinance and other policies include above mentioned measures, for both local and exotic breeds
Cattle (specialized beef)	Agricultural Act, breeding ordinance and other policies include above mentioned measures, for both local and exotic breeds
Cattle (multipurpose)	Agricultural Act, breeding ordinance and other policies include above mentioned measures, for both local and exotic breeds
Sheep	Agricultural Act, breeding ordinance and other policies include above mentioned measures, for both local and exotic breeds

Species	Description of policies or programmes
Goats	Agricultural Act, breeding ordinance and other policies include above mentioned measures, for both local and exotic breeds
Pigs	Agricultural Act, breeding ordinance and other policies include above mentioned measures, for both local and exotic breeds
Chickens	
Horses	Agricultural Act, breeding ordinance and other policies include above mentioned measures, for both local and exotic breeds

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)	Breeding programmes are undertaken by Breeders organizations with the support from the Swiss Federal Office for Agriculture (FOAG). Consequence: the breeding programmes are regularly updated and provide good services (improvement of breeds and their production) even if they face important challenges such as small populations, high-costs etc.
Cattle (specialized beef)	Breeding programmes are undertaken by Breeders organizations with the support from FOAG. Consequence: the breeding programmes are regularly updated and provide good services (improvement of breeds and their production) even if they face important challenges such as small populations, high-costs etc.
Cattle (multipurpose)	Breeding programmes are undertaken by Breeders organizations with the support from FOAG. Consequence: the breeding programmes are regularly updated and provide good services (improvement of breeds and their production) even if they face important challenges such as small populations, high-costs etc.
Sheep	Breeding programmes are undertaken by Breeders organizations with the support from FOAG. Consequence: the breeding programmes are regularly updated and provide good services (improvement of breeds and their production) even if they face important challenges such as small populations, high-costs etc.
Goats	Breeding programmes are undertaken by Breeders organizations with the support from FOAG. Consequence: the breeding programmes are regularly updated and provide good services (improvement of breeds and their production) even if they face important challenges such as small populations, high-costs etc.
Pigs	Breeding programmes are undertaken by Breeders organization. Financial support by the federal government for herdbook, performance testing and genetic evaluation as well as cryconservation enables the breeding organizations to manage and preserve indigenous breeds.
Chickens	Not much support from government, but courses and expositions organized by breeding Organizations
Horses	Breeding programmes are undertaken by Breeders organization with the support from FOAG. These programs allowed to strengthen the quality of breeds (health, appearance, performances) while imports of foreign horses allow to maintain genetic diversity.

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.

There are several constraints that slow down the implementation of Breeding Programmes in Switzerland. Based on a survey conducted by the Swiss Federal Office for Agriculture, most important breeders organizations were consulted.

Hereafter are described the most important constrains to the implementation of breeding programmes:

- The populations of some breeds (cattle, horses) are limited in number. Thus it takes an important effort to valorize and preserve these populations in an efficient manner, especially in order to avoid inbreeding;
- High costs for conservation programmes of traditional and threatened breeds (goats, sheeps);
- No granted financial support for long term conservation programs
- Perception of conflicts between conservation activities and national policies. (goats);
- In some cases (chickens), breeding infrastructures are not sufficiently developed to match the growing demand for traditional breeds;
- In some cases it is difficult to find new farmers interested in rare and traditional breeds (chicken, sheep). It might be because rare breeds are less economically efficient, because of aging of actual farmers or because of closing down of farms. New farmers interested are sometimes described as "hobby farmers" and might therefore lack knowledge, time and facilities to participate effectively in breeding programmes.

But for all species, establishment and operation of breeding programmes have been successful and contributed to high quality of breeding animals in Switzerland.

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)	Improvement of herd book programmes, implementation of a health performance program for different cattle breeds
Cattle (specialized beef)	Improvement of herd book programmes (integration of international data) construction of a detection system for health data; implementation of a health performance programme for different cattle breeds
Cattle (multipurpose)	Improvement of herd book programmes, implementation of a health performance program for different cattle breeds
Sheep	Improvement of breeds and of measures to reduce inbreeding risks. Increase the value of Swiss breeds through specific mating programmes.
Goats	Scientific findings will be increasingly incorporated into breeding programmes; inclusion of socio-economical dimensions in breeding programmes; more long-term planning in breeding programmes; more bottom up approach and inclusion of stakeholders;
Pigs	Seeking new export markets for genetics of our Swiss sire line in order to support the breeding activities in Switzerland and keep this genetic resource viable in vivo.
Chickens	Development of new breeding stations in order to develop the supply of traditional Swiss breeds on the market; development of herd-books; exhibitions to raise awareness on Swiss breeds.
Horses	Measures will be taken to reduce the impact of inbreeding problems and maintain genetic variability within Swiss breeds, improvement of herd books, organization of events and workshops and new mating approaches with foreign horse breeds.

CONSERVATION

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

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

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

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

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

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

- (•) yes
- ( ) no

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

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

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

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

See conservation programmes in EFABIS.

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.

Plans for in-vitro gene bank for chicken are in discussion.

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

	Stored in national genebank
Semen	yes
Embryos	no
Oocytes	no
Somatic cells (tissue or cultured cells)	no
Isolated DNA	no

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)	9	9	yes	no	no	no	yes
Cattle (specialized beef)	10	10	yes	no	no	no	yes
Cattle (multipurpose)	6	6	yes	no	no	no	yes
Sheep	0	0	no	no	no	no	yes
Goats	8	8	yes	no	no	no	yes
Pigs	2	2	yes	no	no	no	yes
Chickens	0	0	no	no	no	no	yes
Horses	1	1	yes	no	no	no	yes

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

Conservation activities regarding in-vitro conservation are carried out: Collection of semen from rare goats must be done in France because there is no longer any institution doing so in Switzerland.

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.

Switzerland is together with ERFP discussing the participation in the European Genebank Network for Animal Genetic Resources (EUGENA). So far, discussions are ongoing.

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.

No cases in Switzerland.

REPRODUCTIVE AND MOLECULAR BIOTECHNOLOGIES

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

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

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

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

- Around 90-93% of Cattles are artificially inseminated. This service is offered by private companies (such as Swissgenetics, Select Star etc.) that work in collaboration with Breeders organizations.
- Embryo transfer is offered by some private companies (Swissgenetics, Select Star etc.)
- No MOET schemes in place in Switzerland
- Semen sexing: Some companies (Swissgenetics) have sexed semen of their own bulls. All AI companies offer sexed semen.
- In vitro fertilization: no commercial application, but Research takes place (Uni Zurich).

General:

- Cloning and genetic modifications are not allowed in Switzerland.
- Molecular genetic or genomic information is available for all farm animal species at an experimental level. In cattle breeding, genomic breeding values are now widely used, whereas in other species only limited marker assisted selection is employed.
- Whole genome sequences for a limited number of Swiss cattle, horses and goats have been determined.

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	no
Embryo transfer	no	yes	yes	no	yes	no
Genomic selection (cattle)	no	yes	no	no	yes	yes
Semen Sexing	no	yes	no	no	yes	yes
Genomic Information	no	yes	no	no	yes	yes
Genom Sequencing	yes	no	no	no	yes	yes

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

Genom sequencing: University of Bern, Institute of Genetics has research projects dedicated to sequencing of whole genome. They also have research directed to the identification of causative variants underlying hereditary traits in farm animals.

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	no	no
Semen sexing	yes	yes
In vitro fertilization	yes	yes
Cloning	no	no

Biotechnologies	Public or private research at national level	Research undertaken as part of international collaboration
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
Genomic sequencing	yes	yes

30.1. Please briefly describe the research.

- *Artificial insemination:* diluters and technologies to extend fertilization capacity; semen quality assessment (Swissgenetics in collaboration with several national and international partners);
- *Semen sexing.* Company Swissgenetics is testing new diluters together with providers of sexed semen
- *In vitro fertilization*: research at Univ of Zurich;
- *Genomic information for estimation of genetic diversity*: Several projects do exist in that area. Most of the projects are using genome-wide-SNP-data. Dense marker data are gathered for almost all relevant livestock species of Switzerland (but less for sheeps, goats and chicken). Joint projects to maintain diversity (HAFL, Qualitas, Applied genetic network, Swissgenetics and Iowa State University). A national research project investigating the use of sequence data for genomic selection and the implementation of a tool for the management of inbreeding in the three main Swiss dairy cattle breeds started in 2013. Another research project investigating the use of genomic selection for a local Swiss horse breed was completed this year. For the pig sector, genomic selection is under development;
- *Genomic information for prediction of breeding values*: Improve predictions, extend to smaller breeds. This kind of projects are established and implemented for the three most important dairy cattle breeds in Switzerland (Qualitas, HAFL, Applied genetic network, Swissgenetics, Iowa State University);
- *Research on adeptness based on genomic information:* new traits for low input breeds (Research Institute of Organic Agriculture (FIBL) and other partners; Selection tools for metabolic robustness of dairy cows (Uni Bern, Uni Göttingen, HAFL, Swissgenetics).

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

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

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

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

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

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

Artificial insemination is performed largely for cattle, horse breeds and pigs.

As mentioned above, several projects evaluating genetic diversity are carried out. Such projects do exist at HAFL, where the genetic diversity was assessed using molecular markers. Some very interesting insights could be gained, especially for small, local breeds with recent herd books (i.e. opened after 1992) the use of genomic relationships and inbreeding seems promising but remains expensive for smaller/local breeders associations.

The University of Bern has also been conducting research related to reproductive and molecular biotechnology. Their primary research goal is the identification of causative variants for hereditary traits including hereditary diseases.

Constrains: Compared to other European countries, there is less funding in Switzerland from government and especially from private organizations for farm animal genetics. There has been a significant reduction of research resources over the last 10 years in Switzerland (Institute of Genetics at the University of Bern: minus 30% in 2005; Education and research activities of Animal Breeding and Genetics sector at the ETH Zurich have been significantly reduced within the last 10 years).

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	extensive	Biodiversity Action Plan of Switzerland elaborated for sustainable conservation of Biodiversity in all above mentioned fields.
Collaboration in the characterization, surveying or monitoring of genetic resources, production environments or ecosystems	none	
Collaboration related to genetic improvement	none	
Collaboration related to product development and/or marketing	none	
Collaboration in conservation strategies, programmes or projects	limited	New common article for the conservation of AnGR and PGR in the Swiss law for agriculture.
Collaboration in awareness-raising on the roles and values of genetic resources	limited	Punctual collaboration e.g. year of Biodiversity 2010 and in speeches.
Training activities and/or educational curricula that address genetic resources in an integrated manner	limited	Mutual participation in training activities.
Collaboration in the mobilization of resources for the management of genetic resources	none	

2. Please describe any other types of collaboration.

Collaboration in international working groups and Commission work.

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

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

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

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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).

Government can co-fund projects in the field of ecosystem services provided by different species/breeds. Examples of projects are e.g. controlling of alpine pastures contributing to reduction of scrub on alpine pastures, keeping forest within its borders, avalanche control. See projects sent to FAO on 2013.

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).

Projects have had positive effect on alpine pastures and avalanche control. See also project descriptions sent to FAO in 2013!

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).

It is still early to describe outcomes regarding AnGR, but we hope that in the future, the number of animals of specific breeds used for ecosystem services will slowly increase.

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.

The climate strategy addresses the reduction of CO2 emission through good management of grazing areas for cattle (beef and milk) as well as through breeding goals for specific cattle breeds.
Switzerland has a very strong legislation regarding water pollution by livestock, we therefore have no real problems in this regard.

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).

Measures for the reduction of CO2, produced by cattle, have only started.

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

-

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

Need for research is obvious and is ongoing in the filed of CO2 reduction. Lack of legal definitions to allow financial support to individual animals for ecosystem services.

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.

See answers above.

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.

See answers above.

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:

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:

Done by breeding organizations and NGOs.

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:

All species, but not all breeds have yet been characterized on a molecular base.

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:

In collaboration with breeding organizations and NGOs.

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:

Monitoring is done by breeding organizations and by the Swiss animal tracing database. Action is planned to refine monitoring.

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:

Monitoring programs using existing databases are elaborated.

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:

Population status and trends are monitored by breeding organizations and through EFABIS.

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:

Simplification of a combination of FAO and EAAP criteria as well as degree of inbreeding.

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:

NGOs have own plans, institutional emergency response system is in discussion.

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:

Research is done by specialized organizations and research institutions.

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.

Breeding organizations and NGOs are in first place responsible for breeds, government manages EFABIS and CRYOWEB and ensures funding.

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:

Swiss Constitution, art. 104; Agriculture Act, SR 910.1, art.147a and 147b, ordinance for livestock breeding. SR 916.310, art. 23 and 25.

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:

Not these policies, but: integration of agro-ecosystem approaches is addressed in different laws (agriculture, veterinary, environment).

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

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

Please provide further details:

Breeding organizations define their breeding programmes according to market demands.

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:

Approved breeding organizations are in place, some for over 100 years.

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:

See question 17.

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

Glossary:

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

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

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

Please provide further details:

Partly yes, as it is known that introduction of Holstein has eradicated Freiburg cows, the same applies to other breeds.

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:

See question 17.

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:

Mechanisms existed before the adoption of GPA and are continuously strengthened.

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:

See question 17.

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:

Contracts exist in pig breeding. Agriculture act foresees a para allowing to develop agreements, funding not yet identified.

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:

See question 17. These programmes existed before the adoption of GPA. They are continuously strengthened and progress has been made since the adoption of these programmes.

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:

See question 17.

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:

Measure existed before the adoption of GPA. They are continuously strengthened and progress is made.

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:

Measure existed before the adoption of GPA. They are continuously strengthened and progress is made.

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

Programmes for sustainable use and development of rare native breeds and their products submitted by breeding organizations are funded.

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.

Regional and international cooperation is promoted within specific yearly workshops.

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:

Economic: intensification of production systems: cattle, goats, sheep, pig, horses, chicken. Socioeconomic: cattle, goats, sheep. New trends: introduction of exotic breeds: all species. Genetics: inbreeding in all species.

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:

Funding of programmes from breeding organizations, contributions to breeding organizations, workshops, publications CH, FAO, EAAP

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:

But: NGOs have so called ARCHE Farms = normal farms with many rare breeds.

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:

Cryoconservation has been installed for cattle, horses, sheep, and goats, all before GPA. See EFABIS and DAD-IS.

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:

See question 34 - 36 for further details.

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:

Major barriers as knowledge of breeders, financial power of breeding organizations, funding by government, legislation and act have been identified in the past. All barriers are being eliminated and comprehensive programs are now in place.

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:

Gaps are identified and collections are updated.

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:

Different veterinary acts are in place.

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:

Contracts between AI centers and FOAG regulate use of material.

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:

Breeding organizations and AI centres implement new techniques and follow research continuously.

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

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

Please provide further details:

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

Priorities for conservation are degree of endangerment, number of active males and degree of inbreeding.

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:

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:

Not yet endorsed by FOAG.

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

- (●) a. Yes
- ( ) b. No, but they will be addressed in forthcoming plan
- ( ) c. No

Please provide further details:

The Swiss Biodiversity Strategy also covers Animal Genetic resources for food and agriculture: http://www.bafu.admin.ch/publikationen/publikation/01660/index.html?lang=en

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:

Agriculture act (SR 910.1), article 147a and 147b; ordinance for livestock (SR 916.310).

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:

Banque de données sur le trafic des animaux (BDTA), EFABIS.

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:

EFABIS

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

- [x] 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:

Coordination, monitoring, dissemination of information, expertise, funding.

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)?

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

Please provide further details:

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

- [x] 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:

Public animal expositions in collaboration with breeding organizations and NGOs, International year of Biodiversity: a stamp of an endangered breed was launched. Breeding organizations are supported in marketing activities.

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

- [x] 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:

Agriculture act (SR 910.1), article 147a and 147b; ordinance for livestock (SR 916.310).

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

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

Please provide further details:

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

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

Please provide further details:

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

Characterization?

- (●) a. Yes
- ( ) b. No

Sustainable use and development?

- (●) c. Yes
- ( ) d. No

Conservation of breeds at risk?

- (●) e. Yes
- ( ) f. No

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

www.prospecierara.ch

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:

ETH, universities, School of Agricultural, Forest and Food Science HAFL.

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.

Strong interaction with breeding organizations, universities, ERFP.

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:

Through international projects (FAO and others).

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:

ProSpecieRara, SAVE.

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

- ○ a. Yes
- ◉ b. No

Please provide further details:

No, because it existed already before adoption of the GPA.

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:

Yes through the Swiss Agency for Development and Cooperation (SDC).

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:

Yes through the Swiss Agency for Development and Cooperation (SDC).

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:

Yes, indirectly through ERFP and FAO.

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

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

Please provide further details:

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

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

Please provide further details:

EFABIS

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:

Yes through the Swiss Agency for Development and Cooperation (SDC).

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:

Yes, through the School of Agricultural, Forest and Food Science and the Swiss Federal Institute of Technology (ETH) in different countries.

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

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

Please provide further details:

ERFP: European genepool network.

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:

Such action is planned through ERFP.

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

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

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

Please provide further details:

ERFP, Swiss Agency for Development and Cooperation SDC, FAO.

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:

Access and Benefit Sharing.

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
Environmental value of Animal Genetic Resources	Increasingly important	Make surveys and define standards

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