



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: Viet Nam

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).

Vietnam is among the few countries with diverse genetic resources, both in fauna and flora. There is a wide variety of livestock such as buffaloes, cattle, pigs, goats, sheep, chickens, ducks, etc. Vietnamese husbandry industry is traditional in forms and purposes, either intensive or semi-intensive, and serves demands of individual households. The roles of indigenous livestock often include the provision of traction and manure, sources of savings, insurance, cyclical buffering, accumulation and diversification, and fulfillment of socio-cultural roles (e.g. dowry payments and/or slaughter during special ceremonies). Therefore, domestic livestock tends to be small in stature, highly resistant to diseases, and well adapted to low level technologies, harsh climates, and sparse nutrition. The domestic market also prefers these livestock for their meat quality and flavor. Besides economic values, domestic livestock hold tremendous ritualistic importance and are incorporated in cultural emblems such as Ho paintings, Do Son buffalo fights, etc.

The most significant threats to the diversity of FAnGR are crossbreeding and breed replacement. Recent years have seen a drastic rise in human consumption, which domestic breeds' low productivity is failing to satisfy. Many households turn to imported breeds and crossbreds for better yield. The growing use of exotic breeds has led to the extinction or severe erosion of genetic diversity in traditional breeds, despite their adaptation to local environments. The rapid expansion of exotic and crossbred population is putting domestic livestock at risk. Many indigenous breeds struggle to compete with exotic breeds and crossbreds and thus face serious extinction threats: I, Son Vi, meo, Mini pigs, Van Phu chicken, etc..

These important services are rarely valued in livestock assessments, leading to distorted government policies and interventions that fail to properly consider the impact of 'new' agricultural practices (e.g. crossbreeding or breed replacement) on farmer livelihoods and indigenous FAnGR. In the same way, market access and infrastructures are weak and inequitable. This is especially difficult for poor farmers in remote villages, where the majority of indigenous FAnGR are kept. These farmers then use their livestock for subsistence purposes and only occasionally sell surplus.

- Policymakers and the government still do not grasp that pressures from the market are the reason for the loss of valuable indigenous genetic diversity. On the other hand, farmers suffer from lack of information and poor awareness of

the importance of maintaining domestic genetic diversity, of indigenous breeds' potential, and of sustainable breeding programs.

Lacking is the understanding that the key to success in husbandry is sustainable development and environment conservation. Genetic diversity in livestock production is the deciding factor in agricultural sustainability and in alleviating the consequences of natural disasters and the risk of epidemics.

Major barriers to addressing these challenges are the lack of appropriate and effective policies for the sustainable management of FAnGR and the inadequate knowledge of the value of indigenous breeds. The latter varies amongst the stakeholder groups, with farmers and breeders' associations holding the most knowledge and government officials the least. Links between and among these groups are weak or non-existent. Basic information about valuable indigenous breeds and representative animals is needed, as is the capacity to prioritize, monitor and manage them at both scientific and farm operational levels. Stakeholder groups need the capacity to take on this process.

Effective tools to support decision making for the conservation and sustainable use of indigenous FAnGR is needed. These tools will help manage priority FAnGR, and assess, strengthen and monitor the policies and market structures that support the conservation through utilization of FAnGR for the benefit of human livelihoods. The tools will be applied through capacity-building and awareness-raising mechanisms that will both emphasize the value (conservation and potential market return) of FAnGR and ensure that the tools are embedded in and used efficiently by institutional programmes and by poor livestock keepers.

Priorities and strategic directions for future action (focusing particularly on the next ten years).

- Enhance country management activities in relation to AnGR for food and agriculture, food security, rural development, and environment, including strengthening policies, institutions and building capacity.
- Enhance partnerships among governments, scientists, livestock keepers, breeders and consumers.
- Promote long-term technical and financial cooperation at the national, regional and international levels.
- Contribute to the success of the Global Plan of Action for AnGR.

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

FLOWS OF ANIMAL GENETIC RESOURCES

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

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

- yes
- no
- yes but with some significant exceptions

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

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

- yes
- no

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

- yes
 no

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

Data is available only in Vietnamese. A sampled summary can be found below.

In 11/2013, Vietnam imported 59 purebred pig from Belgium (83.1%) and the USA (16.9%), 56,3% down from previous month. Total of import turnover is 157.246 USD.

In 11/2013, Vietnam imported 105.417 purebred chickens, mainly from the USA (73,5%) and France (26,5%). The chicken breeds imported in this month include: Ross, Cobb, Isa Shaver, Hysex Brown, Hubbard color.

The total number of purebred poultry imported during first eleven months in 2013 reached 1.706.924 fowls. The number of purebred poultry imported from 8 markets, increased in 3 markets (Czech, Dutch, England) and decreased 3 markets (Hungary, Korea, Philippines). Specific market imports: USA 758.537 (44,4%), France 467.377 fowls (27,4%), Malaysia 193.132 fowls (11,3%), Dutch 164.008 fowls (9,6%), Australia 65.096 fowls (3,8%), Britain 38.958 fowls (2,3%), Czech 14.090 fowls (0,8%) and New Zealand 5.726 fowls (0,4%).

Imported chicken meat in 11/2013 reached 7.520 tons (an increase of 2,9% from 10/2013), the import turnover reached 6.871.859 USD (increasing 7,4% from previous month). The total number of imported chicken meat during 11 months reached 69.406 tons. Chicken meat were imported from 28 countries in the first 11th months of 2013, an increase of 5 markets from the same period in 2012). Imports were mainly from: USA, Korea, Brazil and Iran; with 49,4% from USA, 27,3% from Korea, 13,8% from Brazil, 4,1% from Iran and 5,4% from others.

The cattle market: During 11 months in 2013, the total number of imported cattle reached 52.733 cattle from Australia; 90.068 cattle from Thailand.

Source: Reports from Livestock Production Department - Ministry of Agriculture and Rural Development

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.

Previously, animal imports were mainly from Cuba, Russia, and other political allies. Nowadays, animal imports are from developed countries all over the world, as specified above.

In particular:

Previously: HF dairy cattle were imported from Cuba, Karbadin horses from Russia, geese from Hungary, etc.

Now: HF cattle from Canada, U.S., Australia, New Zealand, Boer goats from U.S., Alpine goats from India, Pakistan, pigs from Denmark, etc.

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.

- An increase in foreign breeds destabilizes the structure of domestic genepool in favor of exotic breeds.
- Inefficient management of resources relies primarily on self-reporting during trade.
- Increased risks in disease control and management in livestock and poultry are observed.
- Artificial insemination is rarely used for local breeds; prices are therefore unknown.

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	high	Rising demands are due to rising population and the government's goal to increase livestock herds (less cultivation and more husbandry)
Changing demand for livestock products (quality)	high	medium	Quality was improved to respond the consumer demand for food safety and hygiene.
Changes in marketing infrastructure and access	medium	high	Wet markets continue to flourish, but processed meat is gaining traction in supermarkets. Processing points are more important, and there are more contracts.
Changes in retailing	low	high	The percentage of retail decreased, current it is normal.
Changes in international trade in animal products (imports)	medium	high	Public - Private Partner open, international trade flow are more flexible
Changes in international trade in animal products (exports)	medium	high	Due to open Public - Private Partner and animal livestock following VIETGAPH is better and better
Climatic changes	high	medium	AnGR are raised free-range in Vietnam and are susceptible to climate changes. Diminishing grazing lands also contributes to the decreased.
Degradation or improvement of grazing land	high	medium	Natural food source for livestock and grazing land were decreased and destroyed.
Loss of, or loss of access to, grazing land and other natural resources	high	high	
Economic, livelihood or lifestyle factors affecting the popularity of livestock keeping	high	high	High standard of living and financial motivation propel people to switch to exotic breeds with higher productivity and shorter investment cycle.
Replacement of livestock functions	high	high	Previously, many livestock are raised for personal income and cultural values; nowadays, the commercial values of livestock are increasingly important to people's livelihood.
Changing cultural roles of livestock	medium	medium	Cultural roles of livestock are diminishing.
Changes in technology	high	high	
Policy factors	medium	high	The government's policies lean towards exotic breed importation to increase productivity.
Disease epidemics	high	medium	Many epidemics, controlling better in the future.

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)	1	4
Cattle (specialized beef)	2	6
Cattle (multipurpose)	7	5
Sheep	1	0
Goats	2	3
Pigs	6	8
Chickens	12	20

CHARACTERIZATION

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

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

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

Species	Baseline survey of population size	Regular monitoring of population size	Phenotypic characterization	Molecular genetic diversity studies – within breed	Genetic diversity studies based on pedigree	Molecular genetic diversity studies – between breed	Genetic variance component estimation	Molecular genetic evaluation
Cattle (specialized dairy)	1	1	medium	medium	low	low	low	low
Cattle (specialized beef)	4	1	low	low	low	low	low	low
Cattle (multipurpose)	2	0	low	low	low	low	low	low

Species	Baseline survey of population size	Regular monitoring of population size	Phenotypic characterization	Molecular genetic diversity studies – within breed	Genetic diversity studies based on pedigree	Molecular genetic diversity studies – between breed	Genetic variance component estimation	Molecular genetic evaluation
Sheep	1	1	low	low	low	low	low	low
Goats	4	4	low	low	low	low	low	low
Pigs	8	4	low	low	low	low	low	low
Chickens	20	12	low	low	low	low	low	low

INSTITUTIONS AND STAKEHOLDERS

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

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

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

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

	Description
Education	University curriculum on the importance of natural resources are introduced in certain departments. Modules on conservation of domestic genetic resources as well as breeding and selection are included in several courses.
Research	There are surveys and discoveries of new domestic breeds in rural, remote areas, especially in ethnic minority group. Research projects are included in national animal biodiversity programs. Phenotypic characterization is only done for a limited number of breeds.
Knowledge	Understanding and knowledge of genetic resources have improved.
Awareness	Awareness has improved.
Infrastructure	There have been improvements in terms of infrastructure, including better zoning of conservation areas, adaptation programs for imported breeds, and development of remote areas.
Stakeholder participation	Relationships between stakeholders have been improved.
Policies	Breeding ordinance includes a chapter on the development of genetic conservation.
Policy implementation	The aforementioned policy is being implemented.
Laws	Ordinances on livestock and veterinary are issued.
Implementation of laws	The aforementioned laws are reinforced to a moderate extent.

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>).

The management, conservation, and categorization of genetic resources are performed at a national level. The participating institutions are systematized in a network managed by the Ministry of Science, the Ministry of Agriculture and Rural Development and the Technology and the Ministry of Environment

Source (Vietnamese): Ministry of Justice

http://www.moj.gov.vn/vbpq/Lists/Vn%20bn%20php%20lut/View_Detail.aspx?ItemID=8142

BREEDING PROGRAMMES

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

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

10. Who operates breeding programmes in your country?

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

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

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

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

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

Species	Tools															
	Animal identification		Breeding goal defined		Performance recording		Pedigree recording		Genetic evaluation (classic approach)		Genetic evaluation including genomic information		Management of genetic variation (by maximizing effective population size or minimizing rate of inbreeding)		Artificial insemination	
	Loc	Ex	Loc	Ex	Loc	Ex	Loc	Ex	Loc	Ex	Loc	Ex	Loc	Ex	Loc	Ex
Cattle (specialized dairy)	0	4	0	4	0	4	0	2	0	2	0	2	0	2	0	2
Cattle (specialized beef)	2	6	2	6	2	6	1	3	3	0	3	0	0	0	0	3
Cattle (multipurpose)	4	5	4	5	4	5	0	0	0	0	0	0	0	0	0	3
Sheep	1	0	1	0	1	0	0	0	1	0	1	0	1	0	0	0
Goats	2	3	2	3	2	3	0	0	2	3	2	3	2	3	0	0
Pigs	6	8	1	8	6	8	1	4	6	6	6	6	2	4	1	8
Muscovy ducks	1	3	1	3	1	3	0	0	0	0	0	0	0	0	0	0
Horses	1	2	1	2	1	2	1	1	0	0	0	0	1	0	0	0
Chickens	12	20	12	20	12	20	3	4	9	3	9	3	3	9	0	0

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

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

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

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

Species	Training	Research
Cattle (specialized dairy)	medium	high

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

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

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

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

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

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

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

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

In general, the government set up and fund breeding programs; external companies also fund programs in certain areas. Breeders' Associations also participate in organization and training. Livestock keepers implement the programs within their farms. Research organizations are funded by the government and are responsible for furthering and transferring technology to other stakeholders.

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

Species	Policies or programmes
Cattle (specialized dairy)	yes
Cattle (specialized beef)	yes
Cattle (multipurpose)	yes
Sheep	yes
Goats	yes
Pigs	yes
Chickens	yes
Ducks	yes
Muscovy ducks	yes
Pigeons	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)	The Department of Livestock - Ministry of Agriculture and Rural Development has deployed national breeding program, supported original species selected and bred purebred. (HF bulls and HF cow). It is divided follow the different stages. The first period State supports importing dairy breeds (milking machines, grass, grazing land, milk collection and processing, semen, propagation). The next stages, the supports decreases gradually.
Cattle (specialized beef)	The Department of Livestock - Ministry of Agriculture and Rural Development has deployed national breeding program, supported original species, selected and bred purebred. (Yellow cattle)
Cattle (multipurpose)	The Department of Livestock - Ministry of Agriculture and Rural Development has deployed national breeding program, supported original species, selected and bred purebred. (Brahman x Yellow, for example, are mainly used for labor)
Sheep	The Department of Livestock - Ministry of Agriculture and Rural Development has deployed national breeding program, supported original species, selected and bred purebred (Phan Rang sheep)
Goats	The Department of Livestock - Ministry of Agriculture and Rural Development has implemented national breeding program, supported original species, selected and purebred: Boer; Co goats; Boer; Bach Thao goats;
Pigs	The Department of Livestock - Ministry of Agriculture and Rural Development has deployed national breeding program, supported original species, selected and bred purebred.

Species	Description of policies or programmes
Chickens	The Department of Livestock - Ministry of Agriculture and Rural Development has deployed national breeding program, supported original species , selected and bred purebred. The State encourages the import of new high productivity breeds, new technology (Ai Cap, H'mong, Ri, sasso hens, Kabir hens, Ross hens, LV chicken hens, Thai Hoa hens....)
Rabbits	The Department of Livestock - Ministry of Agriculture and Rural Development has deployed national breeding program, supported original species , selected and bred purebred.

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)	Currently, Vietnam has 167 thousands of dairies (both pure and crosses-50-75-87% HF), fresh milk production is 386 thousand tons. Nearly 70% of the dairy herd is kept in the household. The remaining are raised in farms of 300 or more. The average yield of dairy is about 4.6 thousand liters /dairy/305 days. The yield of dairy has been increased of 30 - 50% for 10 years recently.
Cattle (specialized beef)	Today Vietnam has 5.194.178 cows, the percentage of crossbred Zebu accounting 44.2%. The average adult weight of the Vietnam Yellow cattle is 180-220kg (males, females are 200 kg); the average adult weight of crossbred cows is 230-280kg (males, females are 250 kg). Productivity of beef cows increased 15 - 20%.
Cattle (multipurpose)	
Sheep	Sheep and goat: 1.343.600 animals.
Goats	Sheep and goat: 1.343.600 animals.
Pigs	According to the General Statistics Office in 01.10.2012, Vietnam has 26.49 million pigs, sows is 4.025 millions, accounted for 15.2% of the total. In 2012, hog slaughter in whole nation is 48.147.734. Source: Report of status quo pigs, cows breeding.
Chickens	According to the General Statistics Office in 2012, the total poultry of Vietnam is 308.46 millions. The total meat production of poultry sold in 2012 reached 729.40 thousand tons. Egg production in 2012 of about 7.30 billions. The broiler breeds, super egg of the world such as AA, ISA, Ross, ISA Brown, Nick Brown, Hysex Brown, ... are present in Vietnam. In the past 10 years, broiler production up 30%; The egg production increased of 15-20%.
Buffaloes	There are 2.627.800 buffaloes.
Horses	There are 88.100 horses.

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.

- Livestock husbandry in small households, management on breeding is not closed, genetic progress is not accelerated; sometimes in the remote region, breed is eroded due to inbreeding.
- Recording systems in small households were difficult
- Controlling disease was difficult
- Household fed cattle, poultry with small quantities, easies to inbreeding
- Funding for breeding programs is limited
- Understanding of keeping the local species is limited

Remedies:

- Increase in funding for breeding programs
- Strengthening training for farmers in technical of selecting and mating breeding,
- Finding niche markets to improve profitable breeding.
- Strengthening vaccination follow process.

Some animal models of local breeds success:

- Program to renovate beef cows: The percentage of meat increased of 30 - 40% from 160 -180 kg/cow, use semen of imported bull to renovate background local (Brahman,...).
- The policy of state support, keepers earn more money from higher production.

https://www.google.com.vn/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&ved=0CCcQFjAA&url=http%3A%2F%2Fwww.monre.gov.vn%2Fv35%2Fuploaded%2F11%2F20954_Du_thao_Chien_luoc_quoc_gia_ve_da_dang_sinh_hoc_den_nam_2020%2C_tam_nhin_den_nam_2030.doc&ei=ppjkUsjTLrvoATzy4KYCQ&usg=AFQjCNGm-ku4Rm7yyrjRLpqPwMzcSR4x2Q&sig2=ynw6qj1ugcWAMYBzeMIFRA&bvm=bv.59930103,d.cGU

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)	<p>In 2020: The average of the herd of dairy increases over of 11% per year, reach approximately 500 thousands, with 100% the number of dairy was intensive and semi-intensive feed.</p> <p>Dairy farming is concentrated in the highlands such as Lam Dong, Moc Chau and other provinces have investment conditions, livestock experience.</p> <p>https://www.google.com.vn/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&ved=0CCcQFjAA&url=http%3A%2F%2Fwww.monre.gov.vn%2Fv35%2Fuploaded%2F11%2F20954_Du_thao_Chien_luoc_quoc_gia_ve_da_dang_sinh_hoc_den_nam_2020%2C_tam_nhin_den_nam_2030.doc&ei=ppjkUsjTLrvoATzy4KYCQ&usg=AFQjCNGm-ku4Rm7yyrjRLpqPwMzcSR4x2Q&sig2=ynw6qj1ugcWAMYBzeMIFRA&bvm=bv.59930103,d.cGU</p>
Cattle (specialized beef)	<p>In 2020: The average of the herd of beef increases over of 4.8% per year, reaching approximately 12.5 millions, with over 50% crossbred cows. .</p> <p>Buffaloes: stable with 2.9 millions, feeding mainly in the Northern mountainous, North Central and West Highlands provinces.</p> <p>Beef cattle production is concentrated in the North Central, the South Central Coast and the Central Highlands, South East and some areas with livestock experience and the ability to invest.</p> <p>https://www.google.com.vn/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&ved=0CCcQFjAA&url=http%3A%2F%2Fwww.monre.gov.vn%2Fv35%2Fuploaded%2F11%2F20954_Du_thao_Chien_luoc_quoc_gia_ve_da_dang_sinh_hoc_den_nam_2020%2C_tam_nhin_den_nam_2030.doc&ei=ppjkUsjTLrvoATzy4KYCQ&usg=AFQjCNGm-ku4Rm7yyrjRLpqPwMzcSR4x2Q&sig2=ynw6qj1ugcWAMYBzeMIFRA&bvm=bv.59930103,d.cGU</p>
Cattle (multipurpose)	Beef cattle are frequently used for labor.
Sheep	Total population is very small, mainly concentrated in a certain areas but little plan to expand.

Species	Description of future objectives, priorities and plans
Goats	In 2020, the herd of goat and sheep: an average increase of 7% per year, reaching about 3.9 millions. Development goat livestock with farm combine with raising in cages and semi-grazing in the Northern mountainous, the North Central, the South Central Coast provinces. Ninh Thuan and Binh Thuan provinces and some locals have ecological conditions suitable to expand sheep. https://www.google.com.vn/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&ved=0CCcQFjAA&url=http%3A%2F%2Fwww.monre.gov.vn%2Fv35%2Fuploaded%2F11%2F20954_Du_thao_Chien_luoc_quoc_gia_ve_da_dang_sinh_hoc_den_nam_2020%2C_tam_nhin_den_nam_2030.doc&ei=ppjkUsjTLrvoATzy4KYCQ&usg=AFQjCNGm-ku4Rm7yyrjRLpqPwMzcSR4x2Q&sig2=ynw6qj1ugcWAMYBzeMIFRA&bvm=bv.59930103,d.cGU
Pigs	In 2020: Development size of the imported herd pursue big industrial farms in where there are land condition, controlling disease and environment; maintaining the scale of cross pig, special pig suit livestock of households and areas. The total number of pig increase of 2,0% per year, reaching about 35 millions, with 37% of imported pigs in the industrial farms. Part of the rest 63% are raised in medium sized, semi-industrial farms.
Chickens	In 2020: Innovation and development poultry livestock orients farm, industry and controlled grazing. The total average increase over of 5% per year, reach about 300 millions, with 33% is industrial chicken.

CONSERVATION

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

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

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

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

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

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

yes

no

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

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

	Considered in formal prioritization approaches
Risk of extinction	yes
Genetic uniqueness	yes
Genetic variation within the breed	yes
Production traits	yes
Non-production traits	yes
Cultural or historical importance	yes
Probability of success	no

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

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

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

Dairy cattle are currently a priority species in the national breeding programs. Therefore, there are a lot of activities about the dairy cattle, for example, the National Dairy Cattle Festival with a Cattle show (prizes are awarded for the best in show cattle).

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

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

- yes
 no

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

- yes
 no

23.2. If yes, please describe the plans.

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

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

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

Species	Number of breeds for which material is stored	Number of breeds for which sufficient material is stored	Does the collection include material from not-at-risk breeds?	Have any extinct populations been reconstituted using material from the gene bank?	Have the gene bank collections been used to introduce genetic variability into an in situ population?	Have the gene bank collections been used to introduce genetic variability into an ex situ population?	Do livestock keepers or breeders' associations participate in the planning of the gene banking activities?
Cattle (specialized dairy)	2	2	yes	no	no	no	no

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 beef)	1	0	yes	no	no	yes	yes
Cattle (multipurpose)	1	0	yes	no	no	yes	no
Sheep	1	0	yes	no	no	yes	no
Goats	5	2	yes	no	no	yes	yes
Pigs	8	3	yes	yes	no	yes	yes
Chickens	12	0	yes	no	no	yes	yes

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

In vitro preservation activities: semen, embryos for dairy cattle, somatic cells and DNAs for most indigenous pigs and chickens, sheep, cattle, goats, sheep, etc.
Population reconstitution has not yet been implemented.

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.

Southeast Asia, Japan, France

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.

Bau Quy duck, Ho chicken, H'mong chicken, Phan Rang sheep, I pig, Van Pa pig.

Associations for each breeds were established (Ho Chicken association, etc.); Women's Associations, Veterans' Associations, etc. also got involved and raised interest and awareness regardless of economic concerns. Slowly the interests drive up the market demand, and they were able to sustain their activities by up-marketing their livestock products.

REPRODUCTIVE AND MOLECULAR BIOTECHNOLOGIES

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

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

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

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

DNA technique, embryo transfer, technique apply books, embryo transfer books....

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

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

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

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

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

30.1. Please briefly describe the research.

- Artificial insemination research, improve conception rates of the cattle,...
- Technology for embryos, cryo-embryos, application of semen sexing, embryos sexing, in vitro fertilization in cow.
- Embryo transfer: low-level research, only success on chicken.

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

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

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

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

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

- Biotechnologies are from foreign cooperative projects (BIODIVA, IAEA, GEF, etc.) and national projects funded by the government.
- Constraints: difficulties in applying and transferring technologies to production, due to the vast difference between laboratory environment and actual realities of small households. Limited budget and funding for such application are also an issue, as is the lack of appropriate policies and management capacities. Livestock keepers are also limited in their understanding of new technologies.
- Steps to be done: raising capacities of livestock keepers, policymakers, and other stakeholders. Better funding structure and cooperative efforts are also needed.

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	Building Biodiversity Law

	Extent of collaboration	Description
Collaboration in the characterization, surveying or monitoring of genetic resources, production environments or ecosystems	limited	National Park link among animals with forest resources, the animal, plant and aquatic ecological conservation areas.
Collaboration related to genetic improvement	limited	
Collaboration related to product development and/or marketing	limited	
Collaboration in conservation strategies, programmes or projects	limited	Biodiversity Law
Collaboration in awareness-raising on the roles and values of genetic resources	limited	<ul style="list-style-type: none"> • Biodiversity Law • Strategic development of the livestock sector • Restructuring husbandry
Training activities and/or educational curricula that address genetic resources in an integrated manner	limited	
Collaboration in the mobilization of resources for the management of genetic resources	limited	

2. Please describe any other types of collaboration.

Demonstrating by laws. Action is limited

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

Conservation of species associated with the ecosystem, combine with development and enrich the flora and fauna.
Source: Biodiversity Law

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

- Advantage: In a ecosystem: plant - animal - fishery parallel exists in each region in Vietnam.
- Disadvantage: Budget limited, lack of awareness, unspecific text.

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

- There is cooperation with other organizations on biodiversity
- Propaganda in many forms
- Funding for specific items

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).

- Content: Propaganda technical processes poultry to ensure safe disease, reduce environmental pollution and greenhouse gas emissions in livestock farms and households.
- Development pig livestock orient VietGAHP
- Content: Propaganda technical processes super-meat pig livestock orient VietGAHP; applying biology padding in pig livestock to ensure safe disease, reducing environmental pollution and greenhouse gas emissions in the farms and households.
- Location deployed: on the whole country.
- Development of grazing livestock, prioritizing use of available feed, locally efficient, contributing to greenhouse gas emissions
- Content: Propaganda and transfer technical processes of grazing livestock (Buffalo, beef cow, dairy, goats, sheep, ...), prioritizing the use of available feed, effective at to contribute to the reduction of greenhouse gas emissions.
- Location deployed: on the whole nation, the priority focus Midlands and Northern mountainous, Central Coast and Central Highlands.

<http://thuvienphapluat.vn/archive/Quy-dinh-1258-QD-BNN-KHCN-Chuong-trinh-khuyen-nong-Trung-uong-2013-2020-vb196209.aspx>

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).

3.1. Policy
 Developing, promulgate and implement good policies in:

- Encouraging the development of farm livestock, livestock process industry, slaughter and processes products.
- Controlling and encouraging creativity, application of technology to minimize environmental pollution in livestock.
- Investment in the investigation, basic research and application of environmental protection in animal husbandry.
- Investment in construction of ecological systems through the multi-animal model with the ecological characteristics of each region to maintain and develop biodiversity in the farming.
- Extension of sustainable farming associated with environmental protection.

3.2. Science and Technology

- Research and transfer development livestock technology in accordance with the ecological zones in order to promote the exploitation of comparative advantage and overcome the limitations of each region .
- Research and transfer to treat with waste of animal in the environment conditions.

3.3. Management organization

- Regular training to improve level of state management in livestock, environment in livestock.
- Strengthening inspection, checking breed, materials, provenders, epidemic prevention and treating waste of livestock.
- Completing policy framework and data systems in breeding, feeding and environment in livestock.

3.4. Livestock plan
 Implement region project, livestock areas is first and important method, that is basic to conduct environment protection measures.
 The farms, livestock areas must orient plan of local authorities, accordance with economy development and society schedule and guarantee environment hygiene to sustainable development.
 Source: Ministry of Agriculture and Rural Development

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).

Outcomes have not yet been surveyed and summarized.

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.

- Waste of animal, biogas,
- Transfer and business animal breeds among the areas.
- Ordinance on Livestock and Veterinary
- The Strategy for Livestock Production up to 2020

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).

Reducing freelance migrant, declaring, reducing negative environment.

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).

Outcomes have not yet been surveyed and summarized.

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.

- Public awareness, especially in rural and remote areas.
- Officials responsible for reinforcing the implementation are limited in both quantity and quality
- Funding limited
- Natural Disasters

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.

- Many indigenous animals, pressure of the internal breed were reduced, exotic rose.
- Controlling feeding, restricting freedom trampling.
- Biogas emissions.

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.

- Propaganda of biogas, using renewable energy

- Controlling livestock, there are special procedures for the remote areas.

Plan:

- Program development renewable energy sources
- Restructuring of the agricultural sector
- Cooperation with other countries: Japan, Netherlands, Germany.

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.

- The Strategy for Livestock Production up to 2020
- The Biodiversity Law

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:

Vietnam has 11 species of the animal, was surveyed safety scope of breeds with FAO standard, established record for each species - DAD-IS system, constructing breed feeding for each species, discovering and surveying breeds.
Source: Ministry of Agriculture and Rural Development

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:

Defining the phenotype following the guidelines of FAO; characterize appearances, the productive ability of breeds that have important economically traits: Ban pig, Mong Cai pig, Ha Lang pig, Ho chicken, Dong Cao chickens, Co duck, ...

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:

Some breeds were evaluated on molecular genetics: the domestic chickens, domestic cows, domestic pigs, domestic goats.

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:

The Statistical Office and the Ministry of Agriculture and Rural Development conduct the baseline survey and report in October every year. Several other surveys in provinces and some international projects.

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:

The Ministry of Agriculture and Rural Development in collaboration with the Ministry of Science and Technology are agencies with response for monitoring status of animal genetic resources.

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:

Draft of a program to monitor the status of animal genetic resources has deployed since 1990. The Ministry of Science and Technology and the Ministry of Agriculture and Rural Development have been having fund for this program but not much.

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:

Animal genetic resource and Breeding programs of MARD.

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:

http://www.google.com.vn/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&cad=rja&ved=0CDcQFjAC&url=http%3A%2F%2Fdatafile.chinhphu.vn%2Ffile-remote-v2%2FDownloadServlet%3FfilePath%3Dvbpq%2F2013%2F11%2F160-nd.pdf&ei=TSzjUqS5DM-GogTY_4LwAQ&usq=AFQjCNHtbPt5EJ7E5AM70sCd7giJXJDTYw&bvm=bv.59930103.d.cGU

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:

- Global early warning and the role of the domestic animal diversity information system (dad-is)
- After GPA, the security alerts of risk breeds of all important species have been emphasized in the National and locality Conferences, scientific conferences, projects, ...

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:

Cooperation programs with Japan RAP/144/JP/project, (FAO), FFEM project, BIODIVA, Upland program, IAEA) had more training course, more people were trained aboard to study on develop methods, technical standards or protocols for phenotypic or molecular characterization, or breed evaluation, valuation or comparison.

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:

Most farmers are small households. It is difficult to control epidemic disease due to small-scale livestock husbandry. The recording systems is also get difficult because of this reason.

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:

- Training course for different participations (farmers, technicians) on collecting and processing information.
- Disease Control.
- Enhancing funding for indigenous breeds keepers.
- Need to have a government policy to support for small livestock farmers.

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.

- Most breeds have been characterized and breed descriptors developed through field surveys.
- Technical standards and protocols for characterization have been developed.
- Phenotypic and molecular characterization studies have been implemented on local chickens (MARD), goats and sheep (IAEA), cattle, pigs and chickens in the north of the country (DFG; Biodiva ;GEF-UNEP).
- A database of 78 breeds has been built.

STRATEGIC PRIORITY AREA 2: SUSTAINABLE USE AND DEVELOPMENT

- The state of national sustainable use policies for animal genetic resources
- The state of national species and breed development strategies and programmes
- The state of efforts to promote agro-ecosystem approaches

14. Does your country have adequate national policies in place to promote the sustainable use of animal genetic resources (see also questions 46 and 54)?

- a. Yes, since before the adoption of the GPA
- b. Yes, policies put in place or updated after the adoption of the GPA
- c. No, but action is planned and funding identified
- d. No, but action is planned and funding is sought
- e. No

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

1. Livestock breeding Ordinance No 16/2004/PL-UBTVQH11 of Standing Committee of the National Assembly issued on 24th March 2004.
2. Decision No 10/2008/QD-TTg on the approval of livestock development strategy to 2020 issued on 16 January 2008 by The Prime Minister of Vietnam.
3. Decree 14 CP on the management of domestic animals
4. Regulation on international exchange of gene sources of precious and rare domestic animals (promulgated together with the Agriculture and Rural Development Minister's Decision No. 43/2006/QD-BNN issued on 1st June 2006)

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:

Biodiversity Law

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 program of the Ministry of Agriculture and Rural Development has been implementing over 10 years. The breeding program covers some local breeds and are being implemented.

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:

Breeding program of the Ministry of Agriculture and Rural Development has been implementing over 10 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:

- Population growth and the consequent rise of consumer demand, poverty and migration
- Economic development at the expense of environment and biodiversity: importation of high productivity semen is encouraged while development of local breed semen does not receive focus.
- Underestimation of the values of biodiversity
- Lack of proper conservation methods for biodiversity

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:

Positive impacts:

The import of exotic breeds has helped enhance the productivity of livestock and the diversity of husbandry products. Most exotic breeds are not only used in production but also in genetic research aimed at improving local breeds' productivity. So far, a few exotic breeds have been developed in widespread areas in Vietnam, such as Yorkshire, Landrace, Duroc, and Peitran pigs, Hostein Friesian dairy cattle, Sasso chicken, Brow nick, Hyline, etc. Thanks to imported breeds in combination with the application of modern husbandry techniques, industrial farming has gained traction and popularity and produced high volume of products.

Negative impacts:

At time of survey, no assessment on possible negative impacts was conducted.

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:

The adoption of GPA has propelled further conferences and meetings between policymakers and local associations. The importance of better recording systems and organizational structures were realized. Therefore, systems were put in place to improve such practices as pedigree and performance recording, etc.

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:

After the adoption of the GPA, conferences between relevant stakeholders are held more frequently. Sessions are organized to facilitate the interactions between stakeholders in hope of improving cooperations between these sectors in the long run.

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:

- Biodiversity law in 2007
- The Livestock Development Strategy to 2020
- These laws and measures are implemented on a local level as well as national. The spiderweb-like network is further extended into training sessions and awareness sessions in different provinces and villages.

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:

Several national conferences: "Policy and legal issues regarding biodiversity in Vietnam" in 1999; "Laws regarding the approach of profit sharing from animal genetic resources" in 2000.

Legal draft: "Regulations for use, protection, and development of animal resources" by the Institute of Ecology and Biological Resources in 2001

<http://www.ria1.org/projects/datagenbank/Htmls/Datavanban/tiep%20can%20va%20chia%20se.htm>

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:

There is more awareness from government funding bodies, and with more funds come better programs with further reach, especially in pigs, garden chickens, goats, and dairy cattle.

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:

Priority directions

- Development of poultry diseases safety, reduce environmental pollution in households and farms
- Development pig livestock orient VietGAP
- Development of grazing livestock, priority use of available feed, locally efficient, contributing to greenhouse emissions
- Development of breeding bees, silkworms and some indigenous animals to diversify livestock.

Source: Central extension program period 2013 - 2020

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

- a. Yes, sufficient measures have been in place since before the adoption of the GPA
- b. Yes, sufficient measures are in place because of progress made since the adoption of the GPA

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

Please provide further details:

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

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

Please provide further details:

<http://www.ria1.org/projects/datagenbank/Htmls/Datavanban/tiep%20can%20va%20chia%20se.html>

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

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

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

STRATEGIC PRIORITY AREA 3: CONSERVATION

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

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

- a. Erosion not occurring
- b. Yes, regular assessments have been implemented since before the adoption of the GPA
- c. Yes, regular assessments have commenced since the adoption of the GPA

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

Please provide further details:

Because budget is limited, implementation hasn't started.

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:

- Crossbreeding and breed replacement for better yield, in response to drastic rise in human consumption.
- Lack of breeding program for local livestock breeds
- Lack of appropriate effectively policies for the sustainable management of FAnGR and inadequate knowledge of the value of indigenous breeds (Government-subsidized investments and policies focus more on high input production systems using exotic breeds and crossbred, than on establishing long-term genetic improvement schemes for local breeds).

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

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

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

Please provide further details:

Several important breeds with small quantities are conserved and researched at the National Institute of Animal Husbandry: I pig, Bau Quy duck, Bau Ben duck, Ky Lua duck, Dom Lang Son duck, Hmong chicken, Te chicken.

Due to the Avian Influenza, according to the directives of the Ministry of Agriculture and Rural Development, several other breeds have also been centralized, e.g. Ho chicken, Dong Tao chicken, Tre chicken, Co goose.

Source: Conservation of animal genetic resources Vietnam in 1999

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:

Policies and programs are reviewed annually.

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:

Due to limited budget, only a few breeds are covered. Expansion is not in plan.

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:

Ho chicken, I pig, Mong Cai pig, spotted deer, Hmong cattle, Te, Ac chicken, Co goat. etc.

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

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

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

Please provide further details:

Cattle semen: U Dau Riu, Hmong
DNA: Mong Cai pig (120 samples), I pig (28 samples), Co Nghe An pig (88 samples); Ho chicken (125 samples), Mia

chicken (135 samples), Ri chicken (120 samples) , Dong Tao chicken (115 samples), Ac chicken (120 samples), Yellow cow (120 samples), Coc cow (115 samples) and spotted deer (118 samples).
Source: Conservation of genetic resources

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

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

- a. Yes
 b. No

Please provide further details:

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

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

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

The major barriers

- Remaining breeds have not have surveyed conservation yet.
- Risks for inbreeding, loss due to epidemic outbreaks, and lack of responsibilities on the keepers' part
- Outdated DNA techniques and/or equipment for discovery of new breeds
- Lack of funds for sustainable use

Source: Conservation of animal genetic resources Vietnam in 1999

The national action plan to 2020 also mentions, if briefly, the directives to conserve indigenous breeds. How effective they are, however, remains to be seen.

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:

Ex situ conservation of some breeds, mainly DNA and somatic cells; little conservation of embryos and semen in rare breeds.

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:

Some arrangements are in place, but not implemented due to lack of funding.

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

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

Please provide further details:

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

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

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

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

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

Please provide further details:

Programs are born out of conferences by the government, different NGOs, etc. For example, the national extension program, breeding program, etc. all have awareness sessions; university modules were also developed for post-graduate degrees.

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

The breed projects and programs:

- Conservation of genetic resources that are in danger
 - Conservation of genetic resources that directly benefit plant and animal breeding programs
 - Conservation of genetic resources that have high economic value (quality, disease resistance ...) and ability to create competitive products in the domestic and international sectors
 - Use of advanced technology to effectively preserve, classify, and assess genetic diversity and genetic resources
- (Results of Genetic Resource Conservation in Agriculture, Agricultural Publishing House, 2002)

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.

Problems

- Monitoring of trends and associated risks-breed and recording system in smallholder farms.
- Awareness among smallholders of using local breeds.
- Financial resources.

Challenges

- National policies effectively and regulatory frameworks.
- Epidemic diseases, pollution, production system and climate change and food safety.

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:

Annual plan for management program, scientific and technological activities, as well as research application in production.

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:

- Mitigate genetic loss that is widespread in nature and in production; protect, maintain, and develop the national genetic resources, as this is an fundamental element of sustainable biodiversity.
- Conserve, use, and develop genetic resources in a sustainable manner; transform domestic breeds into specialized goods for Vietnamese and international breeders.
- Develop legal codes for conservation management and international trade.
- Develop a plan for national genetic resource conservation, with specific steps in terms of organization and investment.

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

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

Please provide further details:

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

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

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

Genetic resources are included in the national program for conservation and sustainable use and the ministry's agriculture development program.

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:

- The result of animal genetic resources conservation in Vietnam (Agriculture Publishing House 1994).
- Monograph of animal genetic resources conservation in Vietnam, Part I: Cattle (Agriculture Publishing House, 1999).
- Monograph of animal genetic resources conservation in Vietnam Part 2: Poultry (Agriculture Publishing House, 2001).

- Atlas of animal breeds in Vietnam (Agriculture Publishing House 2004).

Source: Conservation of animal genetic resources Vietnam in 1999

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

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

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

Please provide further details:

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

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

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

A national coordinating body of AnGR stakeholders has been established including NIAH, LPD-MARD, Ministry of Science and Technology, Ministry of Natural Resources and Environment.

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

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

Please provide further details:

National body AnGR network of stakeholders, managers, policy makers, researchers, extensionists and livestock keepers. Strength and consistency can be improved.

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

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

Please provide further details:

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

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

Please provide further details:

1. Livestock breeding Ordinance No 16/2004/PL-UBTVQH11 of Standing Committee of the National Assembly issued on 24th March 2004.
2. Decision No 10/2008/QD - TTg on the approval of livestock development strategy to 2020 issued on 16 January 2008 by The Prime Minister of Vietnam.
3. Decree 14 CP on the management of domestic animals
4. Regulation on international exchange of gene sources of precious and rare domestic animals (promulgated together with the Agriculture and Rural Development Minister's Decision No. 43/2006/QD-BNN issued on 1st June 2006).

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:

- Technical standards and protocols for characterization have been developed.
- Phenotypic and molecular characterization studies have been implemented on local chickens (MARD), goats and sheep (IAEA), cattle, pigs and chickens in the north of the country (DFG; Biodiva ;GEF-UNEP), LIEPSAP.

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:

- Ho chicken Association
- Chicken livestock Association: <http://agriviet.com/home/forums/45-Hoi-Chan-nuoi-Ga#axzz2rOr89Psi>
- Farmers' Association: <http://www.hoinongdan.org.vn/>
- Women's associations: <http://hoilhpn.org.vn/>

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:

- Ministry of Agriculture and Rural Development
- Ministry of Science and Technology
- Ministry of Education and Training

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

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

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

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

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

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

Sustainable use and development?

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

Conservation of breeds at risk?

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

Please provide further details:

The projects: DFG; Biodiva; GEF-UNEP-ILRI; LIEPSAP.

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:

<http://www.vec.org.vn/index.php?language=2>
<http://vietnam.um.dk/en.aspx>
<http://www.jicavietnam.org.vn>
<http://www.fao.org.vn>

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

- a. Yes

- b. No

Please provide further details:

Characterization, Inventory and Monitoring of Trends and Associated Risks, Sustainable Use and Development, Conservation, Policies, Institutions and Capacity-building went up.

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

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

Please provide further details:

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

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

Please provide further details:

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

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

Please provide further details:

Helping the Agriculture Development Centre of Lao and Cambodia the following areas:

- Animals: cattle, cattle semen, goats, Mong Cai pig, Ri chicken.
- Training research capacity in agriculture
- Collaboration in Engineering, Master, Doctor degrees in Agriculture.

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

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

- e. No, because country is generally not a donor country

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

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

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

Please provide further details:

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

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

Please provide further details:

DAD-IS; DAGRIS (ILRI)

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

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

Please provide further details:

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

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

Please provide further details:

An action plan was drafted and agreed on during the FAO Conference in October 2013 in Thailand. Implementation will begin after the regional focal points are established.

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:

An action plan was drafted and agreed on during the FAO Conference in October 2013 in Thailand. Implementation will begin after the regional focal points are established.

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

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

Please provide further details:

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

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

Please provide further details:

Through international projects on conservation of genetic resources, a number of researchers have been trained in capacity-raising campaigns; institutions have been equipped with database and relevant materials to facilitate sharing of genetic materials.

- FAO collaboration for regional projects: TCP, RAS, 144, JPN
- GEF-UNEP-ILRI Project
- IAEA project on Goat and sheep
- DFG, uplands program on local pig project
- CIRAD collaboration (deers)
- Other collaboration with Japan in biodiversity

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:

Vietnam became a member of the Convention on Biological Diversity in 16/11/1994. Joined the Cartagena Protocol on Biosafety in 27/11/2003, and officially approved in 19/01/2004.

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
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