

A BRIEF OVERVIEW ON CONSERVATION AND SUSTAINABLE USE OF ALBANIAN ANIMAL GENETIC RESOURCES FOR FOOD AND AGRICULTURE

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ABSTRACT

Animal Genetic Resources for Food and Agriculture are one of the great national assets of Albania. This genetic fund comprises about 35-40% of biodiversity. The sustainable and effective preservation and use of this wealth is a task that requires the permanent commitment of society in general, government, local government, and the farming community, in particular. In fulfilling this task, the Albanian legislative body has drawn up a legal framework aligned with the requirements and standards of international and FAO documents. The Government and the Ministry of Agriculture have made efforts, but not always with the same commitment and in continuity, to fulfill the obligations arising from the ratification of the Biodiversity Convention, Nagoya Protocol, Interlaken Declaration, etc. Through these documents, the Albanian Government has compiled a National Strategy and National Action Plan for the conservation and sustainable use of animal genetic resources. The implementation of these strategic documents is a critical process. Currently, there are no active institutions, bodies, or operational units for their implementation. There is a lack of support with public funds for the implementation of programs for in-situ and ex-situ.

The Albanian autochthonous genetic fund consists of native, traditional, and local breeds of dairy cattle, buffalo, poultries and goats, pigs, poultry, ungulates, and dogs. In most of them, these breeds are considered to be in danger of disappearing. Among the main factors causing this situation, economic factors, emigration of the population to urban areas and abroad, and their displacement and/or crossing with animals of improved, exotic breeds can be singled out. Facing the challenges generated by the actions of these factors makes it necessary to implement urgent programs and projects, the success of which is conditioned not by the support for their implementation but by the sustainable economic effect that can be achieved through their implementation. This fact is evidenced by the project for the in-situ conservation of native pig breeds, as a success story, and the program for the conservation of buffaloes as a story where success is missing.

Keywords: Animal Genetic Resources, Conservation, Use, Albania.

Animal Genetic Resources for Food and Agriculture -Legislation

Law no. 9426, dated January 20, 2008 “On Livestock Breeding” is one of the most important. Regarding to animal genetic resources, the purpose of this law is their improvement and protection through breeding and conservation programs (*in-situ*, *ex-situ in vivo*, *ex-situ* cryo-conservation) and sustainable use. The Act regulates the following matters:

- (i) livestock conditions and practices for good breeding, methods and technologies for animal breeding and feeding
- (ii) criteria for preparation and approval of breeding programs;
- (iii) gene funds and native breeds;
- (iv) professional services in the area of animal breeding;

- (v) establishment and administration of gene banks;
- (vi) establishment of breeders' associations; and
- (vii) trade of breed materials;

Article 58 of the “Livestock Breeding Act”, entitled “Conservation of genetic variability”, states that the Republic of Albania holds and provides genetic resources, in a minimal number of animals, doses of semen, eggs, and embryos, for specific species, breeds and lines of farm animals. Funds for the conservation and maintenance of genetic resources are provided by the State Budget and/or private donors and the modalities and procedures for the conservation and maintenance of genetic resources are defined by the Council of Ministers. This provision prepares the necessary terrain for further developments of all issues related to the conservation of farm animal genetic resources. In particular, it can serve as a legal base for drafting the regulatory framework.

In the law “Livestock Breeding Act”, issues related to in-situ and ex-situ conservation of FAnGR are treated only in general terms. The Albanian legislation and/or the regulatory framework does not contain any statement regarding the in-situ, ex-situ in vitro, or in vivo conservation as different complementary alternatives for the conservation of local animal breeds at risk of extinction.

In the current legislation, the subsidy issues are treated, but the procedures to be carried out make it difficult to implement them. The legislation imposes the Council of Ministers to decide, case by case, on the methodology and procedures used for implementing the subsidies. This legislative practice has been followed till today in the case of buffalos and native small ruminant breeds that are declared at risk. The analysis of these decisions shows, that, in both cases, the subsidies are effective instruments, but not enough to solve the problems. For the success of the in-situ conservation programs, the effective way is the combination of the in-situ conservation programs with the sustainable use of animals that enables the realization of the economic added value. The Albanian legal framework does not have any solution to support the implementation of this way. The analysis of legislation indicates that the current legislation does not treat issues that can serve as the legal basis for all technical aspects of in-situ / ex-situ conservation programs. This is because this legislation does not give concrete details on mechanisms and legal instruments that should be used for implementing conservation programs. Actual legislation does not give, also the answers concerning the following questions:

(i) Which mechanisms, institutions, and methodologies should be used to effectively activate public funds for the implementation of *in-situ* and/or *ex-situ* conservation programs for native /autochthonous breeds that are at risk?

(ii) Which legal instruments can make possible the activation of private funds for implementing FAnGR for *in-situ* / *ex-situ* conservation programs?

(iii) Which legal mechanisms can make possible the benefit sharing from AnGR conservation programs and sustainable use?

The Albanian National legislation has not fully harmonized the general policies for agriculture and rural development, that intend to establish a long-term vision of agricultural development.

The legislative development and implementation need to consider the strong relationship between technical aspects of Farm Animal Genetic Resources management (e.g. breeding programs and conservation of breeds at risk) and other factors related to the implementation of the legislation). Notwithstanding that Albania is not part of the EU, its legislation should be developed by that of the EU and the International one. The national legislation on the in-situ / ex-situ conservation of farm animal genetic resources should take the form of primary legislation, which should contain provisions of a general nature, to allow the compiling of the subsidiary legal framework. Analysis

of actual economic, social, and political challenges related to animal genetic resources in Albania, and the approximation of national legislation with EU legislation must be the most important key points that should be considered in the future developments in the frame of the National Action Plan for conservation and sustainable use of Farm Animal Genetic Resources in Albania.

Farm Animal genetic resources - A brief overview

In the Republic of Albania, native and autochthonous breeds of animals make up an important part of the farm’s animal population. But most of the animal farm population in Albania consists of crosses of the native/autochthonous breeds with exotic ones.

The cattle

Referring to milk and meat production bovine is the main species of farm animal population in Albania. About 80% of milk production and around 45% of meat production in Albania are produced by cattle. In the breed structure of this species, about 95.3% are exotic breeds, Holstein, Jersey, Simental, and Tarentine, and their advanced crosses with the Albanian native cattle breeds. The crossing of native cattle breeds in Albania with exotic ones, to improve milk production began in the 30th of the 20th century. It has been very intensive during the second half of last century. The cattle population in 2020 accounted for 363,000 heads of cattle. About 70-75% of this population was kept in small-scale family farms, with 1-4 cows. Milk production is mainly used for family consumption and the rest is marketed.

In these small-scale farms, there are cows of exotic breeds and/or their crosses with native cattle breeds. The coastal plain area predominates the Holstein breed and its crossings. In the hilly areas, there are farmed advanced crossbreeds with Jersey and Simental breeds. Commercial farms have on average 10 to 50 milking cows, which account for about 20% of farms. Large commercial farms with more than 50 heads, make up about 5%, of farms with dairy cows of Holstein and Simental breeds. The native cattle breed is found mainly in mountainous areas.

Currently, four cattle populations are classified as native cattle breeds based on an estimation of phenotypic and morphometric traits and molecular characterization (Table no.1)

Table no. 1 Population size of Albanian native cattle breeds

Native cattle breeds	Population size			Trend
	Total	Bull	Cows	
Illyrian Draft cattle named “Albanian Prespa Cattle”, “Busha” cattle	750-800	18	500-550	↗
Busha strain “Lekbibaj cow”	600-650	14	400-450	stable
Busha strain “Gurgucka	650-700	20	500- 550	↗
Illyric cattle “Red of Scutary”	250-300	8	150-180	↗
	45-50	4	25-30	↗

The native cattle breeds are reared in small family farms in hilly and mountainous regions of the country, especially in isolated areas, under the conditions of the traditional production system. Animals are kept on pasture all around the day. At night, they are housed in simple stables. Cows stay indoors only during very cold days of winter. Selected bulls are used for natural mating, avoiding close inbreeding. The cooperation between small-scale family farms consists only of the exchange of bulls for natural mating. Regardless of the size of the farm, the identification of animals (ear tags) was established but not used for breeding program aims. The breeding

programs in the cattle population are not implemented, yet. Breeders associations are not effective. There is no performance control and animal selection are based on the empirical actions of farmers.

For reproduction purposes and genetic improvement of exotic breeds and their advanced crosses with Albania native breeds, the farmers use imported biological materials. About 65 percent of the cattle population, is under the AI. The selection of foreign bulls is done by the operators that import the semen. The insemination is done by the AI private operators with the agreement of the farmers.

For the other 35%, the cattle population uses natural mating with uncontrolled bulls. Natural mating is done by farmers themselves.

With the financial and technical support of different donors' international agencies and NGOs, the In-situ conservation programs were implemented for all native cattle breeds at risk of extinction. For conservation purposes and sustainable use, the farmers that breed Illyrian Draft cattle "Albanian Prespa" and "Busha" cattle are supported for implementing the conservation programs and the programs for the management and sustainable use of their animals under the traditional system of production and processing methods. But this support is not sustainable.

The buffalos

In the year 1938, the total buffalo population accounted for 25 000 heads. The majority of buffalos were situated in the coastal lowlands of Albania. During the years 1950-1990, the buffalo population was considerably reduced as a result of draining swamps, the mechanization of agriculture, the development of transport in Agriculture, and the high rhythm of the dairy cattle population increasing. Recently, as a consequence of the political, social, and economic transformations that brought the disintegration of state farms and agricultural cooperatives, the buffalo population was catastrophically reduced.

The population size is now 350 animals, 38 bulls and 210 cows (MoAF, 2013).

In Albania, buffalos are in general used as draught power. Meat production is chiefly provided by slaughtering young males. Milk is freshly consumed. There is no tradition for cheese production. The management system of buffalos is extensive. The main feed sources of buffalos are grazing, cultivated forages like alpha-alpha, and cereal straws. A small amount of grains like maize or wheat bran is used during the wintertime. Milk yield is low, about 380-480 kg. Albanian buffalo is classified into the group of Mediterranean buffalos.

The sheep

Sheep breeding is a long tradition in Albania. According to the size population and their trend (Table no.2), the current status of four main important native sheep breeds "Rrecka", "Ruda", "Bardhoka" and "Lara of Mati" are not endangered breeds. The Common breed "Rrecka" is under a rapidly decreasing process. The farmer uses these native breeds for commercial production. These four sheep breeds produce together about 45% of the total sheep milk and about 35% of the total small ruminant meat production. The low-input production system is predominant. There has been not implemented no genetic improvement program. The selection of reproducers is made by the farmers themselves, empirically.

Tab.2 The population of native sheep breed*

Breed	Number			Trend
Native breeds				
	Total	Ram	Ewes	
Rrecka	675000	15100	414000	↘
Ruda	87500	3050	71000	↗

Bardhoke	45600	1350	39500	↗
Shkodrane	450	18	350	↘
Lara of Mati	11200	750	9400	↗
Lara of Polisi	720	31	560	↗

*Statistical evaluation data (MoAF, 2013)

During the last twenty years, the interest of the farmers has been oriented to cross their native sheep breeds with exotic breeds to increase milk and meat production.

The sheep population of crossbreeds is a large part of the total Albanian sheep population. This is widespread almost all over the country's territory. The size of sheep farms varies from 20-50 heads up to 250 - 300 heads. The performance control in breeding nucleus herds, the established Herd book, and the support of farmers for implementing breeding programs to increase the economic value through the processing and marketing of products are important. Despite this, such programs are not implemented in Albanian farms. Without a breeding program, it is difficult to evaluate the development of genetic capacities and dynamic of production traits of the breeds, it is not possible to evaluate the trend and effects of improvement genetic programs or crossbreeding programs. In these conditions, it is difficult to monitor the inbreeding coefficient, also. Consequently, effective management of the breeds is not possible. This is a consequence of the fact that, currently, there are no policies and a national action plan accompanied by public financial support. In these conditions, the organization of farmers in breed associations and the support for capacity building in the processing and marketing of the products are important current needs. Renewing the tradition of crafty wool processing is also required.

The goats

The goat native breeds account for about 97% of the total goat population.

Table no. 3 The population of native /local goat breeds

Ecotype/ Breed	Number	Trend
Native ecotypes or breeds		
Caporre of Dragobi	10200	▼ Decreasing
Hasi	43500	— Stable
Velipoja	2200	▲ Increasing
Red of Mati	47800	— Stable
Lara of Kallmeti	900	▲ Increasing
Capore of Mokrra	5200	▼ Decreasing
Black of Liqenasi	3150	▲ Increasing
Dukati	6500	▲ Increasing
Muzhake	54600	— Stable
Native unclassified	664140	▼ Decreasing

*Statistical evaluation data (MoAF, 2013)

The main part of the production of farms breeding the ecotypes “Velipoja”, “Caporre of Dragobi”, “Caporre of Mokrra”, “Black of Liqenasi” and “Dukati”, goes to the local market. Increased tourist capacities of the regions where these animals are bred have contributed to the increase in size populations of these native ecotypes or breeds.

The population of “Hasi”, ‘Red of Mati” and ‘Muzhake” ecotypes are mainly commercial populations, the average farm size of these ecotypes is 150-300 head.

The selection of bucks is done by the farmers themselves using the empirical information, and the organization and implementation of their turnover scheme in village farms, only. This has negative consequences, linked to the use of uncontrolled bucks for natural mating. Poor knowledge of farmers regarding the breeding program, the lack of information, and poor cooperation among them to exchange bucks, etc. are the consequences of the high inbreeding

percentage. Consequently, the level of genetic erosion increases, and the urgent need for implementation of the *in-situ* conservation program is evident.

Recently the import of exotic breeds is a process that is developing faster. Reproduction and improvement of their herds are done mainly through imported reproducers. To reduce the effect of genetic erosion accompanied by this crossbreeding -process, it is necessary to develop and implement specific policies and institutions that should monitor this process.




The pigs

The pig population in 2020 was evaluated at about 158,000 head of pigs, out of which 11,400 are sows and first farrow sows (Statistical Yearbook, 2020, INSTAT). Most of this population is farmed under a low input system of production, in small-scale family farms. Usually in one family farm, 1-2 sows that are crossed with different exotic breeds. During the day animals are kept outdoors.

The fattening of pigs is done on commercial farms. The animals are imported from neighboring countries, mainly Greece and Bulgaria. The breeding program implemented in commercial pig farms and in industrial complex farming the fattening pigs is based on imported breeds. Only one commercial company produces the sows and boars for the needs of farms.

During the last ten years, three native pig breeds have been identified. These breeds are farmed in isolated areas- Back Rrjoll village, near the tourist area of Velipoja. Referring to their size population (Kume, K. 2014) all three native pig breeds are at critical risk of extinction (Table no.4).

Table no. 4. Native pig breeds-The size population and trend

Breed	Number			Trend in the number
	Total	Boars	Sows	
Siska white of Scutary	225-250	6-8	31	
Spotted of Scutary	350-40	18-20	42	
Pig with wattle	200-250	10-12	24	

Being close to the tourist area of Velipoja, the production is mainly used for tourists. The village was farmed this population has been announced as a rescue station. The *In-situ* conservation program that was implemented until now is a success story

The poultry

Poultry is bred in two types of farms, only: Family farms for self-consumption and medium commercial farms and industrial complexes that keep laying hens or broilers. In general, poultries kept in family farms are of the undetermined breed. Commercial farms or industrial complexes use only imported genetic material.

Genetic improvement programs - Obstacles

Even though according to Albanian legislation, all the farm animal population should be under genetic improvement programs, in reality, this legal condition is not yet implemented. After analysis of this situation, in the Albanian Country Report 2013, FAO noted that the main constraints to the implementation of breeding programs consist of insufficient capacities of public and other institutions, like research centers, public extension services, NGOs, etc. to compile the realistic breeding policies and programs; lack of financial support; low level of knowledge and awareness in farmers community and also problems referring to the collaboration between the farmers.

Genetic improvement programs - Needs

The implementation of breeding programs requires intervention to elaborate the policies to support them, establish and update the "Inventory book" and "Herd book" in each farm that markets their products; support the farmers in implementing the performance control and recording system in a farm under the intensive and semi-intensive production system and for establish the breeder's associations; strengthen the capacities to support monitoring of the natural mating and implementation an effective financial institution in rural areas (Albanian Country Report *The second report on the state of the world's animal genetic resources for food and agriculture*, FAO, 2013).

Endangered status of Animal genetic resources

The general information about the status of all Albanian farm animal native/ autochthonous breeds is shown in Table no. 5. According to this data out of 39 native/ autochthonous breeds 12 of them are at critical risk and 2 are at risk of extension.

Table no. 5 Current status of Farm animal genetic resource – Native/ autochthonous breeds

Species	Most Common Name (Native/local Breeds)	Current Status	Reasons for Current Status
Pig	Native pig "Pig with wattle"	Critical	Replacement by imported breeds and crossbreeding with them. Low production and low income for family farms.
	Native pig "Spotted of Scutari"	Critical	
	Native pig "SiskaWhite of Scutari"	Critical	
Buffalo	Buffaloes	Critical	The low economic interest of farmers.
Cattle	Ilyric Dwarf cattle "Albanian Prespa cattle"	Endangered	Replacement by imported breeds and intensive crossbreeding with them. Low production and low income for family farms.
	Ilyric Dwarf cattle "Gurgucka cattle"	Critical	Low production and low income for family farms.
	Busha type "Lekbibaj Cattle"	Critical	Crossbreed with Jersey and Simental cattle breed. Low production and low income for family farms.
	"Busha" cattle	Critical	Crossbreed with Jersey and Simental cattle breed. Low production and low income for family farms.
	Illyric cattle "Red of Scutary"	Critical	Crossbreed with Jersey. Low production and low income for family farms
Goat	Ecotype "Goat of Velipoja"	Vulnerable	Low production and low income for family farms.
	Ecotype "Capore of Dragobia"	The interest	The interest of farmers to produce meat and milk for family consumption and difficulties in farming the cattle and sheep in the harsh conditions of the mountainous areas.
	Ecotype "Goat of Hasi"	Not endangered	The interest of farmers to produce meat and milk for family consumption and difficulties in farming the cattle and sheep in the harsh conditions of the mountainous areas.

	Ecotype Goat "Red of Mati"	Not endangered	The interest of farmers to produce meat and milk for family consumption and difficulties in farming the cattle and sheep in the harsh conditions of the mountainous areas.
	Ecotype "Red of Krraba"	At the risk of extension	The increasing interest of farmers in farming one or two cows on their family farm
	Ecotype "Capore of Mokrra"	Critical	Lack of infrastructure for processing and marketing of milk.
	Ecotype "Black of Ligenasi"	At the risk of extension	Low production and increasing the interest of farmers in farming the cows on their family farm. Lack of human resources, immigration of young people, and absence of shepherds
	Ecotype "Black of Dukati"	At the risk of extension	Immigration of population to urban areas
	Ecotype "Spotted of Kallmeti"	Vulnerable	The interest of farmers is producing local milk and meat productions for local markets and tourists
	Ecotype "Muzhake"	Not endangered	A good alternative for producing milk and meat in harsh conditions of hilly and mountain areas
Sheep	Native breed "Shkodrane"	Critical	Decreasing the interest of farmers in wool. Small animals with low milk and meat production
	Native breed "Bardhoka"	Not endangered	The interest of farmers to produce milk and meat. Animals with good production performances
	Native breed "Ruda"	Not endangered	Increasing the interest of farmers to produce meat. Animals with good production performances
	Local sheep Native Mati"	Not endangered	Increasing the interest of farmers to produce meat. Animals with good production performances
	Native breed "Spotted of Polisi"	Critical	Migration of population to urban areas. Lack of infrastructure for marketing the productions
	Common breed "Rrecka"	Not endangered	Alternative for producing milk and meat in most of the rural areas in conditions of extension traditional system of production with low inputs
Chicken	Local "Tirana chicken"	Critical	Crossbreed with imported breeds
	Local Black Tropoja Lekbibaj	Not endangered	Increasing the interest of farmers to produce eggs and meat for family consumption
	Local Black Devolli	Not endangered	
	Albanian Partridge color chicken	Not endangered	
	Speckled Albanian chicken	Not endangered	
	Bronze and Copper Turkey - Zadrime	Not endangered	Increasing the interest of farmers in farming the turkey for the local market - Albanian tradition for consumption of turkey meat during the New Year Holidays

Factors responsible for the decrease in the size population of native/autochthonous animal breeds

Among the most common factors like erosion phenomena, the decrease of the size populations of native/ autochthonous breeds can be ranked as the most important:

- The economic factors that caused the low production performances of native/ autochthonous animal breeds are the first and the most important factor leading to the genetic erosion of AnGR
 - Decrease the farmer`s interest in breeding the animals of local breeds and their replacement with exotic breeds
 - Lack of necessary infrastructures for development the of rural and ecotourism
 - Lack of well-organized local markets.
 - Import of exotic breeds and an intensive uncontrolled crosses-breed process with local breeds
 - Not enough support to revitalize the traditional system of production and traditional processing methods of milk, meat, and wool
 - Not enough subsidies and other kinds of financial support for farmers that farm the native/ autochthonous animal breeds.
 - Lack of an appropriate awareness of natural resources, animals, and rural landscapes from local and national tourist agencies.
 - Lack of appropriate policies to support the collaboration among farmers
 - The demographic factors - during the last 20 years the process of migration of the human population from rural areas to urban regions, especially young people, was intensive.

In-situ conservation efforts

To conserve and protect the breeds from extinction, during the last fifteen years was implemented programs for *in-situ* conservation. The number of *in-situ/on-farm* conservation programs per species, the number of farms involved in each program, the period of implementation (in years), the source of funding, and the implementing institution, are given in Table no.6

Table no. 6. In-situ/on farm conservation programs

Specie	Breed	Number of farms	Years	Financial source	Institution
Buffalo	Buffalo	12	2002-2014	GEF/UNDP MoAFRD	Albagene Association CATT-Fushë-Kruja
Cattle	Albanian Prespa cattle	21	2005-2015	GEF/PNUD SAVE Foundation	Albagene Association SAVE Foundation
	Busha strain "Lekbibajt cows"	8	2005-2014	MoAFRD	CAT-Fushë-Kruja Blekalb Foundation
	Busha	32	2008-2015	GEF/UNDP MoAFRD	Blekalb-Foundation CATT-Fushë-Kruja AU-Tirana
Goat	Ecotype "Capore of Mokrra"	12	2014-2016	GEF/PNUD	Blekalb-Foundation
	Ecotype "Capore of Dragobia"	31	2013-2015	French cooperation MoAFRD	AU-Tirana MADA RASP
	Ecotype "Black of Dukati"	8	2010-1012	GEF/PNUD	NASR
Sheep	'Breed Shkodrane" breed	14	2005-2006 2010-2012	GEF/PNUD MoAFRD	Albagene Association Blekalb foundation CATT -SRS -Korça
	Breed "Lara of Polisit"	10	2013-2016	GEF/PNUD MoAFRD	Blekalb foundation CATT -SRS -Korça

Pig	Native pig "Pig with wattle"	5	2007-2010	GEF/PNUD SAVE Foundation	Albagene Association SAVE Foundation
	Native pig "Spotted of Scutari"	6	2007-2010	GEF/PNUD SAVE Foundation	Albagene Association SAVE Foundation
	Native pig "Siska White of Scutari"	8	2007-2010	GEF/PNUD SAVE Foundation	Albagene Association SAVE Foundation

* CATT- Centre of Agriculture Technology Transfer, SRS-Small Ruminant Station, RASP-Rural Association Support Program, NASR –National Association for Small Ruminants, MADA - Mountain Areas Development Agency, MoAFRD – Ministry of Agriculture, Food and Rural Development, GEF-Global Environmental Facility, AU–Agricultural University

The *in-situ* conservation programs were compiled and implemented as community-based conservation programs. Supporting the farmers to establish the group of farms where *in-situ* conservation programs were implemented, training them, supporting improving the infrastructure in the farm, and improving the system of production was the important part of activities that have been carried out in the frame of *in-situ* conservation programs. The breed promotion and organized activities for the promotion of the traditional processing methods and local productions were other important elements of the *in-situ* conservation program. In some cases, subsidies were used as instruments to encourage farmers' economic interest in local breeds at risk of extinction.

Ex-situ conservation efforts

The National Action Plan (MoAF&CP, 2007) for the *Ex-situ* conservation is defined, as the first action to undertake, the establishment of the genetic Cryo-bank for the conservation of somatic cells. The breeds/local farm animal populations are selected for the sample collection, leather from the ear. A number of samples are stored and conserved in liquid nitrogen (Table no. 7).

Table no. 7 Gene bank Ex-situ conservation of native/ autochthonous breeds

Specie	Breed	Ex-situ conservation						
		In vivo			In vitro			
		Number of animals		Gene bank	Somatic cell		Semen	Gene bank
		M	F		Number of animals			
			M	F				
Buffalo	Buffalo	1	3	Zoo	5	25		CATT-Fushe-Kruja
Cattle	Albanian Prespa cattle	1	4	CATT -Korça			250 from 3 bulls	CATT-Fushe-Kruja
		1	5	Private farm				
	Busha strain "Lekbibajt cows"	3	40	Private farms	10	50	750 from 4 bulls	CATT-Fushe-Kruja
Goat	Ecotype "Capore of Mokrra"	4	55	Privat farms	10	50		CATT -Korça
	Ecotype "Velipoja"	4	35	Rescues Station				

				Privat farm				
Sheep	“Shkodrane” breed	8	60	CATT -Korça	10	50		CATT -Korça
	Breed “Lara of Polisit”	8	60	CATT -Korça	10	50		CATT -Korça
Pig	Native pig "Pig with wattle"	2	6	Rescues Station Privat farm				
	Native pig "Spotted of Scutari"	2	4	Rescues Station Privat farm				
	Native pig "Siska White of Scutari"	2	6	Rescues Station Privat farm				

Given the lack of necessary infrastructure and capacities for oocytes and embryo cryo conservation and, on the other hand, the limited possibilities that have the actual Cryo-bank to collect and store somatic cell samples of all native or local species, breeds and ecotypes of Albanian animal genetic resources, it is planned to conserve for native breeds of small ruminant, pigs, buffaloes, rabbits, poultry and cattle, no less than 90 samples of somatic cells (70 female and 20 male).

In addition to the Crypto-bank, the National Action Plan foresees the establishment of the Genetic Bank *Ex-situ in vivo* conservation of breeds/ecotypes/populations at critical status. The establishment of this Bank started with the conservation of the native cattle breed “Albanian Prespa cattle”, 5 cows and 1 bull, and “Shkodrane” and “Lara of Polisi” sheep breeds, respectively in a herd of about 60 animals (50 females and 10 males). *Ex-situ in vivo* conservation programs were also implemented in private farms. (Table no.7).

***In-situ/ex-situ* conservation - Obstacles and challenges**

The farmers are not organized in breeding associations, which are necessary to establish a herd book and for the implementation of all other actions in the frame of *in-situ* conservation programs. Their awareness about the value of the animal matriculation system and performance control is low. On the other hand, there is not enough level of public awareness, in general, and in the farmer’s community in particular, about the values of native/autochthonous genetic resources in farm animals. The low level of economic development of rural areas and the very small and not financial resources of farmers affects also the implementation of programs for the conservation of native breeds at risk. The support from public funds for the implementation of conservation programs, particularly relevant to *ex-situ* conservation is not enough. There are not the infrastructures, labs, and human capacities necessary to establish the gene bank for *ex-situ* conservation of oocytes, semen, and embryos.

***In-situ/ex-situ* conservation - needs**

Referring to the current situation, to strengthen the capacity of *in-situ* and *ex-situ* conservation of AnGR, native /local breeds, the Ministry of Agriculture and Rural Development must up-date the Matrix-Plan for implementing National Action Plan for the conservation and development of AnGR, as part of Sectorial Strategy for Rural Sustainable Development. Along with this, it is necessary to make the investment for establishing the necessary infrastructures and to strengthen the capacities, at the national and local levels, in the public and private sectors, for the implementation of both *In-situ* and *Ex-situ* conservation programs.

Success story

In-situ conservation of the native pig breeds

The expedites in Velipoja region during the year 2005 have identified three native pig breeds: Siska white of Scutary, Spotted of Scutary, and Pig with wattle. The breeds are in critical status. Among the factors that affected this situation were:

- Low economic interest of farmers **consequently** concerns of farmers to preserve these breeds and increase number of animals have been low.

- Lack of local market

- Lack of farmer`s organization and program for conservation and development of local pig breeds. As a result, the selection of reproducers, drafting and monitoring mating schemes, and prevention of crossbreeding phenomenon (boars come from Monte Negro) was almost impossible.

Activities and objectives of the in-situ conservation program:

- Implementation of urgent measures, necessary to stop the process of genetic erosion, and decrease of the size population.

- Establish a farm where breeding 4-5 sows and 1-2 boars for each native breed will serve as a nucleus for In – situ / on-farm conservation and as a Rescues Centre.

- Support collaboration among farmers, building up and strengthening the capacity of the Local Network of farmers to support in situ/on-farm conservation.

- Capacity building to support the marketing meat.

After two years:

The size population was quadrupled. Three nucleus farms were established. The price of pig meat has been 80-90 % higher than usual. The demands of consumers for this product are to be increased. The main part of the meat production is dedicated to Velipoja's tourist market. Farmers' interest in breeding native pig breeds, not only in the Velipoja region but also in farms from other regions, has increased.

