

Agrobiodiversity in Southeast Europe - Assessment and Policy Recommendations

REGIONAL SYNTHESIS REPORT



Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH,

Rural development through Integrated Forest and Water Resources Management in Southeast Europe (LEIWW)
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The analyses, conclusions and recommendations in this paper represent the opinion of the authors and are not necessarily representative of the position of the Regional Rural Development Standing Working Group in SEE (SWG) and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

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LIST OF ABBREVIATIONS

ABS Nagoya Protocol	Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits
ABS	Access and Benefit Sharing
AECMs	Agro-Environmental and Climate Measures
AEGIS	European Genebank Integrated System
BPSP	Biodiversity Planning Support Programme
CABRA	Conservation of Agrobiodiversity in Rural Areas of Albania
CAP	Common Agricultural Policy
CBD	Convention on Biological Diversity
CGRFA	UN FAO Commission on Genetic Resources for Food and Agriculture
COP	Conference of the Parties
COSIRA	Competitiveness of the Private Sector in Rural Areas in Kosovo*
DEC	Department for Environmental Conservation
EAAP	European Federation of Animal Science
ECPGR	The European Cooperative Programme for Plant Genetic Resources
ERFP	European Regional Focal Point for Animal Genetic Resources
EUGENA	European Genebank Network for Animal Genetic Resources
EURISCO	European Search Catalogue
FASF	Faculty of Agriculture Sciences and Food
FAO	Food and Agriculture Organization
GEF	Global Environmental Facility
IGRUNIBL	Institute of Genetic Resources of the University of Banja Luka
IPA	Instrument for Pre Accession Assistance
IPARD	Instrument for Pre Accession Assistance for Rural Development
IPGR	Institute of Plant Genetic Resources
ITPGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture
IUCN	International Union for Conservation of Nature
MAFWE	Ministry of Agriculture, Forestry and Water Economy
MoU	Memorandum of Understanding
NPI	Net Positive Impact
PDO	Protected Designation of Origin
PGI	Protected Geographical Indication
RDP	Rural Development Policy
SBSTTA	Subsidiary Body on Scientific, Technical and Technological Advice

SEE	South-East Europe
SGDs	Sustainable Development Goals
SIDA	Swedish International Development Cooperation Agency
SPAs	Special Protection Areas
TEEB	The Economics of Ecosystems and Biodiversity
TIKA	Turkish Cooperation and Coordination Agency
ULO	Ultra-Low Oxygen
UNEP	United Nations Environment Programme
UPOV	Union for the Protection of New Varieties of Plants



GLOSSARY

Accession number means a unique identifier that is assigned by the curator when an accession is entered into a gene bank. This identifier should never be assigned to another accession.

Accession means a distinct, uniquely identifiable sample of seeds representing a cultivar, breeding line or a population, which is maintained in storage for conservation and use.

Agroecological zone means a geographical area with similar characteristics in terms of climate, landform and soils, and/or land cover, and having a specific range of potentials and constraints for land use.

Agroecological intensification means by which farmers can simultaneously increase yields and reduce or reverse negative environmental impacts, through the use of biodiversity-based approaches and the production and mobilization of ecosystem services.

Agroecology means the application of ecological concepts and principles that integrate biological and ecological processes into food production, minimizing the use of non-renewable inputs that harm the environment.

Agroforestry means a production system in which trees are integrated with crops, thus providing many synergistic relationships, such as shade or nutrients.

Agriculture biodiversity (Agrobiodiversity) means a variety and variability of animals, plants and micro-organisms that are used directly or indirectly for food and agriculture, including crops, livestock, forestry and fisheries. It comprises the diversity of genetic resources (varieties, breeds) and species used for food, fodder, fibre, fuel and pharmaceuticals. It also includes the diversity of non-harvested species that support production (soil micro-organisms, predators, pollinators), and those in the wider environment that support agro-ecosystems (agricultural, pastoral, forest and aquatic) as well as the diversity of the agro-ecosystems.

Allochthonous (allohton) means alien species not native to a certain region or ecosystem, but introduced deliberately or accidentally, usually by man.

Biological diversity means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.

Biological resources includes genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential use or value for humanity.

Breed means group of domestic organisms of a same species with clearly defined characteristics.

Collection sub-sets refer to any grouping of accessions with respect to similarities expressed as morphological, agronomical, biochemical or molecular traits.

Conservation means planned management of natural resources with aim of safeguarding the ecosystems' self-sustainability, including all biota; the retention of natural balance, diversity and evolutionary change in the environment.

Convention means International agreement.

Core collection means a subset selected to contain the maximum available variation in a small number of accessions.

Country of origin of genetic resources means the country which possesses those genetic resources in in-situ conditions.

Country providing genetic resources means the country supplying genetic resources collected from in-situ sources, including populations of both wild and domesticated species, or taken from ex-situ sources, which may or may not have originated in that country.

Cover crops means crops which are sown for agroecological purposes, such as containing soil erosion, controlling pests or enriching the soil with nutrients. Green manure is one specific instance of a cover crop. Nutrient-rich plants (usually legumes) are planted and then ploughed into the earth to improve soil quality.

Cryogenical preservation/cryopreservation means reservation of biological materials through the use of extremely low temperatures with liquid nitrogen (-196 °C).

Crop rotation means different crops grown in succession in the same field (e.g. cereal followed by legume), often to reduce risks of pests and diseases or to add nitrogen to the soil

Crop wild relatives means wild plant species that are genetically related to cultivated crops.

Cultivar means a plant or grouping of plants selected for desirable characteristics that can be maintained by propagation. Most cultivars have arisen in cultivation, but a few are special selections from the wild.

Diversity means species richness within a certain area.

Domesticated or cultivated species means species in which the evolutionary process has been influenced by humans to meet their needs.

Domestic(ated) animals are animals whose breeding and husbandry are controlled by human communities to obtain benefits or services from them. The process of domestication may take many generations of the species to be completed.

Ecosystem means a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit.

Ecosystem services are direct and indirect contributions of ecosystems to human wellbeing, such as clean water, habitats for pollinators and waste decomposition.

Ex-situ conservation means the conservation of components of biological diversity outside their natural habitats.

Exotic breeds are breeds that are not locally adapted. Exotic breeds comprise both recently introduced breeds and continually imported breeds.

Gene-bank means collection of seeds, plants, tissue cultures, etc., of potentially useful species, esp. species containing genes of significance to the breeding of crops. 2. (agr.) Place for keeping of whole or the greatest deal of species/varieties of cultivated plants and their wild relatives which have special importance for the selection.



Genetic diversity means a genetic variability among or within a sample of individuals of a variety, population or species.

Genetic material means any material of plant, animal, microbial or other origin containing functional units of heredity.

Genetic enhancement or Pre-breeding concepts refer to activities aimed at transferring genes, gene combinations and/or genetic variability from un-adapted sources into more usable breeding materials that can be used as parents in breeding programmes.

Genetic heterogeneity refers to the genetic variability at the level of both the crop and the cropping system, or agro-ecosystem.

Genetic resources means genetic material of actual or potential value. Genetic material of plant, animal, microbial or other organisms containing a diversity of useful characters of actual or potential value to society

Habitat means the place or type of site where an organism or population naturally occurs.

High risk area means a geographical area characterized by abiotic and biotic stress factors - including those caused by human intervention - to the extent that crops or plant populations run the risk of being genetically impoverished, numerically diminished, or even lost.

Historical varieties are varieties or cultivars, including locally adapted cultivars, which were once registered on formal (official) variety lists but have since been de-listed and made redundant. The epithet 'historical' is not fixed to any certain time period, but is subject to each country's own perceptions. Often denoted 'heirloom varieties'.

Hybrid variety means a variety resulting from crossing genetically distinct parents. Commercially, the parents used to produce hybrids are usually inbred for specific characteristics. If hybrid seed is recycled by farmers, its yield often drops.

Indigenous/autochthonous means a native organism or species originating and occurring naturally in certain area or region.

In-situ conditions means conditions where genetic resources exist within ecosystems and natural habitats, and, in the case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties.

In-situ conservation means the conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings and, in the case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties.

Introduced species are species brought to some region to which they are not native.

Invasive species means a species that move in and takes over an Ecosystem to the detriment of other species; often the result of Environmental Manipulation.

Locally adapted breeds are breeds that have been in the country for a sufficient time to be genetically adapted to one or more of the traditional production systems or environments in the country. Indigenous breeds, also termed autochthonous or native breeds form a subset of locally adapted breeds.

Landrace (also referred to as ‘**farmer variety**’) means a crop variety, often harbouring some genetic variability, yet, with a certain genetic integrity that has evolved in cultivation, usually in a traditional agricultural system over long periods, and has adapted to a specific local environment or purpose.

Native breeds/ Indigenous breeds are breeds living naturally within a given area; used of a plant species that occurs at least partly in natural habitats and consistently associated with certain other species in these habitats.

Medium-/Long-term conservation denotes the time-perspective in relation to germplasm conservation.

On -farm conservation means a dynamic form of crop and animal genetic diversity population management in farmers’ fields, which allows the processes of evolution under natural and human selection to continue.

Orthodox seed means a seed that is tolerant to desiccation and can be stored at low temperatures.

Plant Genetic Resources for Food and Agriculture (PGRFA) means any genetic material of plant origin of actual or potential value for food and agriculture.

Protected area means a geographically defined area which is designated or regulated and managed to achieve specific conservation objectives.

Riparian buffers means a vegetation planted or retained on river banks to protect river systems from adjacent agriculture

Ruderal habitat denotes a habitat that is characterized by frequent surface disturbance, either caused by human activities (e.g. construction sites or road edges) or by natural disturbance (e.g. fire).

Species below the level of genus means a group of actually or potentially interbreeding individuals that are reproductively isolated from other such groups, share a common ancestor more recently than with individuals of related species, and have similar ecology and morphology.

Subspecies means populations of organisms sharing certain characteristics that are not present in other populations of the same species.

Sustainable use means the use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations.

Under-utilized plants mean the neglected but seemingly useful plants, wild or domesticated, that have economic potential.

Value chain means the linkages between individuals or enterprises needed to move a product or service from production to consumption, along with related inputs and technical, business and financial service

Variety means a plant or group of plants selected for desirable characteristics and maintained in cultivation. It may be traditional and maintained by farmers, or modern and developed as a result of deliberate breeding programs



FOREWORD AND ACKNOWLEDGMENTS

The three-year project “Rural Development through Integrated Forest and Water Resource Management in Southeast Europe (LEIWW)” is jointly implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and the Standing Working Group for Regional Rural Development (SWG RRD).

The project aims to improve the regional capacities for sustainable management of natural resources for the development of rural areas of Southeast European countries: Albania, Bosnia and Herzegovina, Kosovo*, Macedonia, Montenegro and Serbia.

As part of the EU (pre-) accession process, the countries of Southeast Europe (SEE) are committed to the harmonisation of their strategies, policies and legislation with the *acquis communautaire* of the EU and to build the conditions and capacities for their implementation.

Therefore, one of the main objectives of the LEIWW project is to create preconditions for evidence-based, EU-compliant policy formulation regarding the conservation and sustainable use of genetic resources in agriculture (agrobiodiversity). Agrobiodiversity is essential for the sustainable development of agricultural production, nature conservation and adaptation to climate change, as well as for the welfare of the people living in rural areas.

In line with this objective, evidence-based policy assessments and gap analysis related to agrobiodiversity were performed in a regional process involving leading experts and institutions of all SEE countries and entities aiming to identify priorities and to formulate recommendations for mainstreaming agrobiodiversity in agriculture and rural development policies, strategic plans, programmes and relevant legislations.

On this occasion, SWG and GIZ would like to express our appreciation to the Ministries of Agriculture and Rural Development from the SEE region for their dedication and active contribution to the process.

The appreciation particularly includes the regional coordinators Prof. Sonja Ivanovska and Prof. Sreten Andonov from the Faculty of Agricultural Sciences and Food, St. Cyril and Methodius University of Skopje, all participating experts and institutions, as well as the team of international experts from the Environment Agency Austria (Umweltbundesamt, GmbH).

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On behalf of the SWG Secretariat
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1. INTRODUCTION

Southeast European (SEE) countries are rich in agrobiodiversity. Farming systems are built on a broad range of divergent local and autochthonous plant varieties and animal breeds of international importance. In times of ecological and economic pressure the treasure of diversity is at risk, distinction is irreversible and hinders today's and tomorrow's welfare, resilience and adaptive capacity. Strong links between agrobiodiversity, traditional knowledge, cultural diversity and local innovations are evident in the region and are part of its unique and rich character. In contrast to the developed countries, often less rich in agrobiodiversity, but equipped with strong policies for supporting preservation, sustainable use and promotion of genetic resources, Southeast European countries still struggle to establish an adequate framework for conservation and sustainable use of plant and animal genetic resources.

Moreover, the public, political and scientific awareness on the essential role of agrobiodiversity is on very different, mostly low levels, followed by (in-)different legislative, low institutional and financial support. Finally, all countries of SEE are facing two strong factors leading to inevitable loss of the still existing valuable genetic resources in agriculture: aging and migration of the rural population.

Conservation and sustainable use of genetic resources in agriculture are essential for the sustainable development of agricultural production, food security, adaptation to climate change, as well as for the socio-economic development and welfare of rural areas. Strong international governance structures, such as the Convention for Biodiversity (CBD) are in place, while the EU countries developed support mechanisms for safe-guarding agrobiodiversity. The SEE region, however, is lagging behind in defining and implementing support policies for conservation and sustainable use of its -still rich- agrobiodiversity.

National and regional policy assessments and gap analysis have been conducted in a process in ownership of the SEE countries (Albania, Bosnia and Herzegovina, Kosovo*, Macedonia, Montenegro and Serbia) in order to provide recommendations for EU compliant policy development relevant for the conservation and sustainable use of agrobiodiversity.

The assessment focuses on an analysis of the current national legislative and institutional status, trends of agrobiodiversity and its protection in the SEE countries. They also focus on identification of gaps, highlighting the necessary changes, reforms and harmonization of the legal base in respect to the Common Agricultural Policy (CAP), NATURA 2000, EU Biodiversity Strategy and Biodiversity Action Plan for Agriculture, Global Plan of Action for Plant Genetic Resources, Global Plan of Action for Animal Genetic Resources and Convention for Biodiversity (CBD).

Key problems and challenges requiring policy interventions are identified, and policy recommendations that will assist the EU integration process of the candidate and potential candidate countries are formulated and disseminated.

The work has raised awareness regarding the importance of agrobiodiversity in the SEE countries, in particular regarding the incentives for conservation and adding value to agrobiodiversity in order to enhance the rural welfare thus maintaining traditions, passing on the local knowledge and ensuring food security.

The assessments, gap analysis and policy recommendations were prepared by academic experts (one for animal genetic resources and one for plant genetic resources from each of the SEE countries/entities), in cooperation with representatives of the respective Ministries of Agriculture and Rural Development, and coordinated by a team of experts from the Faculty of Agricultural Sciences and Food at the St. Cyril and Methodius University in Skopje.



Considering that the agrobiodiversity heritage of the SEE countries is without boundaries, shared, or mutually owned, while the EU accession process represents a common framework for the whole region, the issue of agrobiodiversity affects not only the national levels of each SEE country, but also touches upon the aspects of regional coordination and cooperation. Key challenges and reform priorities at regional level are presented in the Regional Synthesis Report prepared by the Environment Agency Austria, in their position as international backstopping institution.

The assessments were performed in the period between June 2017 and April 2018, through a process of research, consultations, peer learning and networking, both on national and regional level. During this period of time, four coordinative regional working meetings of the experts and Ministries were held.

All the information presented here are as of December 2017.

**This designation is without prejudice to positions on status, and is in line with UNSCR 1244 and the ICJ Opinion on the Kosovo declaration of independence*





2. BACKGROUND

2.1. FAO

The FAO refers to agrobiodiversity in its respective manual¹. It defines it as an essential subset of biodiversity that includes the genetic resources for food and agriculture. These resources include harvested crop varieties, livestock breeds, fish and wild animals used for food, but also non-harvested species in production ecosystems playing a key role in supporting agricultural production, such as micro-biota, pollinators, etc.

According to the same source, agrobiodiversity can also be defined as the outcome of the interaction between the ecosystem, genetic resources and their use in agricultural production within a certain cultural agricultural tradition. Local culture and knowledge, therefore, play an essential role in biodiversity and its management, which traditionally has always included female farmers.

FAO INSTRUMENTS

The FAO's [Commission on Genetic Resources for Food and Agriculture](#) defines as one of the main threats to genetic diversity in agriculture and food production “a focus on the development and use of only a few commercial crop varieties and breeds of livestock, neglecting locally adapted varieties and breeds and their important characteristics”:

The Commission proposes the following actions to target this threat:

- Combining *ex situ* and **in situ** conservation.
- Fostering and supporting in situ conservation by farmers in sustainable production systems or in protected areas.
- Support cooperation between farmers and breeders to develop and ensure the genetic features of locally adapted varieties and breeds and therefore being able to offer the highest quality possible.
- A strong network of producers and consumers will allow farmers to utilize the wealth of genetic resources for food and agriculture and encourage consumers to participate in maintaining this biodiversity. Market opportunities for farmers and educational initiatives for consumers can strengthen this network.
- Foster and support partnerships that include all relevant stakeholders to diversify and adapt agriculture and food production to the market needs and therefore enable locally adapted varieties and breeds to be embedded in tourism, food production, food trade and local cultural activities.

Regarding animal genetic resources, FAO's [Commission on Genetic Resources for Food and Agriculture](#) proposes to conserve livestock biodiversity by “maintaining the livestock gene pool through long-term sustainable use and development of animal genetic resources”. Gene banks for animal genetic resources for agriculture are expensive and need more trained staff and technical resources as gene banks for plant genetic resources. Therefore, the Commission sees them as a back-up system to the sustainable use of locally adapted breeds.

¹ Training Manual “[Building on Gender, Agrobiodiversity and Local Knowledge](#)”. FAO, 2005

To ensure the sustainable use of animal genetic resources in agriculture, the Commission proposes the following actions:

- Stock taking of the existing breeds, including their characteristics, geographical distribution and population.
- Establishment or reinforcing of conservation programs, prioritizing threatened and not only commercial currently attractive breeds.
- Adapt legislation and policies to support the sustainable use of animal genetic resources in agriculture and food production. This should be done by:
 - Financially recognizing the role and essential contribution of locally adapted livestock keepers in conserving animal genetic resources. They are often marginalized when it comes to decision making and policies that directly affect their livelihood.
 - Foster and support cooperation between breeders and livestock keepers to improve and ensure the genetic status of locally adapted breeds and to develop a market for products thereof.

Article 5 of the International [Treaty on Plant Genetic Resources for Food and Agriculture](#) (ITPGRFA) defines several main obligations of the contracting parties relevant for the conservation of plant genetic resources in the SEE countries and entities that correspond to the recommendations presented in this synthesis report:

- Stock taking and inventory of the existing plant genetic resources for food and agriculture, including variations, geographical distribution and endangerment status.
- Support for farmers' efforts to conserve plant genetic resources on-farm.
- Support the *ex-situ* conservation, taking into account that sufficient staff, technical and financial resources are available for the documentation, characterization, regeneration and evaluation of plant genetic resources.
- Foster and support knowledge transfer from research to farmers and support the sustainable use of locally adapted varieties.
- Establish a monitoring system to ensure the genetic integrity of collections of plant genetic resources for food and agriculture.

According to Article 6, the International Treaty on Plant Genetic Resources for Food and Agriculture calls on its contracting parties to ensure that all necessary legal and policy instruments are in place to promote the sustainable use of plant genetic resources in agricultural and food production. Measures to achieve this goal include the support and development of farming systems that make use of agricultural biodiversity in a sustainable way, as well as fostering research that allows farmers to use agrobiodiversity to develop and use their own varieties, as well as conserve their agricultural ecosystem and adapt to climate change. This can only be achieved through the conservation and fostering of genetic diversity in-situ and ex-situ, as well as fostering seed production and exchange, but also through the characterization, evaluation and accessibility of genetic material. The Treaty has also recognized the importance of embedding on-farm conservation efforts in the respective rural development strategies and plans. This approach can also be applied to animal genetic resources, although some adaptations will be needed regarding concrete measures.

Following a stakeholder consultation, the Secretariat of the Treaty prepared a list of resources² needed for the goals mentioned above, which include among others a sustainable use policy,

2 IT/GB-7/17/Inf. 8 - <http://www.fao.org/3/a-bs778e.pdf>



characterization and evaluation, developing and dissemination of conservation techniques, adding value to products from local plant varieties, crop improvement, development and access of farmers to plant genetic resources, fostering collaboration and partnerships among farmers, but also between research, administration, NGOs and the agricultural sector and raising awareness and communication between all actors and the general public. Based on these findings, a Toolbox³ for the Sustainable Use of Plant Genetic Resources for Agriculture and Food was developed. It can be accessed through the FAO [webpage](#).

The actions defined within the Treaty are in-line with the respective findings in the national reports of this publication and show how the knowledge necessary to develop and use plant and animal genetic resources in agriculture and food production is already existent in all countries and entities and can be used to develop an integrated approach towards sustainable agrobiodiversity.

In Articles 6 and 9 of the ITPGRFA, the sustainable use of plant genetic resources is suggested in the framework of actions relevant to the SEE countries and entities and farmers' rights to benefit sharing from plant genetic resources:

- Support to farmers that make use of local plant genetic resources in a sustainable way.
- Support research and the development of evidence based development programs for local plant varieties and ensure the knowledge transfer and access of farmers to improved local plant genetic resources.
- Support farmers who conserve local plant genetic resources on-farm and foster seed distribution.

FAO's [Second Report on the State of the World's Plant Genetic Resources for Food and Agriculture](#) defines the following needs regarding plant genetic resources for a sustainable agriculture and food production relevant to the context of this synthesis report:

In-situ conservation:

- More effective legislation and policy for *in-situ* and on-farm management of plant genetic resources in agriculture and food production.
- Improved collaboration and coordination between agricultural extension services and programs and agrobiodiversity conservation efforts.
- More intensive research and technical capacity building for inventorying and monitoring plant genetic resources.

Ex-situ conservation:

- Increase, maintain and regenerate accessions to collections held in gene banks.
- Improve the cooperation between gene banks and plant breeders.
- Prioritize under-utilized or endangered varieties.
- Improve the cooperation between *in-situ* and *ex-situ* conservation.

Sustainable use of plant genetic resources:

- Support the seed production and breeding capacity of farmers and enterprises.

³ <http://www.fao.org/plant-treaty/tools/toolbox-for-sustainable-use/sustaining-local-crop-diversity/en/>

- Facilitate the use of new technologies for plant breeding for locally adapted plant varieties.
- Raise awareness among policy makers for the importance of low-input agriculture and the sustainable use of locally adapted plant varieties for the sustainable development of rural areas and the essential role of farmers and farmers' associations.

National programs, training needs and legislation:

- Develop and improve integrated strategies for the management of plant genetic resources involving all relevant stakeholders in conservation, genetic improvement and seed production and distribution.
- Monitor and evaluate the progress and conservation status of locally adapted plant varieties.
- Support knowledge transfer and capacity building for the conservation and sustainable use of plant genetic resources.

FAO's [Second Report on the State of the World's Animal Genetic Resources for Food and Agriculture](#)⁴ defines the relevant Aichi targets of the Strategic Plan for Biodiversity 2011-2020 of the Convention on Biological Diversity (CBD) and of the Millennium Development Goals as actions needed for their conservation. These goals are presented below and put into context within the agrobiodiversity status in the SEE countries and entities.

Millennium Development Goal 15: "Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss". Applied to the SEE countries and entities, this goal expresses the necessity to support breeders and make sure that they have access and can develop and improve locally adapted breeds for their sustainable livestock production. It also foresees the integration of agrobiodiversity values into national and local planning and development actions. This applies not only to actions explicitly dedicated to agrobiodiversity, but to all development actions regarding employment, rural and regional development, education and vocational training in rural areas, etc. It also asks for sufficient financial resources to finance the *ex-situ* and *in-situ* conservation of animal genetic resources and to support its sustainable use.

The concrete challenges mentioned in the report to achieve these goals are:

- A viable and stable characterization and monitoring system for animal genetic resources in agriculture and food production, with enough staff and financial resources.
- Policies that focus also on locally adapted breeds and not only on the introduction of exotic breeds or cross-breeding.
- Effective implementation of programs, strategies and action plans for the support of *ex-situ* and *in-situ* conservation of animal genetic resources through stable allocation of staff and financial resources.
- Technical support to breeders to improve the genetic traits of locally adapted breeds to improve the quality of animal food products in low input production systems.
- Support to the organization of breeders' associations and cooperation with research, extension services and other stakeholders such as tourism, food trade, etc.

4 FAO. 2015. *The Second Report on the State of the World's Animal Genetic Resources for Food and Agriculture*, edited by B.D. Scherf & D. Pilling. FAO Commission on Genetic Resources for Food and Agriculture Assessments. Rome (<http://www.fao.org/3/a-i4787e/index.html>).



- Support to farmers for their contribution to the ecosystem services by using and therefore conserving animal genetic resources on the ground (on farm).

Based on the documents mentioned above, the FAO's [Second Global Plan of Action for Plant Genetic Resources for Food and Agriculture](#) and the [Global Plan of Action for Animal Genetic Resources](#) foresee several activities that also apply to the national and regional actions necessary for the conservation and sustainable use of plant and animal genetic resources in agriculture and food production of the SEE countries and entities. These plans served as a basis for the development of the recommendations to this synthesis report. Both are discussed further in chapter 8.

The FAO's Second Global Plan of Action for Plant Genetic Resources for Food and Agriculture implementation is mainly coordinated by the [National Focal Points](#) for monitoring the implementation of the Second Global plan of Action for Plant Genetic Resources in Food and Agriculture, who are also in charge of preparing the national reports to the Treaty. Accordingly, the Global Plan of Action for Animal Genetic Resources is implemented under the coordination of the [European Regional Focal Point for Animal Genetic Resources](#) (ERFP).

2.2. EUROPEAN UNION

EU Biodiversity Action Plan for Agriculture

[The Biodiversity Action Plan for Agriculture](#) published by the European Commission in 2001 foresaw the fostering and preservation of an economically viable and socially acceptable agricultural activity. This was to be accomplished through measures to support the conservation of biodiversity in regions where it was still existent and where activities for its conservation and sustainable use were endangered. This included the support of extensive agriculture with a focus on livestock keeping.

The strategy already called for a systemic and coherent approach to establish a link between agricultural and environmental policy in the national instruments. This was to be developed in line with the [Council Regulation \(EC\) No 1467/94](#) on the conservation, characterization, collection, and utilization of genetic resources in agriculture.

The regulation defines plant genetic resources as agricultural crops, including vines, fodder crops, horticultural crops, including market-garden and ornamental crops, medicinal plants and aromatics, fruit crops, forest trees, fungi, microorganisms and wild flora which are or could be of use in the field of agriculture. At the same time, it defines animal genetic resources as the sum of all farm animals, microorganisms and wild fauna which are or could be of use in the field of agriculture.

The Action plan foresaw the conservation *in-situ*, *ex-situ* and the sustainable use of these genetic resources and put a focus on farmers having access and benefiting from the utilization of agricultural biodiversity. It also called for policy and rural development measures that enabled farmers to reorient their production for the application of principles compatible with landscape and environmental protection, especially in susceptible areas called less-favoured areas during that programming period. In situ conservation by farmers was considered an essential component of a systemic and coherent approach as described below.

EU Community programme on the conservation, characterization, collection and utilization of genetic resources in agriculture.

In 2004, Council Regulation (EC) No 870/2004 repealed Regulation (EC) No 1467/94 and established a [Community programme on the conservation, characterisation, collection and](#)

[utilization of genetic resources in agriculture.](#)

The programme was focused on the conservation, characterization, collection and utilization of genetic resources in agriculture. The *ex-situ* and *in-situ* conservation were to be supported to not only maintain biological diversity, but also to improve the quality of agricultural products and to contribute to the diversification of rural areas.

In situ conservation was explicitly expanded to domesticated animal breeds or cultivated plant species and the *in-situ* conservation defined as conservation on farm in the region where these varieties had developed.

The eligible actions for support were:

- diversification of production in agriculture;
- improved product quality;
- sustainable management and use of natural and agricultural resources;
- improved quality of the environment and the countryside;
- identification of products for new uses and markets.

Regarding crop genetic resources the following target activities that are in line with the suggestions developed for this synthesis report were defined:

- characterization and evaluation of crop genetic resources;
- marketing concepts that may promote the use of under-utilized crops and contribute to the diversification of agriculture.

For livestock genetic resources the following targeted actions are relevant for the context of this report:

- documentation of characteristics of endangered farm animal breeds and populations;
- common cross-national breeding programs for endangered breeds and populations;
- programs for the exchange of information, genetic material and breeding animals,
- strategies to support the enhancement of profitability of local breeds;
- actions to promote the value of local breeds for their environmental services (e.g. landscape conservation, agro-ecosystems management) and for their contribution to the multifunctional character of agriculture (e.g. maintenance of rural cultural diversity, rural development and tourism, etc.);
- strategies which promote the utilization of under-utilized animal genetic resources.

All of these actions are in line with the approach synthesized from the national reports of this regional study and served as a reference for the development of the recommendations prepared for this synthesis report.

All actions carried out within the Community Programme had to be in-line with the Convention on Biological Diversity's agreements and the FAO's Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources, which are described below. All actions also had to be in-line with the International Union for Conservation of Nature's (IUCN) [European Plant Conservation Strategy](#), which recognizes the importance of the genetic diversity present in crops and other useful plant species as a basis for improving a sustainable agricultural production and called for actions to ensure that useful plant species have sufficient genetic diversity to meet growing and changing human needs. Other guidance provided by IUCN is presented further below.



EU Report Agricultural Genetic Resources - from conservation to sustainable use

2013's [EU Report Agricultural Genetic Resources - from conservation to sustainable use](#) defined several priority areas, focused on the sustainable use of genetic resources on the one hand, and on scientific and technological developments on the other. It also called for stronger coordination and harmonization for the collections in gene banks and information in databases and for more networking between science, breeding, and farming practices.

The report also defined the key actors involved in the *ex-situ* and *in-situ* conservation of genetic resources in agriculture as well as in their sustainable use. Among them, farmers and their essential contribution to on-farm conservation and sustainable use was especially highlighted. An economically viable basis for these activities was named as a prerequisite to create an incentive for their long-term participation. The necessity to support breeders and cultivators to develop locally adapted plant varieties and animal breeds to improve the quality of products thereof and avoid genetic erosion was also stressed.

In conjunction with this, scientists were defined as essential players for the creation and dissemination of knowledge and information related to genetic material, while decision makers and administrators were invited to create the necessary legal and strategic framework for the conservation and sustainable use of agrobiodiversity.

Finally, consumers play a key role in making supply chains of locally adapted varieties and breeds economically viable and need to be addressed through awareness raising and marketing campaigns in collaboration with sectors such as tourism and gastronomy.

All these actions need to be taken within the existing and future rural development and research and innovation programs in a holistic approach that enables traditional products of locally adapted varieties and breeds to contribute to sustainable food value chains.

Preparatory action on EU plant and animal genetic resources in agriculture

The [Preparatory action on EU plant and animal genetic resources](#) was launched by the European Commission in 2013 and is aimed at providing support for creating an interlink between actions in conservation and sustainable use of genetic resources and the post 2020 rural development programs. Most of its themes (except for the EU Member State communication for best practice and harmonization) are relevant for the purpose of this synthesis report and presented below in adapted form for the SEE context:

- Support networks of stakeholders and end-users to foster cooperation and create or strengthen short supply chains.
- Improve knowledge transfer and research on genetic diversity in agriculture.
- Adapt legislation to the need of conservation and sustainable use of genetic diversity in agriculture.
- Adapt the support to breeding systems to integrate agrobiodiversity.
- Adapt rural development measures to integrate genetic diversity in agriculture.
- Explore bottlenecks and enabling conditions for the sustainable use of genetic resources in agriculture.
- Ensure that farmers have access to knowledge and technical know-how as well as to genetic resources for agriculture.

The recommendations of the final report are discussed in the introduction in chapters 8 and 9.

EU Common Agricultural Policy (CAP)

Under the EU Common Agricultural Policy (CAP), agrobiodiversity comprises not only species that are directly used for agricultural and food production, but also all species that play a role in the conservation of the agro-ecosystem. Locally adapted plant varieties and animal breeds are mainly seen as contributors to the conservation of the EU's wild species interacting and depending on the ecosystem status of agriculturally used areas. Therefore, the promotion of traditional, low-input agricultural production and the use of locally adapted plant and animal genetic resources in agriculture should be a priority within Rural Development measures, but not exclusively those directed towards habitats and biodiversity protection.

The limitation of measures to greening and agro-environmental measures will not suffice to ensure the survival of locally adapted species in low-input agriculture in the relevant areas. Agrobiodiversity needs to be addressed within Rural Development Programs as a cross cutting issue, especially in the areas of ensuring the viability of low-input agriculture as a main contribution to the preservation and restoration of ecosystems. Social inclusion, poverty reduction, knowledge transfer and food value chain development are all areas where the needs of farmers involved in the conservation and sustainable use of agrobiodiversity need to be addressed within the Rural Development Programs. Discussions for a future CAP after 2020 are currently ongoing at an increased intensity in EU institutions.

In the frame of the CAP reform for the next programming period post 2020, the European Commission⁵ envisages being able to ensure a fair income support to farmers contributing to the conservation of biodiversity with a continuation of direct payments and at the same time supporting a higher value added with their products in the food market. The link between research and local agricultural practices is also on the agenda for the next round of rural development programs. It acknowledges that investments are needed to ensure and develop farmers' market reward for products resulting from a sustainable management of agrobiodiversity. Business advice, collective investments and cooperation between farmers and other sectors will be a part of these actions. Climate change adaptation will also be a focus that will open the door to the use of agrobiodiversity within the next programming period. In general, the current architecture of the CAP, that makes a difference between cross compliance, green direct payments and voluntary agro-environmental and climate measures will be opened up to a more flexible approach integrating all actions towards more targeted interventions. The results and impact and not so much the actions themselves will be at the center of attention for the next programming period. This presents an opportunity to integrate the sustainable management and use of agrobiodiversity at the local level in rural development strategies and plans, as the bottom-up LEADER approach will still being part of rural development as a cross-cutting issue.

Several recommendations in this synthesis report refer to either financial support for conservation activities by farmers or in other cases support for an improvement of marketing and the diversification of agricultural activities. These two support lines are funded in the EU within separate pillars of the Common Agricultural Policy. Therefore, in this report observations and recommendations are also often kept separate in different segments of certain chapters. However, both approaches are equally important and part of an integral support for farmers within rural development plans.

The EU Biodiversity Strategy

[The EU Biodiversity Strategy](#) to 2020 foresees an increase in the contribution of agriculture and forestry to maintaining and enhancing biodiversity by maximizing areas under agriculture across

⁵ COM(2017) 713 - Communication from the Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions – *The Future of Farming*.



grasslands, arable land and permanent crops that are covered by biodiversity-related measures under the CAP so as to ensure the conservation of biodiversity and to bring about a measurable improvement in the conservation status of species and habitats that depend on or are affected by agriculture. This is to be achieved by expanding CAP direct payments to reward the delivery of environmental public goods that go beyond cross-compliance and by integrating biodiversity targets into rural development goals.

The European Commission acknowledges the importance of farmers as caretakers of the natural environment. Together, they are responsible for the management of 48 % of all lands and 36% of all forests within the EU territory.

The EU Biodiversity Strategy's⁶ target 3a (Increase the contribution of agriculture to maintaining and enhancing biodiversity) foresaw the need to expand the areas benefiting from biodiversity measures under the CAP in agriculture (arable land and pastures) and to achieve a concrete improvement of the biodiversity status in ecosystems affected by agriculture. According to the mid-term review of the strategy⁷, no significant achievement towards this goal has been reached until now. However, the review also notes that local agricultural practices have proven successful in promoting sustainable agricultural practices and conserving biodiversity. It also points out that a broader application of these strategies could bring with it significant progress in achieving the target 3a.

Agrobiodiversity can be a tool to tackle the five major threats identified in the mid-term review of the current EU Biodiversity Strategy: habitat change, pollution, over-exploitation, invasive alien species, and climate change. The promotion and support of agroecology, as often practiced in local environments can contribute greatly to the conservation of biodiversity in general, but especially of agrobiodiversity at the national level.

For the purposes of this synthesis report, productivity or quality improvement does not mean an intensification of agricultural production, but a more efficient agricultural activity within the parameters of agro-ecology and a more careful selection of seeds or animals for reproduction in order to select their best genetic qualities and ensure an optimal output. When it comes to the professionalization of farmers' activities, this synthesis report refers to raising the added value of products and improving the marketing and distribution of products from traditional varieties and breeds through a higher quality of food products and fostering cooperation and a better distribution of products in other sectors such as tourism, food retail and gastronomy, among others.

EU Birds and Habitats Directives

Biodiversity loss and species degradation are the two most serious threats in the conservation of wild bird species. In the frame of the [Birds Directive](#) (Directive 2009/147/EC) Special Protection Areas (SPAs) have been defined in each Member State to ensure the protection of endangered birds, and especially all migratory bird species, as they are considered to be especially sensible to habitat loss. All the SPAs are defined in the Natura 2000 ecological network and part of the [Habitats Directive](#) (Directive 92/43/EEC). The observed decline of common farmland birds in European countries has been addressed by a stronger integration of bird species needs in all sectoral policies, especially in agriculture, as it can be responsible for habitat loss or provide habitat for certain farmland species. This has been achieved through the linkage of direct payments to the implementation of the Birds Directives, but also through the fostering of environmental friendly

6 COM(2011) 244 final - Communication from the Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions – [Our life insurance, our natural capital: an EU biodiversity strategy to 2020](#).

7 COM(2015) 478 final – [Report from the Commission to the European Parliament and the Council - The Mid-Term Review of the EU Biodiversity Strategy 2020](#).

farming and the sustainable use of agricultural areas within the Natura 2000 areas.

2.3. CONVENTION ON BIOLOGICAL DIVERSITY (CBD)

The Convention on Biological Diversity (CBD) defines agricultural biodiversity (or agrobiodiversity, as it is called in this synthesis report), as the outcome of the connection between the environment, management systems and practices in agriculture and the genetic resources involved in these ecosystems. This includes also species that support ecosystem services, even though they are not directly linked to farm genetic resources, such as microbiota, pollinators, etc., but also abiotic factors such as climate and soil chemistry, as well as social, economic and cultural dimensions of traditional agricultural practice.

Regarding other guidance showing the best way to tackle mainstreaming of agrobiodiversity into agriculture and food, [Barbara Gemmill's guide for UNEP/UNDP/GEF](#), the CBD guidance document [UNEP/CBD/COP/DEC/X/2](#), the provisions in the International [Treaty on Plant Genetic Resources for Food and Agriculture](#) (ITPGRFA), the ITPGRFA's [Toolbox for the Sustainable Use of Plant Genetic Resources for Agriculture and Food](#) and IUCN's [Guidelines for Mainstreaming Gender into National Biodiversity Strategies and Action Plans](#) are useful sources.

Barbara Gemmill's Guide 'Managing Agricultural Resources for Biodiversity Conservation, published by the UNDP/UNEP/GEF Biodiversity Planning Support Programme' (BPSP)⁸ identifies certain key principles of best practices for the conservation of farm genetic resources. It suggests beginning by improving the baseline information and identifying successful ecosystem management practices and connected policies and actions supporting agrobiodiversity conservation and its sustainable use. In a further step, it proposes developing linkages between the genetic conservation and the benefit sharing out of genetic biodiversity resources, in order to ensure a sustainable and integrated involvement of farmers.

To be able to foster farmers' involvement, the community management of agricultural resources must be part of national strategies and plans and benefit from financial support, taking into account the inclusion of women and poor population groups and fostering cooperation between farmers and between agriculture and other sectors.

This is in line with the Convention on Biological Diversity's (CBD) [Thematic Programme in Agricultural Biodiversity](#), which foresees the development of sustainable management approaches, the development of integrated policy instruments and measures and knowledge transfer through capacity building and raising awareness.

Several decisions of the Convention on Biological Diversity (CBD) also give guidance on the kind of actions proposed to mainstream biodiversity, but only one addresses agrobiodiversity in policy and agricultural production⁹. Parallel to the resources necessary for mainstreaming biodiversity prepared by the Secretariat of the International Treaty on Plant Genetic Resources for Food and Agriculture, the actions proposed by the CBD also include communication, awareness raising, incentive measures for farmers and institutional change, but also integrated cooperation between all sectors involved and capacity building and information transfer for and between farmers.

These actions are in line with the strategic goals and underlying targets to be achieved by the CBD parties by 2020 that also ask, among other targets, for awareness raising, inclusion of biodiversity into national and local development, development of incentives for conservation actions and avoidance of subsidies and incentives harmful to biodiversity. Target 7 specifically states:

8 Training Manual "[Building on Gender, Agrobiodiversity and Local Knowledge](#)".

9 UNEP/CBD/COP/DEC/X/2 - [The Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets](#).



“By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity”. Target 13 has a direct connection to agrobiodiversity, stating that by 2020, the local plant and animal genetic resources used in agriculture and food production should be conserved and the respective strategies for minimizing genetic erosion and fostering genetic diversity should be in place and functioning. Other targets ask for ensuring the necessary funding for these actions.

Gender and agrobiodiversity

Gender is a key element in agrobiodiversity, as its conservation traditionally has also been in the hands of female farmers. The CBD’s guidelines for mainstreaming gender into national biodiversity strategies and actions plans¹⁰ recognize that biodiversity conservation in general, but more specifically agrobiodiversity, is a social and not only an environmental issue. A gender mainstreaming approach asks for a deep understanding of the role played by women in agrobiodiversity conservation and ensuring their participation and inclusion in all measures and actions taken to foster and develop agrobiodiversity at the national and local level. This begins at the stock taking and data collection level, where all information should be segregated by gender, but goes on to ensuring the explicit inclusion of women and their needs in all concrete strategies and action plans and in all concrete actions taken, including stakeholder identification and consultation, capacity building, network building, incentive programs for agrobiodiversity conservation, etc.

¹⁰ Sasvari, A., Aguilar, L., Khan, M., Schmitt, F. (2010). [Guidelines for Mainstreaming Gender into National Biodiversity Strategies and Action Plans](#). Gland, Switzerland: IUCN.

3. METHODOLOGICAL BASIS FOR THE REGIONAL SYNTHESIS

The process of synthesis of assessment documents often encounters difficulties related to the homogeneity of the source material. To be able to deliver general assertions valid to all cases, or at least for most of them, the data contained therein must be available in similar quantities and cover the same aspects to a similar depth.

Due to the approach of the national reports of this study, a mix of quantitative and qualitative data was the basis for the synthesis report. However, the quantitative data, e.g. information on the conservation status and number of heads of certain local breeds or the use of certain varieties for crop production, is often based on estimations or projections. This is especially true of the ex-situ conservation status. Even though some countries and entities possess a list of accessions, their actual status is in some cases not clearly known.

Due to these challenges, this synthesis applied a narrative approach to synthesize quantitative and qualitative evidence. Quantitative data was, as much as it was possible, presented in overview tables showing the main differences between the countries and entities.

Qualitative information was first inventoried and in a second step grouped and clustered to find common assertions, that were then textually described and partly presented in analytical tables, whenever enough information was available (before and after direct consultation during the missions in all countries and entities in the frame of this project). The main objective was to transform the data into common rubrics that would serve as a road map to tackle an integrated approach to mainstreaming agrobiodiversity into other policy sectors. The recommendations also intend to describe the necessary prerequisites (including a more in-depth data collection of species and conservation status and a more profound analysis and description of the legal framework by national legal experts) necessary to launch a concerted effort of all institutions, organisations and stakeholders in each country and entity.

Concrete examples and best practices were chosen whenever they showed a singular approach in the region or when they served as a good example of agrobiodiversity conservation and/or use support in line with the main principles as defined in international (e.g. CBD guidelines) or EU instruments (e.g. CAP).

The findings of the synthesis report were validated by conceptual triangulation through the feedback of the regional experts, to which the authors of this synthesis report wish to express their utmost gratitude, and with input from the national experts during missions in all countries and entities in the frame of this project.

The facts and data as presented in this synthesis report are up-to-date as of 31 December 2017. Any data available after 1 January 2018 could not be included in this report.



4. SOCIO-ECONOMIC, INSTITUTIONAL AND LEGISLATIVE CONTEXT

4.1. GEOGRAPHICAL AND POLITICAL CONTEXT

Even though the South-Eastern Europe (SEE) countries and entities share certain common aspects related to their rural socio-economy and agricultural production, as they are described in the following chapter, they differ in a variety of ways when it comes to their geographical area, share of agriculture to GDP and to employment and income per capita. Table 1 gives an overview of the area, population and other geographical and economic and demographic data of each country and entity.

Table 1. Key geographical and economic indicators¹

	ALB	BiH		MNE	MKD	SRB	KOS*
		FBiH	RS				
Area in km ²	28,748	26,165	24,641	13,812	25,713	88,499	10,905
Population in million	2.9	2.2	1.2	0.6	2.1	7.0	1.8
GDP in million EUR	10,274 ^p	10,593	5,192	3,625	9,061	33,491	5,568
GDP per capita in PPP in EUR	3,547	4,061	3,300	5,779	4,377	4,833	2,479
Share of agriculture to GDP in %	20	5.3 ²	7.8	10.5	10	10	11
Exports of goods and services, relative to GDP in %	28.2 ^p	24.3	48.81	42.5	48.8 ^p	46.7	19.6
Economic activity rate for persons aged 20–64 in %	71.3 ^e	40.2	47.20	68.5	70.2	68.1	42.8
Employment, share of agriculture, forestry and fisheries in %	44.6 ^e	13	30	24.4	17.9	19.4	2.3

1. latest available data (2013-2017)

2. in GVA (Total Gross Amount Value)

p = provisional value

e = estimate value

Sources: SEE country reports, EC Country Reports 2016, statistical offices, UNESCO, 2017.

All SEE countries and entities show a declining importance of agriculture to GDP, although it is still much higher than the average of the EU-28. It enjoys significant importance in Albania, where it also accounts for over 40% of employment. Population decline and internal migration from rural to other areas are common problems faced by most countries and entities. This constitutes a problem for the continuation of preservation and utilization of local varieties and breeds in agricultural holdings and semi-subsistence farms, even though measures have been put in place in some countries and entities to promote these activities. These are based on traditional knowledge that plays a key role in conservation of local genetic resources, but also of sustainable agricultural practices and can be a decisive asset in improving the quality of life and income in rural areas if used appropriately and if farmers are supported in their efforts to achieve a higher value added of their products and a remuneration for their contribution to environmental conservation as a whole.

4.2. AGRICULTURAL PRODUCTION: COMPARATIVE OVERVIEW OF THE AGRICULTURAL SECTOR

The agricultural sectors of the SEE countries and entities show a variety of different microclimates and conditions for agricultural production, but also some similarities. The total arable land of each country or entity (excluding permanent pastures) is very similar and varies from 29% in Serbia, to 21% in Macedonia, and 5.6 % in Montenegro. Most of them show a varying area corresponding to mountain areas, hilly zones, and lowlands. Field crops are mostly cultivated in lowland zones, whereas fruit trees are more predominant in hill zones.

Land fragmentation is common in all countries and entities, with a low average farm size, such as in FBiH where 65% of farms show a size of less than 1 ha. In Albania, small family farms with 1 to 1.5 ha per farm are still predominant, even though there has been an increase in the number of middle and large-scale farms. As already shown in chapter 4.1, agriculture still constitutes a major source of employment, especially in the area of the so-called informal employment, as family members are still the main work force in small and family farms in most countries and entities of the region.

Small agricultural holdings play a key role in the conservation and use of plant and animal genetic resources and can be integrated into conservation programs and included in support for a better use and marketing of traditional agricultural products and cooperation between farmers.

Critical, but also positive factors from an agrobiodiversity perspective in non-intensive agriculture, include the low use of technology, lower productivity, but tasty products, but also a lack of fodder from own production for animal production due to land fragmentation and lack of organization of the predominant family farms in cooperatives or other forms of associations.

The information on geographical distribution of crops and breeds and their abundance in general, but especially in mountain and marginal areas, but also the conservation status of most varieties is still not complete in all countries and entities and would be a prerequisite for further actions for their conservation and sustainable use.

4.3. INSTITUTIONAL AND ADMINISTRATIVE SET-UP

The main factors in the SEE countries and entities are Ministries and research institutions.

The Ministries of Agriculture in most of the SEE countries and entities are the responsible institutions for the conservation and sustainable use of agrobiodiversity. The Ministries of Environment are responsible for biodiversity as a whole.

However, there are significant differences in the level of definition of responsibilities and delimitation of activities with other state institutions and organizations. There are also differences related to the existence or lack of organizational units (e.g. directorates) explicitly dealing with topics related to the regulation of genetic resources conservation, preservation and use, as well as different levels of activity to support or foster agrobiodiversity. In general, a balance has to be found between the efforts towards the conservation of plant and animal genetic resources and a sustainable financial allocation has to be ensured, in order to avoid shortcomings in personnel, even though an organizational unit is in place for this task.



In Albania, Macedonia and Kosovo*, there is a clear organizational unit in the Ministries of Agriculture which is attached to the conservation and use of genetic resources. In most countries, however, there seems to be a lack of resources and specialized staff towards the conservation and use of plant and animal genetic resources.

The main problems identified regarding the institutional set-up, which are formulated in general and not always valid for all countries/entities, were:

- The lack of an institutional framework in place for the regulation and management of agrobiodiversity conservation and its sustainable use or a strong fragmentation of the relevant institutional structure.
- The absence of clearly defined competencies between the different ministries and institutions involved in biodiversity and agrobiodiversity, beginning at the multilateral and policy level and going into the management and support of measures for the conservation and use of genetic resources.
- The lack of strategic documents, programs and action plans or updated versions thereof to fully address the issue of conservation and use of genetic resources or its existence but lacking implementation due to insufficient institutional structures, funding or staff.
- The lack of a cross-sectorial structure which is working on natural biodiversity and agrobiodiversity conservation

Additionally to the relevant Ministries, other research institutions and universities or autonomous institutions financed by the state play an important role in the protection and use of agrobiodiversity in most SEE countries and entities.

In all countries and entities, research and academic institutions are responsible for the inventorying, collection, characterization, evaluation, documentation and storing of genetic resources, others implement activities aimed at *in-situ* and *ex-situ* conservation of plant genetic resources or breeding programs, often paired to developing and transferring technologies for both plant and animal genetic resources. In many cases they participate in policy making and strategy development in an advising function. In some cases, also actions to promote the use of traditional varieties and breeds are being implemented by governmental subordinated institutions such as environmental protection agencies.

Many of these institutions face financial constraints, such as lack of continuity of funding, and the need for better technical equipment and more personnel. In some countries/entities, they also would need capacity building to enable them to focus their activities more efficiently towards the fulfillment of the EU acquis and sometimes also national legislation. They would also need further funds dedicated to awareness raising in farms and the general public in order to raise the impact of their activities in and out of the field. In some entities, like Kosovo*, expert authors recommend the establishment of an independent gene bank with clear responsibilities and funding instead of performing characterization and conservation activities in the relevant faculty.

4.4. NON-GOVERNMENTAL SECTOR SET-UP

The number and focus of non-governmental and entrepreneurial organizations in the SEE countries and entities varies as much as the level of organization by farmers towards the sustainable use of genetic resources such as local varieties and breeds.

Table 2. Non-governmental organizations involved in agrobiodiversity

	ALB	BiH		MNE	MKD	SRB	KOS*
		FBiH	RS				
Professional associations active in plant and/or animal genetic resources	X	X	X		X	X	X
Farmers cooperatives/associations (incl. breeders associations)	X	X	X		X	X	X
Extension services and rural development associations		X	X	X		X	
Organic farming associations	X	X	X		X	X	
Environmental and natural protection organizations (having ABD also in focus)	X	X	X	X	X	X	
Slow food and regional food initiatives		X	X		X	X	
Education and research associations			X		X	X	

Source: *Mainstreaming Agrobiodiversity in the Agricultural and Land Management Policies, Plans and Programs of the SEE Countries/Entities, National Reports, 2018*

In most countries and entities, these organizations are very active in the conservation and use of genetic resources, but they face certain common issues and constraints as described below.

The main activities performed are:

- Advising role in the formulation of policy related to agrobiodiversity.
- Contribution to status assessments of agrobiodiversity conservation.
- Support to inventory, characterization and conservation activities and establishment of gene banks.
- Awareness raising and training activities.
- Cultivation of autochthonous varieties and breeding activities.
- Surveys, research, production and marketing activities.

The main problems faced by NGOs active in biodiversity conservation and their sustainable uses are:

- Activities mainly performed in the framework of international projects and lack of long-term perspectives and long-term funding and engagement.
- Insufficient commitment from farmers and lack of financial commitment to co-finance agrobiodiversity measures and projects.
- Lack of coordination with governmental institutions and policy framework to foster and support their activities in agrobiodiversity within objectives set-up in national or entity strategies and action plans.
- Lack or insufficient level of governmental financial support.



4.5. LEGAL AND STRATEGIC FRAMEWORK

The question of legislation dealing with agrobiodiversity is extremely complex due to the different legal approaches found in the various SEE countries and entities and the different level of consideration in public legislation within one country.

Due to the fact that in many cases laws, and in other cases bylaws, deal with the same aspect related to agrobiodiversity depending on the SEE country or entity, a comprehensive stock taking was not fully implemented in the national reports, which were produced by experts dealing with technical aspects of agrobiodiversity and not by legal experts in environmental law.

However, a preliminary picture was drawn that is presented below.

Constitutions

The question of the protection of the environment, of nature or of natural resources is explicitly named in the constitutions of Albania, Macedonia, and BiH (Republika Srpska) and therefore made a priority of in state policies. However, this does not automatically mean that agrobiodiversity is always understood as an integral part of natural resources protection in the laws and bylaws elaborated on upon the basis of the constitution.

National legislation

In SEE countries and entities, generally no concrete legislation deals only with the conservation and use of agrobiodiversity. This does not necessarily constitute a problem, as the relevant legislation on nature protection, rural development, seeds and planting materials, registration of (also traditional or protected) varieties and breeds, animal husbandry, etc. can cover all relevant aspects in the area.

Table 3 (below) gives a first broad overview of the inclusion of agrobiodiversity in national laws and bylaws. With the exception of FBiH in BiH and for laws in Montenegro, agrobiodiversity is always mentioned or considered, even though not all aspects related to animal or plant genetic resources conservation and their sustainable use are always comprehensively tackled, as the examples below will show.

Table 3. Legal framework related to biodiversity and agrobiodiversity

	ALB	BiH		MNE	MKD	SRB	KOS*
		FBiH	RS				
Specific laws or regulations on agrobiodiversity conservation and use	X		X		X	X	X
Explicit inclusion of agrobiodiversity in other national laws/bylaws	X		X	X	X	X	X

Source: *Mainstreaming Agrobiodiversity in the Agricultural and Land Management Policies, Plans and Programs of the SEE Countries/Entities, National Reports, 2018*

Environmental or nature protection laws

A general environmental protection law is existent in all SEE countries and entities. In Macedonia it foresees the establishment of a monitoring network and environmental information system, which is a prerequisite for a successful management of genetic resources in general. The same applies to Albania, the Republic Srpska, Kosovo*, and Serbia, where the conservation of biological

diversity is considered a key element in the law on environmental protection. However, genetic resources for food and agriculture are not mentioned in any of these legislations. Regarding the law on nature protection, Kosovo* has two laws, one on the nature protection that foresees the establishment of a gene bank and the protection of genetic resources, and one general nature protection law. The Macedonian law on nature protection includes the protection of biological and landscape diversity and natural heritage. There is also legislation for nature protection in BiH (FBiH and RS) and Montenegro.

Regarding gene banks, only the Republika Srpska and Kosovo* mention them in a general law on nature or environmental protection. In Albania the Law No. 8732, dated 24.01.2001 "On propagating plant material" recognized the Albanian Gene Bank as a scientific research institution of national importance, while in Macedonia the question of gene banks is dealt with in the law on livestock production and also in the law on seeds and seedlings. In Montenegro, a rulebook defines the tasks to be performed by the gene banks. This shows how different the approach and importance of gene banks and their efficient operation is in the different SEE countries and entities.

Laws on Agriculture and Rural Development

A profound impact on agricultural policy and the conservation and sustainable use of agrobiodiversity could be achieved through the inclusion of agrobiodiversity in laws on agriculture and rural development that provide the legal basis for planning and implementing agricultural policies and their measures.

The sustainable use of agricultural diversity is mentioned in the pertinent laws in Albania, Macedonia, Montenegro, and Serbia. Agrobiodiversity is not mentioned in the agricultural and rural development laws in BiH (BiH, FBiH and RS).

In FBiH however, a separate law on subsidies in agriculture and rural development mentions autochthonous breeds, although it does not sufficiently define the path towards the conservation of all plant and animal genetic resources and their sustainable use.

In the Republika Srpska, there is a Law on providing and directing financial resources for agriculture and rural development. On the basis of that Law, every year the Ministry of Agriculture, Forestry and Waters puts forward a Rulebook on subsidies. In the Rulebook on Subsidies for 2017, subsidies are provided for horse breeding (Bosnian Mountain Horse and Lipizzaner) and beekeeping (Carnolian honey bee).

This can also be said of all the countries and entities named before, although in Serbia the law on subsidies on Agriculture and Rural Development contains two pertinent rulebooks, one on the incentives for the conservation of animal genetic resources and one on incentives for the conservation of genetic resources in gene banks. In Albania, the use of genetic resources for different purposes, its collection, use out of ex-situ samples, and standards for transfer and use are defined in the law on biodiversity.

In general, agrobiodiversity conservation and its sustainable use still have to find their way into being fully integrated into the most pertinent laws in all SEE countries and entities.

Laws on animal production

The Albanian Law on Livestock Breeding deals with the question of animal genetic resources, and their improvement and protection through breeding and conservation programs (*in-situ*, *ex-situ in vivo*, *ex-situ* cryo-conservation) as well as with its sustainable use. It contains details on breeding programs and associations and trade in breed material, but no explicit mention of local breeds for extensive agriculture is mentioned in the respective national report to this synthesis report. The



law on the registration of animals and farms is also pertinent for agrobiodiversity, although the question of hurdles for the inclusion of local breeds needs to be assessed.

Similarly, BiH's legislation (law on livestock breeding in FBiH and law on animal husbandry in the RS), do explicitly deal with the question of the protection or sustainable use of agrobiodiversity in animal production. In the Republika Srpska, the Law on Livestock Breeding mentions preservation of generic resources of cultivated animals and particular breeds of those animals.

The respective Law on Livestock in Kosovo* not only covers these aspects, but also the conservation of genetic variability and indigenous breeds, including professional and scientific services and inspection and acquirement of funds for those objectives.

The Macedonia law on livestock production dedicates a chapter to the protection of animal genetic resources, in which several local breeds are recognized for cattle sheep, goat, chicken, water buffalo, porcine and honey bee. The protection (*ex-situ* and *in-situ*) of autochthonous breeds is mentioned, as well as the fulfillment of international obligations related to animal genetic resources, conducting trainings and raising public awareness for their protection and linking all these activities to related programs in agriculture. The nine breeds of AnGR in the Law on Animal Husbandry in the Republika Srpska are recognized as protected.

Best case – Legal AnGR framework in Macedonia

In Macedonia within the Law of Livestock Production, a special chapter is dedicated to locally adapted breeds' protection. In addition, bylaws are in force regarding recognized institutions, the criteria for monitoring, bred protection (*in-situ* and *ex-situ*), criteria definition for keeping and trading, definition of population size and the way and manner in which maintenance of the minimum population size will be addressed. Also, the first seven-year national AnGR program (2011-2017) was used for recognizing, monitoring and recording locally adapted breeds. A new seven-year program is under preparation.

The Law on Livestock in Montenegro declares the preservation of genetic variability and genetic resources of domestic animals as public interest. Funds for the preservation of the genetic resources of domestic animals are provided in the budget of Montenegro. The preservation of biological diversity in livestock farming as well as the conservation of autochthonous breeds (protection of breed and its name) is governed by several articles. It would be important to assess the level of inclusion of local breeds pursuant to Montenegro's law on the identification and registration of animals.

In Serbia, the Law on Animal Husbandry explicitly mentions preservation of the genetic reserve of domestic animals in Chapters 67-71, but efforts should be made to also include multi-annual financial support options into the law, to accommodate multi-annual support to conservation of animal genetic resources. Therefore the ordinance National Program for the Conservation of Biological Diversity of Domestic Animals for the period 2017-2021 was temporarily withdrawn from the process of adoption until the Law on Animal Husbandry has been changed to establish the appropriate frame for its implementation.

Laws on seeds, seedlings and agricultural plant varieties

In Albania (law on seeds and seedlings) and Kosovo* (law on seeds and law on seedling material) the respective laws do not include explicit provisions for the question of agrobiodiversity protection and its sustainable use. Additionally, Kosovo* also has a law on plant variety protection and Albania has a law on planting and multiplicative plant material. In BiH the FBiH has a law on the recognition and protection of varieties of agricultural and forest plants. In both laws, the question

of a clear delimitation of points related to agrobiodiversity conservation and its sustainable use of plant genetic material from local varieties could be assessed and explicitly regulated.

In BiH the Law on Seeds and Planting Material of Agricultural Plants of Bosnia and Herzegovina does not explicitly deal with questions of agrobiodiversity. In its entity FBiH, the Law on Seeds and Seedlings of Forest and Horticultural Species of Trees and Shrubs is also relevant; although this law does not contain explicit mentions of agrobiodiversity protection and its sustainable use either. In the Republika Srpska the Law on Planting Material, as well as the Law on Seeds of Agricultural Plants define in the same way the plant gene bank. Both laws prescribe the obligation of authorities to store autochthonous and old domesticated cultivars and local populations in the plant gene bank, in accordance with the regulations governing the conservation of plant genetic resources as well as to register them in the Register of cultivars.

In Serbia, the Seed Law has been in place since 1993 (Law on Seed and Seedling Material). In 2005 the Seed Law was issued by Plant Protection Directorate of the Ministry of Agriculture, Forestry and Water Management of Serbia (Official Gazette of Republic of Serbia, 45/2005). This Directorate is in charge for the acknowledgment of crop varieties.

In Macedonia, the Law on Seed and Seedlings defines the respective gene bank as an institution that maintains and stores seed and seedlings of divergent populations and autochthonous species in order to protect biodiversity and stores referent samples of seed and seedlings of agricultural plants, which is a definite step forward compared to legislation in other SEE countries and entities. Under certain constraints local and autochthonous varieties can be registered, according to this law, on the National Variety List under the designation autochthonous varieties/ecotypes.

In Montenegro, the entry of varieties into the Register of Agricultural Plant Varieties is also foreseen within the law on seeds and seedlings, but no definite measures to ensure the inclusion of local and autochthonous varieties are mentioned in the national report of this publication. On the other hand, the law on plant variety protection could also include local varieties based on revised provisions within the law on seeds and seedlings.

In all SEE countries and entities, the question of in-situ and ex-situ conservation and the inclusion of local plant varieties in provisions for the sustainable use of plant genetic resources need to be assessed in detail and improved.

In general, more efforts are visible for the inclusion of agrobiodiversity in the laws on livestock production and animal husbandry than in their respective laws on seeds and seedling material, although there is still a long way to go to ensure that the issue is comprehensively regulated.

Other laws

Several other laws may play a role in the conservation and sustainable use of agrobiodiversity in each of the SEE countries and entities. Examples are:

- the Law on Breeders' Rights in Albania and Macedonia;
- the Law on Pastures, Plant Health Protection or State Agricultural Inspectorate in Macedonia;
- the Laws on Organic Agricultural Production in Albania, Serbia, BiH (Republika Srpska), and Macedonia;
- the Law on the Protection of Fruit Trees in Albania;
- the Law on the Protection of Medicinally Plants' Fund in Albania.

A concrete example is the Law on Forests in Macedonia that regulates the gathering and collection



of wild plants including medicinal and aromatic plants or the Law on the Quality of Agricultural Products in the same country that regulates the protection of agricultural and food products with traditional guaranteed specificity, with geographic indications and designations of origin. The support to marginal regions and small farmers in their efforts to register local varieties should be made a priority through specific provisions. This could be an asset for the sustainable economic development of farmers protecting and producing local varieties and breeds. All other countries have a Law on Forests and the secondary forest products are also regulated.

Regulations and decrees

As stated before, in the SEE countries and entities several issues related to the conservation and sustainable uses of agrobiodiversity are not tackled within laws, but with the approval of regulations and decrees.

Some of them deal with **plant and animal genetic resources**, others solely with **plant or animal genetic resources**.

As these examples show, a detailed and comprehensive assessment of all laws and regulations need to be done to ensure that all aspects related to the protection and sustainable use of plant and animal genetic resources are explicitly regulated and no conflicts are existent with other laws governing rural development, plant or animal variety registration and intellectual property rights of farmers. It would also be necessary to establish mechanisms for the support of farmers protecting and using local plant varieties and breeds to tackle a registration of origin or a geographical denomination, which would help raise the value added of this products.

Strategic plans and measures

Most strategic plans for agriculture and rural development of the SEE countries and entities show some common elements, e.g.:

- Competitiveness in agriculture, agro-processing and rural development, including meeting EU standards.
- Sustainable development of natural resources.
- Diversification of economic activities in rural areas.
- Development of rural services and rural society.

Only Kosovo* has not developed a strategy or action plan for the conservation and use of genetic resources yet. For the following overview, only strategies that apply to the current implementation period (2014-2020) were extracted from the national reports of this study that built the basis for this synthesis report. This was based on the premise that most relevant support schemes will be implemented through rural development measures, as the already described laws and regulations showed.

National strategies and programs for agriculture and rural development until 2020

Albania, FBiH in BiH, the Republika Srpska, Macedonia, Montenegro, and Serbia have current strategies in place. In the case of BiH, FBiH's medium-term development strategy of the agricultural sector applies for the period 2015-2019.

In Macedonia, the seven-year strategy for agricultural policy explicitly mentions agrobiodiversity. However, it also foresees a focus on raising the share of agrobiodiversity in agricultural production of plant varieties and animal breeds that show a higher demand than the current production. Additionally, local breed development and farmers' organizations involved in breeding activities are supported. Even though the inclusion of agrobiodiversity is to be positively acknowledged,

only varieties with an existent market potential are to be supported and developed for a higher share of agricultural production. This could exclude extensive agriculture, threatened varieties and breeds and marginalized regions.

Another problem is that in Macedonia, support within the rural development strategy is predicted to be granted for adding value to products with traditional guaranteed specificity, protection of geographic indication, and designation of origin. But in practice very few farmers or producers apply for such support, and many traditional agricultural products do not yet have these official denominations and would need activities to begin the process to reach registration.

Albania (IPA), the RS in BiH, Macedonia (IPARD II), and Serbia have programs for rural development for the current development period. No program or plan is in place in Kosovo*.

In Serbia, the national agro-environment program has not yet been adopted, but notes conservation of agrobiodiversity.

[National Programs on Protection and Management of the Genetic Resources](#)

In Macedonia, the first national program for AnGR protection was committed (2011-2017) where identification, registration, description and recoding in some of the locally adapted breeds were achieved. Annual support is up to € 100,000.

Albania has developed an overall plan for this purpose that includes both plant and animal genetic resources, accompanied by an action plan and the respective financial allocation. It foresees the study of the current situation of the genetic fund and also of future actions to improve the management of genetic resources. It defines the duties of each institution and stakeholder and explicitly notes the importance of the protection and use of autochthonous (indigenous) varieties and breeds in agriculture.

In the Republika Srpska, a program on plant genetic resources preservation – adopted by the National Assembly in 2008 – is in force. In Montenegro, the past program expired in 2015 and no information on a new one being prepared was mentioned in the respective national report to this study.

Other countries/entities have separate programs for the protection and use of plant genetic resources, as shown below.

[Programs for the conservation and/or use of plant genetic resources](#)

The Republika Srpska has current programs and the Federation of Bosnia and Herzegovina in Bosnia and Herzegovina, has an operational plan for the conservation of plant genetic resources. In Serbia, the final draft of the program for plant genetic resources conservation has been prepared and is awaiting approval to be officially enacted.

[Other plans and strategies](#)

Biodiversity strategy and plan: Albania, BiH, Kosovo*, Macedonia, and Serbia have current biodiversity strategies in place. The previous biodiversity strategy (2010-2015) in Montenegro has expired, while there is a process with a view to adoption of a new one. Besides the biodiversity strategy, Albania also has a Strategy of Forests and Pastures Development, which is being implemented in the current development cycle.

National Plan for Organic Agricultural Production: In FBiH in BiH, Macedonia, and Serbia, national plans for the support of organic agriculture are in place.



National Strategy for Sustainable Development: Development strategies at the national level are in place for Macedonia, Montenegro, and Serbia.

International and European Instruments

International instruments, such as the Convention on Biological Diversity (CBD) or the International Treaty for Plant Genetic Resources (ITPGRFA) play a double role in ensuring an efficient approach towards agrobiodiversity protection and its sustainable use. On the one hand, they can serve as a basis for national legislation and actions for these purposes. On the other, EU strategies generally follow the premises formulated in international instruments and encourage Member States to implement guidance according to the documents approved in multilateral conventions like the CBD.

The following table offers an overview over the conventions and treaties signed and ratified by the SEE countries and entities. The signature and ratification of the International Treaty on Plant Genetic Resources for Food and Agriculture would be of utmost importance for the guidance and knowledge transfer it offers, but also for strengthening the commitment of all policy actors in the region.

An active participation in all meetings of the CBD, especially its subordinated bodies such as the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) of the Conference of The Parties (COP) could help to gain a deeper understanding of policy makers of the conservation and sustainable use of biodiversity in general, but also of agrobiodiversity, as ecosystem based approaches and the linkage between development goals, climate adaptation measures and biodiversity management are also topics being discussed in these fora.

Table 4. Conventions and treaties related to biodiversity and agrobiodiversity

	ALB	BiH		MNE	MKD	SRB	KOS*
		FBiH	RS				
Ratified Convention on Biological Diversity (CBD)	X	X		X	X	X	
Ratified Nagoya Protocol	X						
Ratified International Treaty on Plant Genetic Resources for Food and Agriculture	X			X	X ^S	X	

S = signed, not ratified

Source: *Mainstreaming Agrobiodiversity in the Agricultural and Land Management Policies, Plans and Programs of the SEE Countries/Entities, National Reports, 2018*

EU Integration and support programs (IPA)

In the area of EU integration, all SEE countries and entities already hold EU candidate status with the exception Bosnia and Herzegovina (with its entities FBiH and RS), and Kosovo*, both enjoying potential candidate status. Even though most countries and entities in the region still have a number of obstacles to overcome, especially in the economic, employment and administrative sector, but also related to corruption and civil rights, there have been significant advances in several issues such as an improved business environment and all of them are now obtaining or are eligible for support within the IPARD II program.

This program can play a key role in mainstreaming biodiversity into agricultural production if the topic is considered in the relevant measures for farmers' support and diversification of the rural

economy and the necessary financial means are dedicated to this task.

Regarding the current IPARD II program's status in each country, the Albanian Parliament has already approved the program for the period 2018-2020. The program should begin its implementation in 2018 and will benefit from € 52 million of EU funded support.

BiH has not yet acceded to IPARD funds, as until now, there had been no IPARD structure in place. With the adoption of the Strategic Plan of Rural Development of Bosnia and Herzegovina by the BiH parliament in February 2018, both entities FBiH and RS are now able to access financial support under IPA II (2018-2020) and other EU assistance in the reform process.

In Serbia, the IPARD II program for the period 2014-2020 was prepared and accepted by the Government. Its implementation started on December 2017.

Montenegro has implemented several projects in line with the principles guiding IPARD-funded projects (IPARD-like projects) aimed at modernizing the agricultural sector and meeting EU standards, including food safety, hygiene and product quality. These projects have benefited from support varying between € 1.6 and € 6.2 million.

The IPARD II program in Macedonia has been implemented since 2016 onwards and has focused on investments for material assets in agricultural companies, processing and marketing, rural infrastructure, diversification, and business development.

In Kosovo*, € 79.5 million are available during the period 2014-2020 for measures and projects within the IPARD II. The funds will be dedicated to improve the competitiveness of the agro-food sector, and provide vocational training, as well as fund measures to improve resilience to the effects of climate change.

Other relevant international instruments and working groups

The membership in other instruments and fora (such as FAO) is also of utmost importance to open up policy makers to best practices and international standards for e.g. the characterization of genetic material.

The following list contains conventions, treaties and working groups that also treat with subjects related to agrobiodiversity (e.g. climate change adaptation strategies or genetic resources protection) and where all SEE countries and entities with the exception of Kosovo* are already members:

- International Union for the Protection of New Varieties of Plants (UPOV).
- United Nations Framework Convention on Climate Change.
- International Plants Protection Convention.
- European Landscape Convention of the Council of Europe.
- Global Plan of Action for Animal Genetic Resources and the Interlaken Declaration.

A list of relevant instruments and fora, where some SEE countries and entities are already participating, is presented. This can serve as a good start for policy makers of SEE countries and entities still not members of these to begin the process of membership or the signatory and ratification process.

European Cooperative Program for Plant Genetic Resources (ECPGR): Albania, Montenegro, and Serbia are currently participating members, although Bosnia and Herzegovina and Macedonia have participated in previous phases.



UN FAO Commission on Genetic Resources for Food and Agriculture – CGRFA <http://www.fao.org/nr/cgrfa/cgrfa-home/en/>

The Second Global Plan of Action for Plant Genetic Resources for Food and Agriculture (Second GPA): Albania and Serbia currently have focal points defined for this plan.

European Genebank Integrated System (AEGIS): Albania, Bosnia and Herzegovina, and Montenegro are associated members so far.

Global Plan of Action for Animal Genetic Resources and Interlaken Declaration: Albania, Bosnia and Herzegovina, Macedonia, Montenegro, and Serbia currently have focal points defined for this plan.

4.6. FOREIGN DONOR SUPPORT

Foreign donor support constitutes one of the most important financing sources for most actions dedicated to the conservation and sustainable use of genetic resources in agriculture and food production besides national funding.

These actions comprise programs and projects targeted at different levels of activity in public administration, society in general or farmers and local communities. The following factors have been identified as priorities for the selection of beneficiaries or projects for donor support:

- Remote rural and mountain areas;
- Areas with inadequate infrastructure and local agrobiodiversity management;
- Areas presenting a lower economic and social development;
- Regions affected by exodus from rural areas and communities, especially population drain of young inhabitants;
- Regions where agrobiodiversity is particularly threatened.

These conditions have been selected because they reflect the need to tackle areas where the local population is still using agrobiodiversity, but it is threatened by internal migration and economic pressure. This would enable tackling rural development as well as agrobiodiversity goals.

Table 5. Focus of foreign donor support

	ALB	BiH		MNE	MKD	SRB	KOS*
		FBiH	RS				
Collection of wild relatives of crops	X			X	X		
Conservation and management of endangered crop varieties	X		X	X		X	X
Conservation and management of endangered locally adapted breeds	X			X		X	
Assessments of traditional varieties and breeds	X	X	X	X	X	X	X
Characterization of local plant genetic resources	X	X	X	X	X	X	X
Characterization of local animal genetic resources	X	X	X	X	X	X	X

Conservation and sustainable use of agrobiodiversity in mountain areas	X			X		X	
<i>In-situ</i> conservation and use of animal genetic resources	X	X		X	X	X	
Awareness raising and promotion of local products	X	X	X	X	X	X	X
Education, research and training	X	X	X	X	X	X	X
Observation (conservation data collection) activities		X	X			X	
Development of national strategies and action plans	X		X	X		X	
Ratification and entry into force of international treaties, conventions and protocols			X			X	
Approximation and implementation of EU standards for traditional products	X			X	X	X	
Regional cooperation for conservation and sustainable use of plant genetic resources	X	X	X	X	X	X	X
Establishment of regional networks for breeding	X				X	X	
Sustainable tourism projects with an agrobiodiversity component	X			X		X	
Development of protected areas with a component aimed at mainstreaming agrobiodiversity		X	X			X	
Professionalization and diversification for small farmers in remote areas	X			X		X	X
Support of value chain development of selected ABD products	X					X	

Source: *Mainstreaming Agrobiodiversity in the Agricultural and Land Management Policies, Plans and Programs of the SEE Countries/Entities, National Reports, 2018*

These examples of donor support focus mainly on the following interventions:

- Support to policy and legislative development (including strategies and programs);
- Capacity building for the implementation of agrobiodiversity conservation at the academic or governmental level, including collection, characterization and preservation activities;
- Local capacity building for the implementation of biodiversity conservation and its sustainable use by farmers and farmers' associations;
- Capacity building for research and cooperation;
- Support to awareness raising and education, as well as promotion of traditional products;
- Support to cross-border cooperation.

Additionally, policy makers are not aware of the necessary steps involved in the implementation and enforcement of commitments entered by ratifying international conventions and protocols and the necessary resources and funding needed to achieve a sustainable implementation.



Many NGOs and other stakeholders, such as farmers and farmers' associations, are dependent on donor support for their activities for the conservation and sustainable use of plant and animal genetic resources in agriculture and food production. After the project finalization, commitment to the created structures and activities often deteriorates rapidly, an issue also observed in donor-financed activities.

The German Ministry for Economic Development (BMZ) supported several initiatives related to agrobiodiversity in the Western Balkan and implemented through GIZ: for example, the sustainable collection of medicinal plants in the border area of Kosovo* and Albania, the development of rural tourism based on agrobiodiversity products and services in Albania and the support of the development of policy recommendations on agrobiodiversity at regional level. Further maps projecting wild medicinal and herbal plants for two national parks in Kosovo* have been developed which also is the base for a sustainable harvest of these precious commodities. Also, GIZ supported a project in 2014-2017 entitled Competitiveness of the Private Sector in Rural Areas in Kosovo* (COSIRA), which indirectly effected agrobiodiversity in Kosovo*. The project was active in five sectors and in some of the 37 Kosovar communes. It addressed the target groups from private sector entrepreneurs, their workforce, start-up businesses, and the economically active population in rural regions and selected business sectors. The project promotes female entrepreneurs and women in management positions and it ensures that the needs of marginalized and vulnerable social groups are taken into consideration.

Best Case - Conservation of Agro Biodiversity in Rural Albania (CABRA)

CABRA is a GIZ project which is using an integrated approach to conservation and sustainable use of agrobiodiversity in Albania. Establishment of regional nature parks (i.e Shkrel and Nikaj-Mertur) and their management plans and system was geared towards development of protected areas with a component aimed at mainstreaming agro-biodiversity (<https://www.giz.de/en/worldwide/20445.html>).

Direct measures for conservation of agrobiodiversity strengthened the capacity of the IPGR for *ex-situ* conservation through improved practices and equipped Gene Bank infrastructure to run regular surveys, planting and restoration of cultivars and to carry on *in-situ* measures supporting capacities of farmers to create a network supporting them with technical assistance and providing them with 25 landrace and local varieties during 2016 and 2017. Furthermore, it is an example in support of tourism as an incentive for conservation and sustainable use of agrobiodiversity (<https://www.giz.de/expertise/downloads/giz2015-en-agrobiodiversity-factsheet-collection.pdf>). CABRA supported the nature and rural tourism product development linking with direct marketing such as itineraries in nature parks, chestnut trails, supporting short chains through tourist consumption and *in-situ* selling points such as promotion of fairs, weekend markets, promotion of agrobiodiversity days in nature parks.

<http://www.albaniantravel.info/AlbanianTravel/tradita/item/agrobiodiversiteti-shqiperia-ka-nevoje-te-zhvilloje-turizmin-e-eksperiencape>

Best Case SEEDNet

The most important foreign support for conservation and sustainable use of PGR in the region was funded by SIDA (the Swedish International Development Agency). Its goal was the establishment and operation of the South East European Development Network on Plant Genetic Resources – SEEDNet. This project has not only built capacity at the technical and organizational level (e.g. for the establishment of gene banks), keeping an eye on fostering coherent programming and implementation, but also has helped raise awareness for the importance of the conservation and sustainable use of plant genetic resources in agriculture and food production, raising the level of national collaboration between institutions and all levels of public administration. However, due to the lack of funding for the continuing of the activities after the project finalization, many of these outcomes have been lost.

Best Case GEF, GIZ, SIDA

The Global Environmental Fund (GEF) program for small grants has been successful in several countries and entities in SEE in supporting local communities in their efforts towards the preservation and sustainable use of agrobiodiversity.

In addition, support is implemented through bilateral cooperation through various agencies such as GIZ, Swedish International Development Agency (SIDA), Turkish Agency for International Cooperation TIKKA, etc.

An example is Slow Food Macedonia (a member of Slow Food International), which has been promoting traditional food based on autochthonous varieties. They have initiated a successful campaign for preserving Bukovska pepper supported by SGP GEF (<http://www.gefsgpmacedonia.org.mk/>).

Better coordination of donor support at the national and regional level and a project design taking into account the needs of all existing beneficiaries at the national, regional and local level, including the farmers, policy makers, public administration officials, NGOs, the scientific community, retail and consumers as well as the general public could lead to a higher impact of the achieved outputs by each project.

Existing coordination structures, such as the FAO national coordinators, could be used as the basis for expanding their role to a broad coordination of all public activities in legislation, strategy development, implementation and financial support for agrobiodiversity, but the most ideal person or office for this role should be assessed in view of their standing and acceptance in the national/local setting of each country and entity.

Additionally, there is a need to plan the next steps for a continuation of the created structures and networks, as sometimes these deteriorate after donor support ends due to the lack of funding and commitment by the state and other stakeholders.



5. GENETIC RESOURCES IN AGRICULTURE

5.1. OVERVIEW OF THE STATUS OF GENETIC RESOURCES IN AGRICULTURE

The Balkan Peninsula is a European hotspot of biodiversity of wild species, because it is located at the crossroads of Europe and Asia, strongly influenced by Mediterranean flora and fauna and because of its rugged terrain consisting of many rather isolated mountains, valleys and basins. The SEE countries and entities are also rich in agrobiodiversity. Similarly as for wild biodiversity, this is caused by geography and topography, but also due to a high diversity of peoples and cultures, and partly due to political isolation during parts of the twentieth century. However, the population's drift of young inhabitants to urban areas in all SEE countries and entities presents a threat to the continuation of the conservation and cultivation of local and traditional varieties. Additionally, climate change and the lack of marketing opportunities for local varieties are main driving factors for the existing genetic erosion taking place across the agricultural landscape of all SEE countries and entities.

5.1.1. Plant genetic resources

Although none of the plant species that are the base of human alimentation originated at the Balkans (the most important vegetables, i.e. beans, tomatoes and peppers, even originated in the Americas), the Balkan Peninsula is a hotspot of European plant genetic resources. Today, intensive agriculture in the SEE countries and entities mostly uses modern commercial varieties of crops for production. In certain areas, such as mountain and remote areas, traditional varieties still play a role in less intensive agriculture and can be found in local markets and households and on restaurant tables.

In most countries and entities, home gardens around rural houses are kept by older people, especially women, are the main source of local varieties. Urban citizens have also begun cultivating local varieties in private gardens. They exchange seeds between themselves. Local varieties are also cultivated for culinary reasons, demand for healthy and slow food products as well as for their resistance and adaptation capacity to certain climate conditions and diseases in remote and mountain areas.

In gene banks, old or local varieties are still in storage, especially for cereals and some fruits, such as apples and pears. However, it is often difficult to estimate the status of all varieties and breeds due to the wide range and varieties in use, especially in bigger countries and entities with large and diverse agricultural production. Gene banks often lack resources to maintain their accessions, because regular regeneration requires regular work, experimental fields and funding.

Local vegetable and leguminous varieties have survived in home gardens in rural areas due to the local consumption, culinary characteristics and traditional use of some varieties. Local varieties of beans, tomatoes, cucumbers, peppers, pumpkins, green beans, and onions are still being cultivated to some extent in all countries and entities. Beans are particularly important in this context, in Albania 60% of the total crop area of beans is still cultivated with local varieties and single villages can still host more than 25 local bean varieties. Other characteristic landraces occur across several countries or entities partly under differing local names, such as in the case of the embroidered peppers, grown in Macedonia, Kosovo*, Albania, and Southern Serbia. In Montenegro, organic production mostly relies on autochthonous varieties from the gene bank and multiplies or reproduces them for their own use, mainly because they need certified organic seeds,

but cannot afford to import them.

The status of cereal landraces is generally worse than for vegetables. Certain cereal landraces, such as old wheat varieties in Albania, have been lost since the 1970s, while rye varieties persist in remote areas with a low availability of commercial seeds. In Bosnia and Herzegovina, cereal landraces are threatened through commercial varieties, although some local landraces of wheat and rye still exist. In other countries, such as Kosovo*, local varieties of barley, rye and oat can be found. In general, maize seems to be the cereal with the greatest biodiversity in the region, also due to the demand in its use in traditional cooking and for traditional festivities.

Similar to vegetables, local varieties of old and local fruit varieties are often still cultivated in remote rural areas, often because of their specific aroma or taste and for usage in local recipes for preserves or desserts. Landraces of apples, pears, cherries and plums are the most widespread, but also old varieties of figs and pomegranates can be found in some countries and entities.

Grapevine is the fruit with the broadest biodiversity in the region. In all countries, several local varieties are cultivated and in use for wine production. Based on centuries of wine-making tradition, there is a widespread awareness for the importance of biodiversity in grapevine cultivation and for the unique characteristic of many varieties and the importance of their conservation. Autochthonic varieties include such as Blatina (BiH), Shilanka (BiH), Stanuschina (Macedonia), and Vranac (Montenegro).

The introduction of commercial fodder crops represents a threat to local alfalfa varieties the only case where old varieties of fodder crops are still being cultivated in more than two countries. Several semi-natural pastures and meadows are under pressure of genetic erosion, although the genetic diversity of old fodder crops growing in this areas sometimes mitigates this development.

Industrial crops represent the most serious example of biodiversity loss in agricultural production in the SEE countries and entities, as cotton, tobacco, sunflower and sugar beet production rapidly declined in most countries after the changes in the 1990s and the traditional local varieties were lost in almost all cases. The history of the Macedonian poppy industry is a particular case and still a typical example of the disappearance of a valuable genetic resource that may be needed and profitable in the future. Poppy production was of international relevance due to the high quality of the Macedonian poppy, and stopped almost entirely after Macedonia became independent in 1991 due to the fears that the capsules could be used for illegal drugs. Meanwhile, varieties lost their yielding and quality, and small farmers lacked interest in its cultivation.

Endemic species of medicinal and aromatic plants are common in most SEE countries and entities, where there are still hundreds of uncultivated and cultivated varieties. However, over-harvesting and insufficient management have been eroding their survival. Many medicinal and aromatic species have been declared endangered and some are listed in the national red data books.

The three case studies presented below represent examples of traditional uses of local and old plant varieties that have been a major driver for maintaining a good conservation status. This cultural heritage could be extended to promote culinary tourism (domestic and international) and enable rural areas to diversify their economic activities.



Best Case – corn products in Albania

In the central part of Albania, every 14th March, “Summer Day” has been celebrated since ancient times to honor nature and its fruits. One of the most prominent signs of the celebrations is a dessert called “ballakumes” made of corn flour from a local corn race called “Sulova” that has been known for centuries and is still cultivated on over 300 ha in the villages of the region of Sulovo and is a favorite landrace, because of its specific taste. Similarly, in the northern part of the country, the corn flour from the variety “Reci” is cultivated in over 200 ha and used for the preparation of a special bakery product that is served with fermented milk. Despite its low yields, the overall production of “Sulova” has increased from 100 tons in 1990 to 1,200 tons today and this has greatly contributed to its on-farm conservation. These examples show how traditional festivities and special gastronomic specialties can help preserve local varieties of high quality.

Best Case – Plum products in BiH

Some commercial farms and cooperatives successfully use fruits of autochthonous cultivars for the preparation of slow food products, such as “Slatko od sljive Pozegace” (a sweet relish made from the plum variety Pozegacha), which is prepared over a wood fire using plums grown on the banks of the River Drina. Other products from autochthonous fruit cultivars include fruit schnapps (from plum, apple, pear and cornel), dry plum, “Pekmez” - a special kind of jam made from old apple and pear varieties, and “Bestilj” – a special kind of marmalade made from plum. These products are for the domestic market and for export.

Best Case – “Somborka e Dukagjinit” in Kosovo*

“Somborka e Dukagjinit” is the name of an old autochthonous variety of pepper with unknown exact origin. The fruit colour in technical maturity is white with yellowish nuances, while in botanical maturity, it turns in red. The fruit is without emphasized grooves, with enough space volume to fill it with meat or cheese. Its aroma is light spicy and short lasting. Somborka e Dukagjinit is cultivated almost all over Kosovo*, in gardens and fields up to 1,000 ha. Its fruit is well-known and sought after throughout Kosovo*, by both families and restaurants. It is used for conservation in traditional and industrial ways. The cultivation and seed selection is made by farmers themselves, according to the criteria they wish, mainly according to the regular size and form of fruit. The fruit is used for fresh consumption, scrambled, and traditionally preserved (filled with ground meat and rice, cheese, ground cabbage, etc.) and industrial processing (filled with cheese and milk cream). Its fruit can be stored in a refrigerator or frozen, where it can be stored for a long time and maintains the consistency of the fruit. The fruit is also exported to Europe, both fresh and canned. In this regard, the food industry has also ‘graduated’, by combining the pepper fruit and cheese, to the status of dairy product. On September 16th, 2017, the village of Krusha e Madhe organised the fair ‘Agrofest’ for the first time to celebrate successful harvesting of the pepper, where local products of pepper and other products were also on display.

Both best practice cases below show how private companies (seed companies, nurseries, and companies selling elaborated culinary specialties) can contribute to regeneration and good conservation status of plant genetic material and create a market for its sustainable use in agriculture. Financial or other support by foreign donors or national and regional initiatives could transfer this approach to countries and entities where the awareness for the value of old and traditional landraces is already beginning. This trend towards slow, regional, and healthy food could be a driver for the commercial viability of certain traditional and old plant varieties.

Best Case – Fruit nursery in BiH

The fruit nursery in Srebrenik (“Vocni rasadnik”; <http://vocnirasadnik.ba/en/home-2/>) in FBiH is a 100% private company that produces and sells plant seedlings of fruits, flowers and ornamental trees. The nursery has also the largest and most important *ex-situ* collection of traditional fruit cultivars in Bosnia and Herzegovina and offers 24 autochthonous domestic apple cultivars and 31 pear cultivars. The nursery’s *ex-situ* collection has been a member of the European Gene bank Integrated System (AEGIS) since 2010 and operates a laboratory for “*in-vitro*” tissue culture techniques (with supporting greenhouses) and a modern Ultra Low Oxygen (ULO) storage (with a capacity of about 700 tons). They also process and sell their own fruit juice under the name “Natura fruit”.

Best Case – Regeneration and commercial production of local varieties by private companies in Serbia

The nursery company “Profesional” in Kruševac and the company “Petrović” initiated a project for the conservation and promotion of old varieties of crops and offer over 200 local or old seed varieties of fruits, vegetables, maize, aromatic plants and other crops which can be ordered as seeds or nursery plant material through the website: “Old seed varieties” (<http://sadniceprofesional.rs/stare-sorte>).

5.1.2. Animal genetic resources

In most SEE countries and entities, crossings of autochthonous and local animal breeds with modern breeds are often encountered. Similarly to local and endemic plant varieties, locally adapted animal breeds are most often found in family farms, especially in hilly or mountain regions or in remote areas, often together with traditional production systems. In some countries and entities, indigenous pure breeds are only located at selected very remote areas and are highly endangered or even extinct. In almost all countries and entities, autochthonous animal breeds of the main species, i.e. buffalo, cattle, goat, sheep, pig, chicken, horse, donkey, and bees still exist (Table 6).

Table 6. Status of populations of autochthonous breeds in the SEE countries and entities

	ALB	BiH		MNE	MKD	SRB	KOS*
		FBiH	RS				
Current number of autochthonous breeds	36	11	12	12	11	32	11
At risk*	15	7	4	3	5	29	8
Already extinct	1	0	2	1	1	3	1
Buffalo	1	0	0	0	1	1	1
Cattle	5	2	2	1	1	2	2
Goat	10	1	1	1	1	2	1
Sheep	6	4	3	6	3	11	3
Pig	3	1	1	0	1	4	0
Poultry	6	1	1	1	1	8	1
Horse	3	1	2	1	1	2	1
Donkey	2	1	1	1	1	1	1
Bees	N/A	0	1	1	1	1	1

*Breeds at risk use FAO classification <http://www.fao.org/docrep/010/a1250e/a1250e00.htm>

Source: Mainstreaming Agrobiodiversity in the Agricultural and Land Management Policies, Plans and Programs of the SEE Countries/Entities, Mainstreaming Agrobiodiversity in the Agricultural and Land Management Policies, Plans and Programs of the SEE Countries/Entities, National Reports, 2018



Cattle are an important species for milk and meat production in most SEE countries and entities, where modern breeds make up the vast majority of production. The autochthonous Busha cattle are found in all seven countries and entities, and conservation programs play a role in the maintenance of good conservation status.

Buffalos are still existent in Albania, where they are used extensively in agriculture as work animals. In Serbia, buffalos exist and are used for the production of milk and butter. Meat is produced from young specimens, and milk consumed fresh with no further processing to milk products. The populations are all endangered and in a critical situation. Water buffalos also exist in Macedonia and Kosovo*, but their status is critical. In Kosovo*, the company “R&Rukolli Shpk” has recently established a water buffalo farm in Drenas municipality, the number of buffalos is currently 400 (see best Case p. 44); with around 250 producing milk. It is necessary to note that the populations are very small in all countries and do not have a great chance of survival unless they are looked at as a whole population in the whole region with the necessary exchange of genetic material (bull semen) to reduce inbreeding depression.

Sheep breeding has a long tradition in SEE, and three to six breeding types of Pramenka sheep exist in the seven countries and entities. Some locally adapted breeds in some countries/entities such as Albania, Kosovo*, and BiH are stable and not endangered and show a significant share of total sheep milk and ruminant meat production. However, farmers perform the selection process for breeding empirically without support by breeding programs. Crossing programs with exotic breeds have sometimes taken place, often with the support of extension services. Furthermore, there is usually no operative performance control of breeding efforts and no effective management of breeds. In some countries like Montenegro, Serbia, and Macedonia, crossbreeding or the decrease of sheep population has resulted in the endangerment of traditional breeds and, in some cases, in danger of extinction. Genetic characterization and in-situ conservation efforts have been carried out to take action against this developments with some positive results, as sometimes it was possible to change the status of some breeds from endangered to vulnerable.

Goats are also a traditional species in agriculture in most SEE countries and entities, where locally adapted goat breeds account for the majority of the population. In Albania, 97% of the total goat population of more than 860,000 individuals are locally adapted breeds, labeling systems related to declarations of origin and tourism have positively affected the market opportunities and the development of the goat population. Similar to sheep breeding, the lack of exchange of bucks between farmers and lack of knowledge on breeding principles leads to inbreeding and genetic erosion. In-situ conservation programs and breeding associations could help mitigate this problem. In some entities and countries like the RS and Macedonia, the locally adapted goat populations declined steeply during the time of a goat ban on pastures, but populations have survived. However, crossbreeding with modern breeds has drastically reduced the population of purebred domestic goats. This has also been promoted by extension services without taking into account biodiversity in their development strategies.

In several SEE countries and entities, pig production is still done under extensive agricultural conditions in small family farms, although the majority of pig production is performed in commercial farms with imported animals. In countries like Montenegro, pig production is of no significant importance in agricultural production. Locally adapted breeds have been identified in most countries and entities and are produced in the context of the growing rural tourism, although many breeds are still highly endangered or even extinct, as it is the case in FBiH and the RS. In other countries such as Macedonia, local breeds have no significance in pig meat production and have not been sufficiently characterized. In BiH, the Mangalitza breed has survived in small individual farms, whereas the Shiska breed is probably extinct. The Mangalitza breed is grown in Serbia within small farms and nature protected areas.

Poultry production in most of the SEE countries and entities is performed on small family farms, medium sized farms and big commercial operations, although the breeds existent on small family

farms are often not characterized and therefore there is no breeding strategy in place for any existing locally adapted breeds (like it is the case in Albania and Macedonia). In some countries like BiH, locally adapted hen populations exist but are crossed with modern breeds to improve the fattening performance. In other countries or entities, such as Montenegro, locally adapted breed populations are very small in terms of their genetic and phenotypic characteristics due to the dominance of commercial breeds and are therefore in risk of extinction. In Kosovo*, there is no data to assess the population of the predominant local breed.

Locally adapted horse and donkey populations are still existent in some SEE countries and entities. Local horse breeds are still existent in FBiH, Republika Srpska, Macedonia, Montenegro, and Serbia, but some of them are extinct or only being conserved through private stables or in extreme conditions such as mountain areas. In Montenegro, a segment of the population is out in the pastures the whole year and let to reproduce freely. In Macedonia, no sufficient data is available for an assessment of the population. The donkey populations existent in BiH, Montenegro and Serbia have dramatically decreased. There is little official interest in BiH conserving donkey breeds, which are unclassified in terms of their population and in the RS are even endangered at the species level. In these countries and also in Macedonia, there is too little data existent to fully determine their conservation status.

The natural conditions are ideal for apiculture in many parts of the SEE countries and bee keeping often has a long and rich tradition. Autochthonous breed and a diversity of local varieties still play an important role in countries such as Macedonia (*Apis mellifera Macedonica*) and in all other countries/entities (*Apis mellifera Carnica*), and natural honey is also of economic relevance.

5.2. CONSERVATION EFFORTS OF GENETIC RESOURCES

5.2.1. Plant genetic resources

In some SEE countries and entities, collection missions have a long tradition going way back to the twentieth century. In several cases, researchers from abroad performed their first efforts, but soon national authorities and the national research community took over and continued these activities. In other cases, first efforts were done before World War II, suffering a setback in the twentieth century, only to be reactivated at the end of the twentieth and the beginning of the twenty-first century.

The most important regional effort for conservation of plant genetic resources in recent times has been the SEEDNet project between 2005 and 2011, funded by the Swedish development agency SIDA and enabling countless accessions. This project fostered collaboration between national research institutions and farmers, developed strategies for target species, provided technical capacity building for gene banks' staff and performed inventories, on-farm and ex-situ collection, seed accessions, accessions regenerations and awareness raising activities. Other projects such as the FAO projects also led to accessions but did not take place in all SEE countries and entities.



Table 7. Status of ex-situ conservation in the SEE countries and entities. Numbers are largely estimates.

	ALB	BiH		MNE	MKD	SRB	KOS*
		FBiH	RS				
Total number of accessions in the national inventories	4,105	490	1,182	1,242	1,579*	15,000	384
Seed collections	3,219	438	1,015	334	1,579	12,000**	376
Field collections	886	88	251	828	0	3,744	8
Number of plant species under conservation	147	32	120	30	81	249	26

Source: Mainstreaming Agrobiodiversity in the Agricultural and Land Management Policies, Plans and Programs of the SEE Countries/Entities, National Reports, 2018, and amendments from its authors

*Number of accessions maintained in the gene bank at the Institute of Agriculture. Inventory collection of FASF (over 6,219 samples), which need to be multiplied, is not included.

** 4,238 accessions are maintained as seeds in the National Gene bank

In some countries, the genetic characterization of accessions is still being performed to eliminate duplicities and identify unique accessions. Also the level of documentation, evaluation, characterization and regeneration, is very different and exact data are not available, as they are not transparently published on-line. It must further be considered that parts of the collections are commercial or pre-breeding and breeding material. In some cases, there is not a system in place to regularly check the germination status of accessions. All this makes the provision of consolidated data of accessions and a solid inventory of accessions difficult, which would be the necessary first step for a coherent *ex-situ* conservation system, followed by an overall characterization and conservation effort. RS have deposited the safety base collection at Svalbard Global Seed Vault (in total 921 accessions from 113 species).

There are best cases of cooperation among European gene bank institutions and SEE countries gene banks for collections, conservation, and repatriation of local seeds (IPK Gatersleben gene bank and IPGR Albania).

If needed, existing databases are mainly adjusted to comply with the standards of European database (European Search Catalogue - EURISCO). In this catalogue, 31 Montenegrin accessions are flagged as AEGIS. RS already flagged 22 accessions as AEGIS.

Best case: IGRUNIBL - Institute of genetic resource, University of Banja Luka

Institute of genetic resources (IGRUNIBL established in January 2009 on the basis of recommendations given in Program on Preservation of Plant Genetic Resources of the Republic of Srpska, which was adopted by the Republika Srpska National Assembly in 2008. This Program is a crucial result of joined support of SeedNet project and RS Government started in 2005.

The IGRUNIBL is a fully functioning structure dealing with a wide range of activities such as collecting, documentation, characterization, evaluation and conservation of genetic resources. It serves as the Plant Gene Bank of Republika Srpska and is entirely equipped for conservation of plant genetic resources and fully operational for a long-term conservation of collected material. Currently more than 1,000 accessions are divided into active, base, and safety base seed collections and are placed in long-term storage (approx. 400 accessions of cereals and maize, 310 accessions of vegetables, 200 accessions of fodder crops, 70 accessions of MAP and 10 accessions of industrial plants). The duplicate safety base collection of 921 accessions of 113 species was deposited at Svalbard Seed Vault in 2016. There are three field collections with 251 accession of fruits and Vitis: one in Botanical garden with 177 fruit accessions, second in Čajniče municipality with 39 fruit accessions and one in Trebinje region with 35 grapevine accessions. The total number of accessions with unique accession number in database is 1,266, and 481 accessions are uploaded to EURISCO. As European accessions (AEGIS) are flagged 22 accessions.

IGRUNIBL started the preparation of vulnerability indicators of animal genetic resources as a base for Program on Preservation of Animal Genetic Resources of RS in 2015.

The second regular activity of IGRUNIBL is the maintenance of the protected area “University City” as VI IUCN category. As a registered producer of planting material of horticultural and forest plants and seeds of agricultural plants IGRUNIBL produces the planting material of more than 30 plant species for its own needs (Botanical Garden and the park complex of the “University City” Protected Area), for on-farm conservation and for sale.

IGRUNIBL has 19 employees as of the end of 2017 (<http://www.igr.unibl.org/index.php>).

5.2.2. Animal genetic resources

The status of inventory of populations and conservation status of locally adapted and autochthonous breeds in the SEE countries and entities differs greatly (Table 8). In countries such as Albania, Macedonia, and Montenegro, there is consolidated data for the number of local breeds and their conservation status per breed. In several of the countries, even if data can be obtained they are unreliable or incomplete and there are no reliable data on the existing breed populations for the different species and no gene bank for preserving animal genetic resources in vitro, although sometimes in-vivo conservation is being pursued for certain species. Albania and Serbia have signed a Memorandum of Understanding (MoU) with the European Regional Focal Point for Animal Genetic Resources (ERFP), related to the European Genbank Network for Animal Genetic Resources (EUGENA).



Table 8. Number of locally adapted breeds under conservation programs versus total number of locally adapted breeds in the country and entities

	ALB	BiH		MNE	MKD	SRB	KOS*
		FBiH	RS				
Buffalo	1/1	0	0		0/1	1/1	0/1
Cattle	2/5	0/2	1/2	1/1	1/1	2/2	0/2
Goat	2/10	NA/1	0/1	0/1	1/1	1/2	0/1
Sheep	2/6	NA/4	0/3	4/4	2/3	7/11	0/3
Pig	3/3	NA/1	0/1	0/0	0/1	3/4	0/0
Poultry	0/6	0	0/1	0/4	1/1	3/8	0/1
Horse	0/3	NA/1	2/2	0/1	0/1	2/2	0/1
Donkey	0/2	NA/1	1/1	1/1	0/1	1/1	0/1
Honey bee	0/0	0	1/1	0/1	1/1	0/1	0/1

Source: Mainstreaming Agrobiodiversity in the Agricultural and Land Management Policies, Plans and Programs of the SEE Countries/Entities, National Reports, 2018

The most relevant conservation projects include in-situ conservation efforts for several Busha cattle breeds in the frame of internationally funded projects in some SEE countries and entities (see e.g. <http://www.save-foundation.net/en/projects/balkans>), successful in-situ conservation in Velipoja region (Albania) of three locally adapted pig breeds (Siska white of Scutary, Spotted of Scutary and Pig with wattle), and promotion of donkey milk by media in Serbia and Montenegro, motivating some Serbian farmers to join donkey conservation programs. Donkey sausages, cosmetics, liquor and a highly valued cheese from “Zasavica” Nature Reserve, have had significant market success.

Infrastructure, equipment and human capital for the work of gene banks still need to be improved to ensure an effective rate and volume of collection, conservation and regeneration.

For all species, interventions for the support of breeding programs should be performed at all levels of policy and production. On the one hand, there is a need for support to develop and implement effective strategies and action plans for breeding programs and effective monitoring mechanisms with sufficient funding and resources. Breeding and inventory documents also need to be created or updated. On the other hand, the organization of farmers in breeding associations, together with capacity building for the processing and marketing of products within a national strategy would help improve the situation and prevent inbreeding. However, a continuous commitment for public financial support would help to raise the commitment of local farmers, who often are afraid that *in-situ* conservation efforts will not be economically sustainable in the long run due to the cancellation of subsidies. Extension services can play a crucial role in remote areas, where farmers often have particularly little access to expertise on how to link traditional knowledge and practices with market opportunities.

Regarding highly endangered locally adapted breeds, herd books, blood, tissue and hair collecting and other characterization and conservation efforts need to be set up to preserve the genetic variety and avoid the extinction of pure indigenous breeds. Also data collection and data management on population size of existing breeds would be necessary could be developed further in most countries and entities.

Milk and meat products made from traditional breeds need to be protected in order to avoid unfair competition from commercial alternatives made from crossbreeds or even modern breeds.

Beside others, good market access and opportunities are an important means of protection. Authentic products should be marketed widely to raise awareness for their importance not only in conserving and fostering biodiversity, but also to ensure the economic viability of the local breeds without having to depend solely on subsidies. Consumers partly need to learn to re-appreciate local products such as less lean pig meat varieties. This approach could lead to a higher price and recognition for the culinary values of traditional products made of local breeds and their milk.

Best Case – Developing strategies and practices for conservation of the autochthonous breeds in Albania

A pilot project is under implementation by CABRA in Albania, supporting a network of livestock farmers, from six local landraces, two of them at the 'in risk' status ("Scutary" sheep and "Kallmeti" goat) focusing on developing strategies for conservation, applying a herd book for farms, monitoring for reproduction and production performance, improved exchange among farmers for genetic material, and also preparing farmers to fulfill conditions for upcoming agro-environment EU IPARD incentive schemes.

Best case – Mangalitza pig in Serbia

The best progress in terms of population of a local breed in Serbia was achieved with the Mangalitza pig, whose number increased from 60 heads in 2000, to 3,000 heads in 2013. This progress was the result of the promotion of the special features of the Mangalitza pig meat and fat quality, and of the switch from selling live animals to selling traditional products thereof, thus raising the added value significantly. Through raising awareness among breeders about the importance of preserving this breed, significant improvements in production have been achieved.

Best Case - 'Water Buffalo' in Kosovo*

Since 2011, the company, "R&Rukolli Shpk", has been involved in the agricultural sector with its water buffalo farm, where the animals are kept in a rented facility in Krajkova village, Drenas municipality. The buffalo farm, Rukolli, was established with its own funding. Currently, the number of buffalo is 400 of all ages; around 250 are producing milk. The owner bought a significant number of buffalo from farmers in Kosovo* and some of them in Romania and Bulgaria. Outside of the buffalo stable, a water pond has been built since the buffaloes' natural instinct is to wallow in ponds of water. The company receives direct payments of € 70/head per animal. The same amount farmers receive for one cow, regardless of breed. During the last six months, the company moved 60% of the herd to an open field in the village of Gusare, municipality of Istog to improve their welfare and ensure better feeding. R&Rukolli buffalo farm employs 11 people on the farm, including a veterinarian on a part-time basis. In order to produce enough animal fodder, the company rented land and purchased animal fodder from at least five (5) different farmers, but not regularly and without contracts. Since its establishment, R&Rukolli has had a very positive attitude toward agriculture and the agro-food sector. In that regard, it has linked a buffalo farm to new dairy plant 'Drena' (belongs to the same owner) for diversification purposes and to process more specific products from buffalo milk. The company sells raw milk to a dairy every second day. At this point, the farm is producing around 600 litres of milk per day. 'Drena' is producing Mozzarella and White Buffalo Cheese by a Kosovar recipe. R&Rukolli and Drena are good examples of efforts made to conserve rare breeds and make a profit at the same time. It is a sustainable solution to preserve farm animal genetic resources.



6. STATUS OF PUBLIC AWARENESS

Public awareness is a key element in mainstreaming agrobiodiversity in the overall developing strategies at the public level, but also in agriculture and the food value chain. There are different target groups such as policy and decision makers, public servants, farmers and farmers' associations, research and education, business owners from sectors that are members of the food value chain (tourism, gastronomy, and retail), media, NGOs and consumers that need different approaches to address the issue.

To a varying level, all SEE countries and entities show the need for a better awareness of the importance and value of agrobiodiversity for environmental protection, climate change adaptation and sustainable economic development of rural areas for all target groups described above.

In some national action plans, awareness on the conservation and use of farm genetic resources is an element already being taken into account, but often public institutions do not possess the necessary know-how or resources to tackle the difficult task of raising awareness for agrobiodiversity and its environmental and economic value.

NGOs and non-public institutions often lack the necessary funds to deliver awareness raising actions on a large scale and produce the necessary momentum for a widespread effect on all stakeholders and the general public.

Education is an important element, as awareness raising in schools and for young people can trigger a knowledge transfer to their families and show long lasting effects.

Agricultural extension services and farmers' associations can also be a promising target of awareness raising activities, but are often not part of campaigns, trainings and actions.

In general, awareness raising activities need to have the commitment and participation of all stakeholders, such as public administration, local municipalities, NGOs, the research community, agricultural extension services, farmers and farmers' associations and other economic sectors.

Every single action can be designed to use and produce synergies with other activities and efforts by other stakeholders and so multiply the visibility and effect of each ad and TV show. This is especially important for farmers beginning to use the products of local plant varieties and local breeds to market traditional and local products thereof and who can see an incentive in being showcased and obtaining professional visibility and marketing that they would not be able to produce by themselves.

In a similar way, traditional food products from farmers in local markets could be supported by designing and providing professional marketing and information material and supporting the organization of fairs, cultural events and other activities aimed at revitalizing rural communities and creating viable economic prospects for young farmers.

Awareness raising activities so far include:

- Events and activities with civil servants, experts, farmers and other stakeholders, including:
 - Livestock competitions with local breeds;
 - Fairs and similar events featuring traditional products and competitions;
 - Study visits to farms to demonstrate traditional cultivation and breeding techniques;
 - Seed exchange fairs and networking events for farmers seeking interesting breeds for their agricultural activities.

- Training and capacity building activities:
 - Training and capacity building actions at the national and local level for staff of public institutions, experts and farmers involved in *in-situ* conservation of plant and animal genetic resources;
 - Training and capacity building actions for public institutions, experts and agricultural extension staff, as well as farmers to foster the diversification of rural economy and development of environmentally and economically sustainable uses of plant and animal resources in agriculture and food production;
 - Scientific events and exchange formats with the research community and public institutions' staff, as well as interested stakeholders.
- Cross-border efforts to map and assess local plant or animal genetic resources and their population with funding by ministries of agriculture and input from research and other stakeholders.
- Awareness raising and knowledge dissemination activities:
 - TV and radio shows that feature the choice of local and locally adapted plant varieties and breeds and efforts to conserve and use these in a sustainable manner, especially featuring schools and young farmers, as well as other stakeholders making use of local products for the elaboration;
 - Marketing of traditional and innovative traditional food products in direct marketing on farm, rural and urban gastronomy and retail, tourism and cultural events;
 - Campaigns for raising awareness for the importance of agrobiodiversity and the quality of products thereof using digital channels and social media as well as printed material such as leaflets, posters and booklets.

Best case - Promotion of agrobiodiversity values in media and fairs (CABRA project in Albania)

Agrobiodiversity promotion days were examples of combination of tourism promotion and awareness raising, integrating the demonstration of livestock and plant landraces, presentation of conservation measures by the Gene Bank, fair presentation of local products, visits to a chestnut forest, etc. Yearly events were organized by CABRA in Shkrel Regional Nature Park (October 2016, November 2017)

<http://top-channel.tv/video/parku-natyror-i-shkrelit-projekti-gjerman-per-nxitjen-e-turizmit/>

<http://www.monitor.al/rec-aty-ku-agroturizmi-dhe-geshtenjat-po-pasurojne-fshatin/>

Albanian Institute of Plant Genetic Resources in cooperation with CABRA project during 2016-2017 has assisted in producing four TV programs for local landraces <https://www.youtube.com/watch?v=LGgWztQqMIQ>

Best case – Promotion of local breeds and traditional products in Montenegro

In the frame of the project “Valorizing the Montenegrin Katuns through sustainable development of agriculture and tourism - KATUN (2015-2017)” funded by World Bank and Ministry of Science in the area of the Durmitor and Kuci mountains, concepts and product packages for the marketing of local breeds and traditional dairy products through rural tourism were developed in workshops with farmers and other stakeholders. Dairy products were promoted through fliers and product packages.

**Best case – workshops and training for the cultivation and use of autochthonous genetic resources in Macedonia**

To protect traditional varieties, breeds or food products with specific designations for quality, workshops are performed by the Ministry of Agriculture (MAFWE) in the frame of the strategy for rural development 2014-2020. As a result, practical guidebooks and dissemination material was provided to farmers, including the contact details of all farmers maintaining genetic farm resources.

Best case – Awareness raising projects in schools in Republika Srpska (BiH)

Two projects to raise awareness targeted at elementary school pupils and teachers of biology were implemented. The project “Record in the Eye” included information material and painting activities for 10 schools and 600 students. “Plants Forever” was implemented in 10 primary schools located in very remote municipalities, where 200 pupils collected autochthonous varieties of different species together with old traditional recipes.

“Save the Old Fruit Cultivars” involved the inventory, collection and photographic documentation of autochthonous fruit varieties. The best three photographs among the 130 secondary school students from six schools were awarded a camera.

Best case – Preservation activities with schools in Serbia

In 2007 the pilot project entitled as “Let’s preserve and protect the old Vojvodina’s vegetable varieties” was implemented by the Agro-institute in Sombor, supported by the Ministries of Education and Agriculture. 22 schools and 3,000 students from northern Serbia collected 5,296 samples of 40 different crops, mainly vegetables. The results are documented online under <http://www.sorte.minpolj.gov.rs>.

Best case – “Agrofestiva” or “Pepper Days” in Kosovo*

Agrobiodiversity promotion days were examples of fairs for domestic production of peppers and different vegetables. Promotion and raising awareness, integrating the demonstration of production and traditional vegetables processing, especially women activities within agrobiodiversity. This event is traditional and was organized by Rahoveci Municipality on the 16th September 2017, in the village of Krusha e Madhe, Rahovec.

7. KEY FACTORS PLAYING A ROLE IN AGROBIODIVERSITY

7.1. FACTORS PLAYING A ROLE IN ENDANGERMENT AND EXTINCTION OF GENETIC RESOURCES IN AGRICULTURE (INCLUDING SOCIO-ECONOMIC AND GENDER ELEMENTS)

7.1.1. Plant genetic resources

The most critical factors for the endangerment and critical status of plant genetic resources in agriculture are, among others:

- Lack of knowledge about the key role of agrobiodiversity for the social and economic development of rural communities with the inclusion of related sectors such as gastronomy, culture, retail, tourism, research and education, media, etc.
- Lack of information about the status of local varieties and lack of accession of certain local varieties within the *ex-situ* conservation efforts in some SEE countries and entities.
- Inadequate storage and irregular regeneration of accessions leading to their irreparable loss.
- Not enough technical and financial resources to perform characterization and evaluation activities for all accessions and difficulties in characterizing certain varieties in remote areas due to climatic conditions and their strong effect on phenotypic characteristics.
- Lack of seed reproduction companies offering locally adapted or autochthonous varieties and local landraces and competition by foreign seeds of modern or exotic varieties.
- Insufficient accession of certain species into gene banks due to prioritization of others.
- Lack of awareness by consumers and other stakeholders for the potential of plant and animal genetic resources in agriculture and food production.
- Lack of awareness among farmers of the importance of cooperation and organization in farmers' associations and other forms of common economic activities.
- Lack of technical equipment for agricultural production for farmers as well as processing, and in consequence lost chances for economic success using sustainable approaches of farming.
- Lack of knowledge and infrastructure for processing of agrobiodiversity products.
- Lack of economic incentives to cultivate and market products of local varieties that sometimes have a lower yield or are not as easily marketable as modern exotic crops.
- Lack of exchange on success stories of farming of autochthonous varieties and local landraces.
- Lack of cooperation between the agriculture and tourism sector as a chance for development special market channels.
- Lack of subsidies or other support like technical knowhow transfer for farmers (and female farmers) actively participating in on-farm conservation of plant genetic resources.



7.1.2. Animal genetic resources

The most common factors for the loss of animal genetic resources show an effect on the genetic erosion on the one side, and on the radical decrease in population size of many breeds on the other. Among them, the following were the most indicated:

- A lack of economic incentives to keep locally adapted or autochthonous breeds due to the lower productivity related and lack of knowledge and opportunities to achieve a higher added value of the products thereof through marketing and food product development, as well as cooperation with other sectors such as tourism and gastronomy.
- A trend towards the exchange of local with exotic breeds and cross breeding with modern breed to increase productivity, sometimes as a result of the cooperation with the agricultural extension services.
- An undeveloped market for quality products from locally adapted breeds in gastronomy, retail, tourism and other sectors.
- Not enough financial support and technical knowhow transfer to farmers (and especially women) involved in the revitalization of traditional extensive agriculture and traditional methods of meat, milk and wool production and in the conservation *in-situ* of local and autochthonous breeds.
- Migration of young persons (and especially educated women) to urban centers or economically more developed regions due to the lack of perspective in the local economy.
- A lack of awareness for the vital importance of the conservation and sustainable use of local breeds for biodiversity in general, but also for ecological services (maintaining landscapes, pollination, use of low productivity areas, etc.), the quality and culinary value of meat and milk products, and their attractiveness for agro-tourism, local cuisine and rural culture.
- Lack of awareness for the vital importance of cooperation among breeders and lack of support from programs and projects that foster collaboration and the establishment and operation of breeders associations and breeding programs.
- Inadequate agricultural policies.

7.2. POSITIVE FACTORS ON THE USE OF GENETIC RESOURCES IN AGRICULTURE (INCLUDING SOCIO-ECONOMIC AND GENDER ELEMENTS)

A clear inclusion of agrobiodiversity in the strategies and action plans to improve the quality of life in rural communities is the first step to ensure that the conservation and sustainable use of plant and animal genetic resources is sufficiently tackled. A prerequisite is adequate funding and human capital, as well as an implementation within a coherent approach with other programs and efforts by public administrations for the economic, social and environmental development of each SEE country and entity.

Some of the factors mentioned here have been already described in chapter 6 and will be the object of perspectives and recommendations in the following chapters. Therefore, they are only briefly described:

- Technical support to farmers to increase the market value of their agricultural production using local plant varieties and breeds with a view to improving also the quality of the resulting products, including capacity building, pilot projects for food product development out of agricultural raw materials and marketing in the frame of diversification efforts of rural income.

- Creation of new holistic approaches for the development of rural communities that encompass traditional knowledge, the marketing of rural and traditional culture, agro- and rural tourism, rural and urban gastronomy and cultural events and practices to ensure the economic viability of cultivating local plant varieties and keeping local breeds.
- Support to farmers for the harmonization of their agricultural and food production activities with EU standards and norms¹³, whenever possible through agricultural extension services and farmers' associations that can foster the horizontal knowledge transfer and with the input of the research community.
- Strengthening of semi-private or private initiatives in small and remote communities (like the production of seeds from traditional varieties by associations and commercial nurseries) and the cooperation at the cross-border, but also at the community level to tackle initiatives and actions in a coordinated way and enable horizontal knowledge transfer as well as technical and economic exchange.
- Women account for a large proportion of human work force in local communities dedicated to agriculture and food production, but only a small proportion of entrepreneurs. They also have a much higher share in agricultural activities dedicated to the conservation and sustainable use of plant and animal genetic resources as a whole, even though, in some SEE countries and entities, animal breeding is a typically male dominion (with the exception of poultry and small ruminants, that are traditionally women's jobs). Any action directed towards capacity building and technical assistance for the conservation and sustainable use of biodiversity should therefore ensure that women are actively included and encouraged to join programs, associations and projects to this end. An inclusion element for women should also be part of any diversification program dedicated to the production and marketing of local and traditional products from local breeds and to the development of related sectors, such as agro- and rural tourism, gastronomy and retail.
- Awareness raising activities should not only emphasize the vital contribution of farmers to the conservation of agrobiodiversity, but also the often neglected critical input of women to this process and the opportunities arising from their active participation in the social and economic development of rural areas. Women generally show a much higher awareness for the importance and value of genetic resources in agriculture and food production.
- Existing slow food and ethno-food movements and initiatives to protect traditional products with denominations of origin and/or traditional product quality labels.

¹³ E.g. EU marketing standards for food as defined in EU Regulation No 543/2011 and maximum contaminant levels in the annex of Regulation (EC) 1881/2006 for fruits and vegetables or Regulation (EU) No 1308/2013 of the European Parliament and of the Council of 17 December 2013 establishing a common organisation of the markets in agricultural products for beef and veal.



8. GAPS IN LEGISLATION AND POLICY

There is a consensus that national legislation needs to be harmonized with ratified international instruments, such as conventions, treaties and their protocols, as well as with the relevant EU legislation relevant for biodiversity and especially for the conservation and use of plant and animal genetic resources in agriculture and food production.

On a multilateral level, there is also a need on the side of some of the SEE countries and entities subject to this synthesis report to sign and ratify all multilateral instruments.

A complete analysis of all treaties, conventions and strategies relevant to agrobiodiversity on an international level would surpass the scope of this synthesis, so only the most prominent and relevant are presented in detail and linkages to other instruments are discussed in the text.

8.1. FAO

The FAO's Second [Global Plan of Action for Plant Genetic Resources for Food and Agriculture](#) foresees several priority activities that also apply to the national and regional action necessary for the conservation and sustainable use of plant genetic resources in agriculture and food production and are also congruent with the recommendations as developed for this synthesis report:

For *in-situ* conservation and relevant to the SEE region, the plan foresees:

- Surveying and inventorying plant genetic resources for food and agriculture.
- Supporting on-farm management and improvement of plant genetic resources for food and agriculture.

For *ex-situ* conservation, the foreseen relevant actions for the SEE include:

- Supporting targeted collecting of plant genetic resources for food and agriculture, focused on genetic material that is missing from *ex-situ* collections.
- Supporting the stable and coherent operation and expanding *ex-situ* conservation of germplasm and regenerating and multiplying *ex-situ* accessions, a task that requires substantial technical and administrative challenges to coordinate the work between the different actors involved, such as administration, policy makers, universities and research, gene bank operators, etc.

For the sustainable use of plant genetic resources from locally adapted plant varieties, the plan suggests:

- Expanding the characterization, evaluation and further development of specific subsets of collections to facilitate their sustainable use in agriculture and food production, which involves a diversification of the collections that can help to deliver better material for crop improvement of locally adapted varieties.
- Supporting plant breeding, genetic enhancement and base-broadening efforts to further develop the varieties used in low-input agriculture and ensure their use by farmers.
- Promoting the diversification of crop production and broadening crop diversity for sustainable agriculture using locally adapted varieties.

- Promoting development and commercialization of locally adapted, traditional varieties/landraces and underutilized species. This is especially important in view of the often-found prioritization of commercially attractive varieties already established in the market in the SEE countries and entities.
- Supporting seed production and distribution of underutilized or endangered traditional varieties. In some cases, commercial seed enterprises have begun to distribute traditional varieties, but mostly the commercially most attractive. Seed production and distribution of underutilized or endangered varieties may need to be supported to ensure their sustainable use by farmers.

Regarding the institutional and human capacities, the plan foresees the following actions:

- Improve and strengthen national programs for agrobiodiversity, but also other programs where agrobiodiversity should be included as a cross-cutting issue (e.g. biodiversity, rural development, employment, social cohesion, education, etc.).
- Foster and support the creation or improvement of existing networks for ex-situ (networks of relevant stakeholders like state institutions, policy makers, research and education, but also including farmers' associations) and in-situ conservation (farmers' associations, seed production and exchange programs, commercialization networks for small farmers, etc.).
- Developing and strengthening systems for monitoring and safeguarding agricultural genetic diversity and minimizing genetic erosion of plant genetic resources for food and agriculture, linked to the reporting obligations pursuant to national and international legislation and treaties.
- Improving human capacity by ensuring that locally adapted varieties are part of the extension services and its staff is adequately trained to deliver know how to farmers. Additionally offering technical capacity building to NGOs, farmers' associations and similar private endeavors involved in *ex-situ* and *in-situ* conservation of locally adapted varieties.
- Promoting and strengthening public awareness on the importance of plant genetic resources for food and agriculture.

The FAO's [Global Plan of Action for Animal Genetic Resources](#) is aimed at promoting the sustainable use of animal genetic resources in agriculture and food production and the conservation of animal genetic resources. It focuses on farmers' activities for ecosystem services and strong national programs with enhanced institutional capacity to support these goals, while raising public awareness for the importance of agrobiodiversity for sustainable development as a whole.

The Plan is divided into strategic priority areas dealing with the most important challenges for agrobiodiversity conservation and its sustainable use, which are briefly introduced and put into context with the findings in the national reports. This approach is coherent with the recommendations as expressed in this synthesis report:

Strategic Priority Area 1 deals with the characterization, inventory and monitoring of trends and associated risks related to animal genetic resources in agriculture and food production. It foresees not only an inventory and characterization process, but also the harmonization of the national technical standards for phenotypic and molecular characterization.

Strategic Priority Area 2 focuses on sustainable use and development of animal genetic resources in agriculture and food production. It calls for a review of existing policies and development of the legal and policy framework to integrate agrobiodiversity as a cross-cutting issue in all relevant policy areas. As a next step, it foresees the creation of breed development programs and supports the participation of farmers and other stakeholders. These are defined as providers of agro-ecosystem services, as they are the main actors of a sustainable management and *in-situ*



conservation and therefore need to be compensated for these services and for their contribution to fostering low-input production systems using locally adapted breeds and therefore to agrobiodiversity conservation.

Strategic Priority Area 3's main task is conservation and the elimination of genetic erosion of animal genetic resources. It foresees the development of a set of priorities and goals for conservation based on an assessment of the factors leading to the genetic erosion of animal genetic resources. These priorities and goals are the basis for the establishment of the institutional and policy structures necessary to enable a stable and coherent *in-situ* and *ex-situ* conservation system. This system must be based on an incentive system for farmers and consumers to support underutilized or endangered locally adapted breeds.

Strategic Priority Area 4 proposes an analysis of the national institutional capacity and the establishment or strengthening of national focal points for animal genetic resources. These focal points will coordinate the activities of policy makers and authorities.

Within this priority area, a review of the national and legal framework for animal genetic resources is also proposed. On the international level, a review of the international legal framework is also foreseen to take into account the requirements and obligations derived from international treaties and conventions and evaluate the signature and ratification of further multilateral and international instruments.

Also the educational and research facilities should be supported to establish networks and partnerships on the national and regional level and cooperate with extension services to give technical capacity building to breeders, while coordinating the improvement of the technical capacity for the characterization, inventory and monitoring the conservation of animal genetic resources and their sustainable use.

Finally, it calls for awareness raising activities for the importance of animal genetic resources for a sustainable agricultural and food production.

The recommendations developed for the final report of the [Preparatory action on EU plant and animal genetic resources](#) relevant to the SEE countries and entities in the context of their national and regional activities in view of an approximation to EU policies are presented below, adapted to the context of this synthesis report:

- Better linkage between different legal and policy instruments with integration of agrobiodiversity as a cross-cutting issue and linkage to international treaties and multilateral instruments.
- Better coordination at the national and regional level to tackle funding and technical issues related to *in situ* and *ex-situ* conservation as well as sustainable use of genetic resources in agriculture.
- Active support to partnerships and cooperation between stakeholders at all levels in the supply chain and between the *in situ* and *ex-situ* communities.
- Support to research and development for the conservation and management of genetic resources and participation in European, national and regional R&D programs exploring the sustainable use of genetic resources for better food and nutrition.
- Development of an appropriate infrastructure for traditional variety development, seed production and distribution through Public Private Partnerships, multi-stakeholder approaches, etc.
- Strengthen advisory services to integrate agrobiodiversity in their activities.
- Improve value chain cooperation for rare breeds and underutilized/neglected crops

by promoting the added value (biodiversity, tourism, and cultural heritage) and use of European geographic indications for rare genetic resources and fully use of RDP funding opportunities.

- Provide adequate funding via the agri-environmental and climate measures (AECMs) and the investment measures of the rural development policy (RDP) for the conservation and sustainable use of genetic diversity in agriculture (through e.g. adding collective financial support for collective measures).
- Review and secure the coherence of existing legislation for rural development, food security, environment, etc. to facilitate and integrate the conservation and sustainable use of genetic resources for food and agriculture.
- Ensure that farmers have an economically viable access to genetic resources and receive training and support for the marketing and placement of their products in short supply chains.
- Secure long-term political commitment for agro-biodiversity supported by appropriate funding.

8.2. IUCN

According to the International Union for Conservation of Nature's (IUCN) publication [Agricultural Ecosystems - Facts and Trends](#), agricultural management systems and environmental stewardship by farmers already exist in many cases, but are not actively encouraged or financially supported. This is in line with the findings on the national reports of this regional study that point out the necessity to provide a stable income for farmers performing an environmental service in conserving agrobiodiversity.

The concept of the International Union for Conservation of Nature's (IUCN) called Net Positive Impact (NPI)¹⁴, which is defined as goals for biodiversity conservation in development efforts, is strongly focused on commercial agriculture and forestry. It identifies five stages for organizing a network for the application of the NPI approach that, with adaptations for agrobiodiversity values, as proposed below, can serve as a basis for agrobiodiversity conservation and the fostering of its sustainable use within rural development programs or specifically designed action plans for agrobiodiversity.

Stage 1 - Identify priority agrobiodiversity values in the project region and define conservation goals. This should include:

- Identification of concrete varieties/breeds in each country and entity.
- Description of specific negative effects if no action is taken towards their conservation.
- Development of concrete targets within a defined timetable for the implementation in action plans.

Stage 2 - Map locations, compile trends and establish a baseline of the agrobiodiversity resources:

- Make a detailed mapping of the varieties and breeds for all relevant regions within the SEE countries and entities.
- Establish a baseline of the conservation status of the target plant varieties and animal

¹⁴ Aiama D., Edwards S., Bos G., Ekstrom J., Krueger, L., Quétier F., Savy C., Semroc B., Sneary M. and Bennun L. 2015. *No Net Loss and Net Positive Impact Approaches for Biodiversity: exploring the potential application of these approaches in the commercial agriculture and forestry sectors.* Gland, Switzerland: IUCN.



breeds through a detailed stocktaking and description for each relevant species.

- Make scenarios and trends and forecasts with or without actions for conservation and sustainable use.

Stage 3 – Define an action plan based on the agrobiodiversity data obtained and apply to the defined priority varieties and breeds:

- Avoid unacceptable impacts to defined agro biodiversity values. This can contain an active mainstreaming of agrobiodiversity as cross-cutting issue in all rural, regional and general development actions on the national or local level (e.g. avoiding support to modern varieties and breeds in areas where plant and animal genetic resources are endangered and through the inclusion of agrobiodiversity values in rural development strategies and action plans).
- Minimize impacts to defined agrobiodiversity values that may occur from project activities by ensuring that agrobiodiversity is always considered in rural and regional development during each project planning phase as a cross-cutting issue.
- Restore impacted agrobiodiversity features by implementing conservation programs and supporting farmers in the sustainable use of autochthonous animal and plant genetic resources in agriculture and food production.
- Compensate farmers for the use of traditional varieties and breeds with a lower output and support them in developing those traditional varieties and breeds to obtain a higher product quality.

Stages 4 and 5 – Implement the project plan, and monitor progress towards the NPI goal:

- Take active steps to include agrobiodiversity in all strategies, action plans and project plans, especially in rural development, but also in social and labor development actions.
- Take active steps to put a system in place within all strategies and actions plans for all national, regional and local development actions that includes the support of farmers for the conservation and use of traditional plant varieties and animal breeds.
- Identify and quantify the risk if no action is taken and monitor and evaluate the progress achieved.

8.3. SUSTAINABLE DEVELOPMENT GOALS (SDGs)

There is a direct or indirect linkage of agrobiodiversity and the measures proposed in this synthesis report to the **Sustainable Development Goals (SDG, <https://sustainabledevelopment.un.org/?menu=1300>)**, more specifically the following recommendations can be drawn based on targets 2.3 to 2.5, 2A, 5A, 8.9, 15.6, 15.9 and 15A:

- Higher financial support to farmers in marginal and hilly/mountain areas, as well as small family farms active in the production of local varieties and breeds struggling with internal migration to cities.
- Inclusion of agrobiodiversity in climate change adaptation strategies, as the local varieties and breeds are more resilient against challenges such as drought and temperature changes.
- Maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed.
- Provide financing for a sustainable operation of gene banks.

- Ensure that women are included in the support to farmers involved in *in-situ* conservation and the sustainable use of plant and animal genetic resources.
- Support traditional agricultural products within tourism strategies.
- Ensure a fair income for local farmers out of their economic activity and contribution to the ecosystem protection through direct financing of *in-situ* conservation of genetic resources and the support to a better quality and marketing of products processed from local varieties and breeds.
- Detailed assessment of all points and sub-points contained in the different laws, bylaws and regulations on the national level in the SEE countries and entities, which surpasses the scope and resources of this study and must be elaborated in detail, although this synthesis report already shows the high number of different approaches and legal instruments dealing with the different agrobiodiversity issues and the necessity to make an inventory of each point in all relevant laws and regulations of each SEE country and entity before being able to make a detailed assessment of gaps and identify all duplicities or contradictions.
- Provide sufficient and adequate funding for the operation of gene banks, the monitoring and inventorying of local varieties and breeds and research and capacity building as well as financing for *in-situ* and *ex-situ* conservation.

8.4. CONVENTION ON BIOLOGICAL DIVERSITY (CBD)

The Convention on Biological Diversity (CBD) addressed the issue of biodiversity conservation and sustainable use in its Strategic Plan for Biodiversity for 2011-2020. The strategic targets and their Aichi targets are the basis for the efforts suggested to reach the overall goal. Several Aichi targets are pertinent to agrobiodiversity conservation and its sustainable use:

- Strategic Goal A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society.
 - Target 1 asks for awareness raising actions to make consumers in the SEE region aware of the contribution of local farmers to agrobiodiversity conservation and the value of products made out of local varieties and breeds.
 - Target 2 has a linkage to the SDG 15.9 and asks for a full integration of agrobiodiversity into national legislation at all levels and in an integrated approach that avoids duplicities and gaps after a full assessment and revision of all relevant legislation.
 - Target 3 addresses the problem of agricultural extension services and, on a more general level, agricultural and rural development plans that put an emphasis on productivity improvement and intensification of agriculture at all costs without adequately taking into consideration environmental aspects and the critical contribution of a sustainable agriculture to environmental protection and a sustainable economic development of marginal rural areas.
 - Target 4 addresses the need to ensure that ecosystems are used within the limits of sustainable production and consumers change their behavioral patterns toward a more resource-oriented approach. This involves the support of agro-ecology with local varieties and breeds and the support of the market viability of local products.
- Strategic Goal B: Reduce the direct pressures on biodiversity and promote sustainable use.
 - Target 7 asks for a sustainable agrobiodiversity management. Efforts must be intensified in the SEE region to at least try to reach the target and define next steps for the biodiversity strategy post 2020, a process that is currently being discussed actively in the CBD meetings. This also involves an integrated agrobiodiversity strategy and complementing measures, which can be achieved through integration into the rural

development or biodiversity strategies.

- Strategic Goal C: To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity.
 - Target 13 directly addresses the recommendations as stated in this synthesis report. Policy should make sure that all measures are being taken and sufficiently financed to take stock, monitor, characterize, conserve and promote the sustainable use of plant and animal genetic resources in the whole SEE region. This should be achieved based on the standards and principles defined in international treaties, conventions and working groups, especially the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA - <http://www.fao.org/plant-treaty/en/>), the European Cooperative Program for Plant Genetic Resources (ECPGR - <http://www.ecpgr.cgiar.org/>) and its European Genebank Integrated System (AEGIS - <http://www.ecpgr.cgiar.org/aegis/aegis-homepage/>), <http://www.ecpgr.cgiar.org/aegis/aegis-homepage/>), the European Regional Focal Point (ERFP) for Animal Genetic Resources, the European Genebank Network for Animal Genetic Resources (EUGENA - <https://www.eugena-erfp.net/en/>), the European Federation of Animal Science (EAAP - <http://www.eaap.org/>), and the Commission on Genetic Resources for Food and Agriculture (CGRFA - <http://www.fao.org/nr/cgrfa/cgrfa-home/en/>) of the Food and Agriculture Organization (FAO, <http://www.fao.org>).
- Strategic Goal D: Enhance the benefits to all from biodiversity and ecosystem services.
 - Target 14 calls for financial support of small farmers and especially women and farmers in poor or marginalized areas that can contribute to agrobiodiversity conservation and its sustainable use. Not enough financing has yet been given to the essential contribution by farmers to in-situ and on farm conservation, a fact that is repeated in all national reports and is contained also in the recommendations to this synthesis report. This is also coherent with the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity (<https://www.cbd.int/abs>), which foresees awareness-raising within local communities and technology transfer to ensure that they have access to local and traditional plant and animal genetic resources.
- Strategic Goal E: Enhance implementation through **participatory planning, knowledge management and capacity building**.
 - Target 18 addresses the need to make sure that extensive agricultural practices by family farms in the SEE countries and entities need to be sufficiently fostered and documented and that measures should be financed to make them viable on a long-term basis.
 - Target 19 refers to the need to ensure that scientific work being done at the university level in the SEE countries and entities, but also scientific findings at the international and multilateral level is sufficiently transferred to the practice of *in-situ*, *ex-situ* and on-farm conservation. The same applies to findings related to best agricultural practices for breeding or seed production, that need to be applied to avoid genetic erosion of local varieties and breeds and put to the disposition of small farmers active in agro-ecology.

8.5. EUROPEAN UNION

The **EU Biodiversity Strategy** is the European implementation of the CBD's Strategic Plan for Biodiversity for 2011-2020 and also aims to preserve biodiversity and ecosystem services in the EU by defining six targets and three horizontal measures. Of these six targets, target three is the most important for agrobiodiversity:

- Target 3 - Achieve more sustainable agriculture and forestry: By 2020, the conservation

of species and habitats depending on or affected by agriculture and forestry, and the provision of their ecosystem services show measurable improvements.

- The target in the EU strategy is much more carefully formulated as in the CBD target, although “measurable improvements” still have to be achieved by 2020. Five actions were defined to reach it, of which the following are relevant to agrobiodiversity:
 - Action 9: Better target Rural Development to biodiversity needs and develop tools to help farmers and foresters work together towards biodiversity conservation. This target again calls for policy directly aimed to help farmers participate in conservation efforts, also of agrobiodiversity. This includes financial support, but also knowledge transfer and access to genetic resources.
 - Action 10: Conserve and support genetic diversity in Europe’s agriculture. This target is directly linked and refers mainly to the conservation and sustainable use of local varieties and breeds subject of the national reports and of this synthesis report. It calls for adequate legislation, strategies and action plans, as well a sufficient financing to reach the target of reaching a significant improvement of biodiversity and ecosystem protection by 2020.

For more information: https://ec.europa.eu/agriculture/sites/agriculture/files/genetic-resources-com-2001-162-iii_en.pdf.

EU community programs for Member States have supported the conservation, characterization, evaluation and use of genetic resources in agriculture and established conservation activities, both *in-situ* and *ex-situ*. They have also supported the improvement of the scientific knowledge on plant genetic resources and the dissemination of results, but also the establishment of strategies and guidelines and the improvement of a European database for farm animal species and breeds.

In the area of research, the current EU horizon 2020’s work programme 9 for 2018-2020 named [Food security, sustainable agriculture and forestry, marine, maritime and inland water research and the bioeconomy](#) offers a topic called SFS-01-2018-2019-2020: Biodiversity in action: across farmland and the value chain. This topic is expected to be continued beyond the 2020 threshold. It focuses on agricultural biodiversity relevant for food production and agriculture and all components of biological diversity that constitute agro-ecosystems. The scope of projects eligible for financing include research on small organisms and their interactions with plants, the interrelation between farm management and native agricultural biodiversity, as well as the creation and sustainable development of dynamic value chains for locally adapted plant varieties and animal breeds and products thereof.

IPARD funds are already in implementation based on the national development programs presented to the EC and could be evaluated to address possible financing for research or capacity building for *ex-situ* and especially *in-situ* conservation efforts.

A detailed stock taking of research funding opportunities is outside the scope of this synthesis report. Further information is available through the European Commission’s [Directorate General for Research and Innovation](#) and the [Horizon 2020](#) webpage.

Also, the Synthesis Report: [Animal Genetic Resources in the EU](#) and [Animal Genetic Resources in the EU](#), which are part of Literature Review developed under the Preparatory actions on EU plant and animal genetic resources provide an overview of the actual trends in genetic resources research. A more detailed description of the networks involved in current research on genetic resources in agriculture at the European level is also to be found in the Final Report of the [Preparatory action on EU plant and animal genetic resources](#).

Regarding EU financed measures at the national level, the European Commission has stated that agro-environment measures, forming part of Rural Development, are also a viable vehicle to



support practical farming to perform on-farm conservation of genetic resources. They also include the possibility to compensate farmers for additional costs and income foregone resulting from conservation activities aiming to preserve endangered breeds and crops under threat of genetic erosion. Furthermore, it states that the conservation and sustainable use of genetic resources is also an integral part of the Common Agricultural Policy.

All these actions form part of the EU approach to the conservation and sustainable use of genetic resources in agriculture, that aim to enhance the economic viability of the agricultural systems involved in genetic resources conservation, especially for underutilized species, as well as traditional and local breeds and crops. This is not always followed in countries like Macedonia, where local crops and breeds that show a higher market demand than production can currently deliver and are as such prioritized in the measures of the rural development program. This could result in a lack of support for underutilized local varieties or local breeds.

Other actions have included the establishment and operation of collections and related databases on genetic resources, breeds and plant varieties, but especially aimed at coordinating the activities of different collections and harmonizing their approach to ensure the exchangeability of data and materials and the creation of permanent information systems.

8.6. OTHER MEASURES

GIZ's publication *Agrobiodiversity – the key to food security*, published in 2015, offers extensive guidance on most topics related to the conservation and sustainable use of agrobiodiversity with a focus on developing countries, offering an ample variety of case studies that can serve as a basis for concrete actions within the SEE countries and entities if adapted to their context. Its fact sheets contain valuable information on the nature and challenges in creating incentive systems for ecosystem services provided by farmers through the conservation and sustainable use of agrobiodiversity, but also for the support of market incentives and the development of agrobiodiversity value chains.

The global initiative The Economics of Ecosystems and Biodiversity (TEEB)'s Interim Report offers several options for the financial validation of ecosystem services, also related to the conservation and sustainable use of biodiversity in agriculture and food production, although sometimes the approach points towards a prioritization of intensive agriculture on viable lands to expand the protected areas. This approach however, could also be of interest to reduce the pressure on low-input agricultural areas and enable them to focus on the conservation and sustainable use of locally adapted plant and animal genetic resources.

8.7. IDENTIFIED GAPS AND CONSTRAINTS

In the SEE countries and entities, there is not always a clear legal definition of the roles and responsibilities of the relevant institutions and units active in the area of agrobiodiversity conservation and its sustainable use. In some cases no national authorities are defined in legislation to include agrobiodiversity in public efforts towards rural development, climate change adaptation and other policy areas. Sometimes there are parallel structures in different ministries or other public institutions administrating different, but related aspects of the identification, characterization and conservation of genetic resources.

Legal definitions related to basic terminology of agrobiodiversity conservation also need to be addressed to ensure that there is a coherent approach between research, public administration, programming instruments and support schemes when it comes to e.g. herd books, variety registries.

In some cases, gene banks and *ex-situ* conservation of genetic material need to be clearly defined

in legislation to ensure the realization in practice and an adequate and permanent funding.

A basic principle of the EU community programs for the improvement of the conservation and use of genetic resources in agriculture has been to promote the active communication and exchange between science, seed production, and breeding and farming practices.

Certain common aspects of legislation in the SEE countries and entities point towards a working legislative framework in place for most subtopics related to agrobiodiversity conservation, such as *in-situ* and *ex-situ* conservation, institutional roles in conservation, approval and distribution of seeds, etc., but there is often a lack of enforcement and implementation, even though in some cases concrete bylaws and regulations, sometimes even the specific national programs and action plans are in place. Additionally, viable mechanisms with sufficient financing for the transfer of genetic resources, scientific findings and technical knowledge to farmers are not always in place.

A good example concerns the funding of *in-situ* and *ex-situ* conservation of agrobiodiversity that is not sufficiently provided in countries like Albania. Due to the lack of effective mechanisms for its activation, the funding of concrete actions is almost impossible. The same applies to subsidies and support programs that sometimes lack a practicable definition of the financing process, although their existence and funding is foreseen in the existing legislation.

In Montenegro, after the National Program of Conservation and Sustainable use of the Genetic Resources in Agriculture (2008-2013), and the Action Plan for Conservation of the Genetic Resources in Agriculture (2009-2013) expired, there has been no concrete plan for the allocation of funds to agrobiodiversity conservation and its sustainable use in agriculture and food production.

Another issue concerns multiple institutions and legal frameworks involved in certain issues related to the use of genetic resources in agriculture and food production, as is the case in BiH, where the Food Safety Agency has created a series of regulations on the basis of the Law on Food, while the Institute for Intellectual Property applies the Law on Industrial Property of Bosnia and Herzegovina and the Law on the Protection of Geographical Indications. In addition, RS and FBiH have their own regulations, which are partly in conflict with the national laws.

In some cases, legislation does not sufficiently define and differentiate between the necessary actions to implement certain objectives or tasks. This is the case in Macedonia, where referent collections maintenance and gene bank operation are not sufficiently delimited, resulting in a lack of funds to cover both activities equally. Similarly, not all relevant species are always included in the relevant laws and regulations, leaving certain areas unregulated.

There seems to be a need for harmonization and simplification of legislation in several SEE countries and entities in order to comply with standards set up in international conventions, treaties and protocols, as well with the European Commission Directive 2008/62/EC on conservation varieties of agricultural species. Furthermore, efforts to identify and eliminate duplicities in legislation, as well as unclear definitions and mixing up of different tasks in accordance with national, international and EU standards for agrobiodiversity conservation and for its sustainable use could eliminate certain shortcomings in their enforcement.

There is also a need in most SEE countries and entities to create or improve secondary legislation for the enforcement and support of the conservation and use of agrobiodiversity and their funding. Additionally, national or entity programs and action plans for agrobiodiversity conservation and its sustainable use need to be created or updated to ensure their adequate funding and implementation.

Specific secondary agrobiodiversity legislation could be an asset to delimit actions and ensure funding and infrastructure for its conservation and sustainable use beyond biodiversity conservation, which in most cases involves other species and measures.



Small SEE countries and entities in terms of production and consumer market size face also hurdles as a result of the relatively low quantity produced and lack of financial support for producers active in the area of genetic resources conservation and its sustainable use. The support to the formation or strengthening of producer's associations and marketing and local processing of traditional varieties and breeds, as well as sufficient funding of their conservation activities could present a path to facilitate their engagement and commitment. This could also apply to small producers in bigger markets in other SEE countries and entities.

In general, all national and entity reports point towards the need for legislation and its corresponding programs and action plans that are more focused on an effective and efficient implementation of actions to ensure agrobiodiversity conservation and foster its sustainable use in agriculture and food production.

In general, the main problems faced by most SEE countries and entities in view of their international obligations on the basis of the FAO instruments, CBD, the SDGs and the European Action Plan for Biodiversity in Agriculture are:

- No coherent and comprehensive integration of agrobiodiversity into national laws and regulations governing rural development and biodiversity conservation. Often not enough awareness for the role and importance of extensive agriculture in biodiversity conservation and the financial means and measures necessary for its integration into active policy implementation.
- Often fragmentation of agrobiodiversity issues in too many laws and regulations that impede the enforcement of their agrobiodiversity elements. This also makes it almost impossible to have an overview over the necessary definitions, roles and responsibilities and financial and staff allocation for enforcement for agrobiodiversity conservation and promotion of its sustainable use.
- Insufficient inclusion of agrobiodiversity in national strategies and action plans for rural development, biodiversity or environmental protection and insufficient institutional resources and financial allocation in cases where integration has taken place. In some cases insufficient resource allocation for concrete strategies for the sustainable use of plant and animal genetic resources in agriculture.
- Insufficient inclusion of support to farming that perform *in-situ* and on farm conservation of plant and animal genetic resources in agro-environmental measures.
- Focus of support in operational programs to local breeds and varieties for economically most promising products, instead of prioritizing varieties and breeds in need of support for their economic viability.
- Insufficient financing and a coherent coordination and approach to conservation in legislation, strategies and action plans aimed at the characterization, monitoring and evaluation of genetic resources in agriculture and establishment of information systems. Duplicities in responsibilities and lacking legal definitions.
- Insufficient inclusion of support to farmers, farmers associations and breeding associations for networking and coordination activities within the community, with research and policy makers and with other sectors. These actions should be aimed at raising the access of farmers to genetic resources and also raising the economic viability of the agricultural systems involved in genetic resources conservation, especially for underutilized species, as well as traditional and local breeds and crops.
- Insufficient strategies and action plans to raise awareness in the general public for the importance and value of local varieties and breeds for agrobiodiversity conservation and the conservation of traditional natural and cultural heritage.

On a more concrete level, the following gaps were identified based on FAO's criteria within the

Global Action Plans for plant and animal genetic resources in agriculture:

For *ex-situ* conservation:

- No clear definition of roles, responsibilities, competence and financing for institutions and staff involved in *ex-situ* conservation.
- Unclear financing and resource allocation for gene banks.
- Lacking of clear financing schemes for *ex-situ* conservations projects
- Lacking provisions to establish cooperation between gene banks and seed production/distribution for the sustainable use of plant genetic resources.
- Lacking provision to establish cooperation between gene banks and breeders for the sustainable use of animal genetic resources.
- Lacking of provisions to ensure that farmers have access to seeds and can participate in development programs for improving the quality of locally adapted plant varieties.
- Lacking of provisions to ensure that breeders and livestock keepers have access to support for breeding programs and can improve the quality and genetic traits of locally adapted breeds.
- Focus on locally adapted plant varieties and breeds that are commercially attractive or already widespread instead of prioritizing underused or endangered species and varieties/breeds.

For *in-situ* conservation and sustainable use:

- No coherent and locally adapted plans for *in-situ* and on-farm conservation and management of locally adapted plant varieties and animal breeds.
- No or insufficient plans for the inclusion and remuneration of farmers for their participation on conservation and sustainable use activities in accordance with ecosystem services approaches.
- No inclusion of agrobiodiversity in all relevant legislation and/other programs, strategies and action plans as a cross-cutting issue.
- Insufficient provisions for capacity building for farmers and seed producers/distributors to foster and support the sustainable use of locally adapted, traditional plant varieties, specially underused and endangered plant genetic resources.
- Insufficient provisions for capacity building for breeders and livestock keepers to foster and support the sustainable use of locally adapted, traditional breeds.
- Insufficient provisions to raise awareness among policy makers and public servants regarding the essential importance of agrobiodiversity conservation and of farmers for the sustainable use and *in-situ* conservation of animal and plant genetic resources in agriculture and food production.
- Insufficient provisions to address the potential for synergies and cooperation between farmers using locally adapted plant varieties and animal breeds and tourism, food trade, gastronomy, etc.

A detailed gap analysis of legislation and policy in the SEE region would need to be developed with a full translation into English of all legal texts and a detailed stock taking and inventorying of all aspects named above in each instrument. This was not within the scope of the national reports of this regional study and therefore not possible within the frame and available budget of this synthesis report. The presented results can serve as a first step towards a more profound analysis of the integration of agrobiodiversity as a cross cutting issue into all relevant legislation and policy instruments.



9. POLICY AND LEGAL PERSPECTIVES AND RECOMMENDATIONS FOR FURTHER ACTIONS

Based on the FAO's [Second Global Plan of Action for Plant Genetic Resources for Food and Agriculture](#) and the [Global Plan of Action for Animal Genetic Resources](#), presented in chapter 8, the following common perspectives and recommendations, valid for both plant and animal genetic resources in agriculture and food production, are made along these lines. They do not necessarily fully apply to all countries and entities in SEE. Nevertheless, they show the need for a more coherent and coordinated approach at the national and regional level, aiming at establishing a link between evidence produced by research, regulation and interventions designed by policy maker, such as national strategies and action plans, and their implementation in the field with a strong commitment and participation by farmers, NGOs, associations and other sectors such as tourism, gastronomy and food retail.

All of the recommendations should be read as opportunity for improvement of conservation of agrobiodiversity, unless already implemented. The actual degree of implementation varies between the countries and entities, and some of the recommendations only apply for selected cases. The recommendations are structured by strategic objectives, as shown in the following box.



Foto by: Zoran Jovic

Strategic objectives of the recommendations

Creation and upgrade of policy and legislation through:

- analysis of international framework;
- evaluation of the current status;
- revision and adaption of legal and administrative rules so that agrobiodiversity, its conservation, development and sustainable use becomes an objective of agri-environmental policies;
- barriers for the sustainable use of genetic resources should be removed, exchange facilitated and benefit sharing ensured.

Improvement of institutional capacities through:

- legal provisions;
- clearly defined responsibilities;
- knowledge exchange and infrastructural development;
- staff and financial resources.

Improvement of agrobiodiversity conservation through:

- a monitoring system which is necessary to assess and report status and trends;
- increase of reproducibility, comparability, transparency, and knowledge availability by documenting and/or standardizing methods;
- improvement of *in-situ* and *ex-situ* conservation measures;
- consideration of the socio-economic context for conservation of agrobiodiversity and the motivation of farmers.

Improvement of scientific and public awareness through:

- strengthening the research and educational sector;
- public awareness is strongly linked to demand and the market-based component of conservation.

Further enabling actions to increase demand for products through:

- improved valuation through labelling systems;
- support for small scale food processing in local facilities.

Improvement of regional cooperation facilitates:

- knowledge transfer;
- market opportunities;
- effective larger scale conservation action.

In chapters 9.1. to 9.6., detailed recommendations are given along these objectives. The core aspects of the recommendations are highlighted in italics, with further explanatory text added in most cases.



9.1. RECOMMENDATIONS FOR CREATION AND UPGRADE OF POLICY AND LEGISLATION

For a successful and sustainable implementation of Conservation of Genetic Resources for Food and Agriculture into national and regional policies, a structured compilation of the **international framework** is necessary, including an **evaluation of the current status** of each country or entity. In this respect it is required to:

- *Evaluate the status of signature and ratification of all relevant treaties and conventions and their respective protocols in a structured way to assess how far each SEE country and entity is in this process and which steps could be taken to accelerate the process and its integration into national legislation and national strategies and action plans.*
- *Meet the international obligations deriving from multilateral conventions and treaties and their protocols in the field of biodiversity and agrobiodiversity as they were ratified by the SEE countries and entities.*
- *Clearly link to climate actions and their relevant instruments, taking into account ecosystem based approaches and mainstreaming of biodiversity into rural development and agricultural production with a view of climate mitigation and adaptation strategies and actions could lead to a better usage of available funds. For example, local plant varieties and animal breeds are a crucial source of genetic material for climate change adaptation.*
- *Further approximate the national legislation to EU legislation within the enlargement process. Agrobiodiversity issues need to be addressed clearly and the goals need to be set towards an integration of its conservation and sustainable use in agriculture and food production as a part of the overall agricultural strategy set up in a coherent approach.*
- *Take provisions for the monitoring and enforcement of the Convention on Biodiversity and the Nagoya Protocol (if ratified), including Access and Benefit Sharing (ABS) of genetic resources, ABS of traditional knowledge and legal registration and protection of traditional livestock products, consent and participation of local communities.*

The country's or entity's system of **legal and administrative rules needs to be adapted**, so that agrobiodiversity, its conservation, development and sustainable use becomes an **objective of agro-environmental policies. Barriers for the sustainable use of genetic resources should be removed**, exchange facilitated and benefit sharing ensured. It is important to:

- *Compile a detailed stock taking and a comprehensive analysis of all legal texts existent and inventorying of all elements contained in each legal instrument. This structured analysis is necessary to tackle the issue of mainstreaming agrobiodiversity into legislation in all SEE countries and entities.*
- *Develop or update the country/entity agrobiodiversity strategies and action plans for the conservation, development and sustainable use of plant and animal genetic resources in line with the national and international framework, which define goals and pathways to achieve conservation of genetic resources *in-situ* and *ex-situ*, including allocation of financial and institutional resources. Take into account the specific climatic, geographic, socio-cultural, demographic and economic context of each region within the country or entity.*
- *Include a clear approach towards implementation in all country/entity programs, strategies and action plans for *in-situ* and *ex-situ* conservation of genetic resources, including financial support to farmers and farmers' associations and stakeholder involvement.*
- *Strongly link country/entity agrobiodiversity strategies and action plans to the overall goals as defined in the relevant legislation and national development strategies; especially high potential of synergies are seen with climate change adaptation activities and development*

of cultural landscapes or habitat management. Make sure that no measures or actions are being taken in other areas (such as agricultural extension services) that work in the opposite direction or contradict the goals as stated in the national biodiversity and agrobiodiversity strategies. In this strategies provide a link to institutional structures in charge of the enforcement of mainstreaming of agrobiodiversity and to the procedures for the support to institutions, research and education, farmers and other stakeholders and sectors.

- *Include and develop Agri-environmental measures within country/entity strategies and action plans in all SEE countries and entities to trigger a more concerted effort with organic production and other forms of rural development support and agricultural extension services. Agro-environment measures such as HNMF management and nature protection measures could support the conservation and sustainable use of plant and animal genetic resources.*
- *Take care that the seed marketing regulations do not hinder the exchange of genetic material between seed savers and encourage stakeholders to register their valuable varieties.*
- *Develop hygienic standards for production, processing, and retail in a way friendly to small scale and on farm production; this facilitates the valorisation of local varieties and breeds for farmers and opens the potential for marketing of special products.*
- *Establish or further develop coherent legal definitions and standards of fundamental concepts such as indigenous, traditional, locally adapted and autochthonous breed, *in-situ* and *ex-situ* conservation methods and programs, gene bank, cryo-conservation, breed management and breeder organization, herd book, genealogic book, red book, and risk status.*

9.2. RECOMMENDATIONS FOR IMPROVEMENT OF INSTITUTIONAL CAPACITIES

To improve institutional capacities for the conservation of plant and animal genetic resources for food and agriculture different levels of acting are required: **legal provisions and clearly defined responsibilities, knowledge exchange and infrastructural development, staff and financial resources** to fulfil the required tasks.

- *Adequately fund existing institutions dealing with agrobiodiversity* Including research, administration and education, NGOs, associations and private companies. Sufficiently fund identification, monitoring and inventorying of plant genetic resources and their conservation status. Operational *ex-situ* gene banks and *in-vivo* facilities for plant and animal genetic resources should be available in all countries and entities. It should be based on a long-term predictable funding allocation.
- *Place agrobiodiversity and the conservation and sustainable use of local and native breeds into the task list of relevant administrative institutions.*
- *Develop legal provisions for:*
 - responsible institutions for identification, characterization and monitoring of the population status of plant and animal genetic resources for food and agriculture.
 - responsible institutions for the administration of the country/entity database.
 - country/entity information system for monitoring of on farm diversity, with special focus on animal genetic resources.
 - responsible institutions for international and multilateral cooperation and exchange.
 - country/entity network, country/entity coordinator and country/entity focal point for genetic resources for food and agriculture.
 - a country/entity agency for farm management, especially of AnGR.



- *And care for their implementation.*
- *Strengthen the capacity of research and education institutions* for the support of education, research and training to tackle the inventorying, characterization, monitoring, conservation, development and sustainable use of plant and animal genetic resources.
- *Establish or strengthen institutional monitoring structures* that also harmonize the technical standards and protocols for collection, phenotypic and molecular characterization, storage conditions, evaluation, and multiplication.
- *Create or strengthen a country/entity agrobiodiversity coordination centre*, best within an existing institution dealing with agrobiodiversity. It may also be installed as a “virtual centre”, acting as a well-coordinated network of specialist institutions.
- *Foster cooperation and synergies between different authorities and stakeholders* such as ministries, central and local public authorities, public and private agencies, the research and education communities and the private sector, including farmers, farmers associations, and other economic sectors.
- *Provide training for the professionalization of activities of NGO stakeholders* including project development, funding acquisition, as well as project and financial management.
- *Shape all responsibilities, structures, and processes in a transparent manner.* Support to all actions described above should be documented and administered in a publicly controllable, criteria based, transparent way including the distribution of subsidies, grants, technical support, training and other instruments and provision of sufficient financial means, staff and infrastructure. Formation or further development of a database with implemented projects and status of agrobiodiversity can be a means to achieve this.

9.3. RECOMMENDATIONS FOR IMPROVEMENT OF AGROBIODIVERSITY CONSERVATION

As a first requirement for evidence based agrobiodiversity conservation the development and implementation of **a monitoring system is necessary to assess and report status and trends**. This should be initiated by a structured and comprehensive assessment of the conservation status, geographical distribution and use of all relevant plant varieties and breeds, beginning with existing data, but also performing the necessary field work to complete the picture and give law and policy makers a basis for a more targeted approach. For this purpose it is needed to

- *Involve research institutions, farmers and farmers' associations, NGOs and other stakeholders* to ensure a solid evidence basis for the development and prioritization of conservation efforts.
- *Prepare and publish variety and breed lists and define lists of endangered target breeds and varieties* for having defined subjects of measures and legal treatment.
- *Establish and/or maintain country/entity databases* and information systems for locally adapted animal breeds as well as autochthonous and local plant varieties.
- *Conduct a status quo assessment and establish, extend or maintain a country/entity (or regional) monitoring system* on numbers of individuals, areas, populations and production/yields, including the level of crossbreeding with modern or introduced breeds and of inbreeding of locally adapted breeds. Derive a comparable assessment of vulnerability of the populations and define a regular reporting procedure for PGR and AnGR.
- *Include the collection and assessment of socio-economic data* to facilitate the evaluation of threats and success factors for in situ conservation of genetic resources.
- *Allocate adequate financial funds.*

A further requirement for evidence based agrobiodiversity conservation is to increase reproducibility, comparability, transparency, and knowledge availability by documenting and/or standardizing methods of:

- *Description and genetic characterization of plant and animal genetic resources.*
- *Agronomic and production related evaluation* including for the estimation, monitoring and assessment of genetic variability and inbreeding, within breeds and breeding programs for the management of genetic reserves.
- *Estimation of the state of use and the extinction risk* of animal breed and plant varieties populations and early warning triggers on the state of plant and animal genetic resources.
- *Education and training* in the field of conservation of plant and animal genetic resources.

An effective implementation of country/entity programs, strategies and action plans for **conservation *in-situ*** should consider doing the following:

- *Prioritize local or locally adapted plant varieties and animal breeds that are in a critical status, alongside with further improved support for less critical endangered genetic resources.*
- *Financially support farmers and farmers associations or breeders associations, including, if not yet existent, the creation of a breeders registry to foster transparency of support and cooperation.*
- *Support network building actions* to foster the creation or strengthening of breeders' organizations, community-based conservation organizations, non-governmental organizations and other actors to participate in conservation efforts.
- *Support regional cooperation* and exchange of published regional breed and seed catalogues. Identical breeds are sometimes found in several SEE countries and entities although their names may vary. In some cases cooperation between neighbourhood countries or entities can generate the meta-population necessary to avoid inbreeding effects in animal populations. Also, for plant genetic resources close cooperation may reduce efforts and improve and stabilize the results.
- *Raising public awareness* for the values of agrobiodiversity.
- *Analysing social and socio-economic data of threats and success factors* for in-situ conservation.
- *Encourage in-situ-conservation efforts for AnGR in nature-protected areas* where appropriate.
- *Encourage conservation efforts in private gardens* of urban or non-agricultural households.
- *Support the rehabilitation of ruminant pastoral systems* to conserve this habitat and contribute to ecological land use, particularly in areas where grassland is the result of long history of interaction between nature and human intervention.
- *Support and conduct documentation of specific traditional knowledge connected to the keeping and use of autochthonous and locally adapted breeds and varieties.* Local strains often developed in certain circumstances perform best under specific type of management or processing down to local specialty recipes. This specific knowledge is required for successful *in-situ* conservation.

Recommendations for **conservation *ex-situ*** are:

- *Provide or support adequate multiplication of seeds and planting material* in all SEE countries and entities.
- *Support and improve capacities for ex-situ conservation (gene bank) of AnGR, prioritizing the*



breeds in most critical conservation status. Provide existing facilities with the resources necessary to run a long-term gene bank. For efficient use of resources a well-coordinated and cooperative approach is useful.

- *Consider to establish farms which are dedicated to conservation breeding of endangered breeds.* This includes options to refund farmers for breeding of certain target animals as a conservation action, as well as running special conservation farms. These could earn additional income through development of additional service-products in education, tourism, health food, and other sectors.
- *Develop models of public-private partnerships with initiatives and companies offering ex-situ conservation and reproduction of local plant varieties for agriculture and gardening to enable farmers to use genetic resources that are not available anymore or not in the adequate quality for their conservation and sustainable use efforts.* These approaches need to respect the principles of access and benefit sharing. Also, in AnGR the combination of private interests with public conservation objectives may generate opportunities for effective funding of facilities.
- *Provide for duplication of all gene bank collections in an international network of seed banks, possibly also in the “Svalbord Global Seed Vault”; also for AnGR to ensure the duplication of ex-situ conserved genetic resources.*

Strongly consider the **socio-economic context** for conservation of agrobiodiversity and the **motivation of farmers** to work with traditional plant varieties and animal breeds by:

- *Recognizing farmers as the guardians of genetic resources and reward their contribution.*
- *Introducing the conservation of plant and animal genetic resources as a cross cutting issue for measures aimed at diversifying rural economy.*
- *Improving the situation of women in rural areas, with respect to access to information, practical knowledge etc. and foster and create enough opportunities for young educated women to stay in small communities and develop or join economic activities related to the sustainable use of agrobiodiversity.*

9.4. RECOMMENDATIONS FOR IMPROVEMENT OF SCIENTIFIC AND PUBLIC AWARENESS

A major requirement is to **strengthen the research and educational sector** on agrobiodiversity issues. This should be achieved by:

- *Conducting a needs assessment of the research and educational sector at the institutional level, as well as regarding experts in the field of farm genetic resources.*
- *Including and fostering agrobiodiversity in research in universities and other academic institutions.*
- *Enabling an active participation of the research community in the formulation of country/entity strategies and action plans for the conservation and sustainable use of agrobiodiversity in agriculture and food production.*
- *Developing training plans to foster knowledge transfer within the research and education community, to public administration, local authorities, agricultural extension services, farmers and farmers’ associations and other stakeholders.*
- *Fostering scientific and educational exchange at the international and regional level and the formation of experts in the field of farm animal genetic resources.*
- *Educating and training farmers on the possible benefits of maintaining autochthonous and*

local varieties/breeds, producing traditional products, and applying and conserving the traditional knowledge as well as on the crucial role of women in the conservation of agrobiodiversity.

- *Raising long-term awareness* through specific education programs in kindergardens and schools.

Public awareness is a key factor for conservation of agrobiodiversity. It is linked to **demand and the market-based component of conservation** by increasing the market value of PGR and AnGR and it is crucial for increasing policy relevance of the topic. It is crucial to:

- Raise the awareness of the *general public*.
- Raise awareness and facilitate knowledge transfer for *farmers, farmers' associations, sectors such as tourism, food production, gastronomy and retail*, e.g. on the importance and opportunities for marketing of farm animal products and the diversification of rural economy through agrobiodiversity.
- *Raise the awareness of policy makers*, public authorities and local administrations, including agricultural extension services.

Such **awareness raising can be achieved through:**

- *Presenting the results of the assessment of conservation status to policy makers* in a manner that enables them to make evidence-based policy decisions.
- *Promoting activities using the ethno food, slow food and other current culinary trends*, as well as agro and rural tourism, ethno villages, spa centers, etc.
- *Promoting activities for mainstreaming agrobiodiversity by local events, documentaries, TV and radio shows*, showcasing the use and conservation of genetic resources in agriculture, including the implementation of specific projects and activities.
- *Actions to embed local varieties and animal breeds in cultural and touristic events*; traditional products could also be promoted through agrobiodiversity campaigns pointing out not only the environmental and economic value, but also the nutritional and culinary value
- *Granting projects or subsidies (and applying clear and transparent requirements and criteria for this purpose) towards fostering network building* among different stakeholders and the involvement of other sectors, such as tourism and food production, as well as retail and gastronomy.

9.5. RECOMMENDATIONS FOR FURTHER ENABLING ACTIONS TO INCREASE DEMAND FOR PRODUCTS

Recommendations for further enabling actions to **increase demand for products** based on autochthonous and local plant varieties and animals breeds are related to **declarations of origin and protected geographical denominations, organic farming, and support for small scale food processing in local facilities**. Declarations of origin and protected geographical denominations and organic farming can be an effective tool to raise the market value and income obtained from products made out of local plant varieties and animal breeds. This applies to the direct marketing of agricultural and food products on the farms, as well as in the local and urban gastronomy and accommodation sectors as well as specialized and general retail. Small-scale food processing in local facilities can enable market access and strongly increase demand and value for local products from remote areas. Key recommendations in this regard are to:

- *Develop, implement, and promote quality standards*
- *Implement and promote robust and reliable certification and labeling systems* such as for



Protected Geographical Indication (PGI), Protected Designation of Origin (PDO), and Organic Production.

- *Enhance direct marketing on farm, local gastronomy, specialized urban gastronomy and specialized retail stores.*
- *Support and further develop organic agricultural production, as a chance for farming of locally adapted or autochthonous varieties and breeds and development of special quality food products.*
- *Support small scale food processing on farm or in local facilities to meet standards in hygiene and animal welfare by providing necessary technology, information and training, support cooperation and feasible regulations.*
- *Support value chains with local plant varieties and animal breeds that involve all relevant sectors, such as agriculture, food production, gastronomy, tourism and others and obtain the participation of the media through marketing and awareness raising actions, including the registration of products of geographical origin and their marketing. These initiatives should also contain elements of technology transfer, quality assurance and product development to improve the quality of traditional products whenever needed and foster innovative products out of local plant varieties and animal breeds.*
- *Taking into account the crucial role of locally adapted and local breeds in the sustainable development and income generation of farmers from food products made of the animal genetic resources still existent in all SEE countries and entities. Locally adapted breeds can be the basis for traditional brands and products that can be marketed in the frame of cultural traditions and events, if possible combined with touristic, gastronomy and retail participation to ensure that the value added of these products in terms of agrobiodiversity conservation, but also in terms of their culinary and quality value is communicated to consumers. These actions can provide an answer to young farmers migrating to urban centers due to a viable economic perspective in their home communities.*

9.6. RECOMMENDATIONS FOR IMPROVEMENT OF REGIONAL COOPERATION

International and regional cooperation facilitates knowledge transfer, market opportunities and effective larger scale conservation action. It is recommended to:

- *Create a regional agrobiodiversity network involving various participants in the process of agrobiodiversity use and conservation. Results and activities should be disseminated through the web portal created by the network. Success stories and best practice can be shared through this network, as well as research cooperation and management experience.*
- *Promote and support academic and research exchange and participation on scientific events.*
- *Establish or strengthen cross-border and regional cooperation for the conservation and use of farm animal genetic resources.*
- *Strengthen horizontal knowledge exchange at the cross-border and regional level and establish cross-border and regional cooperation programs and projects.*
- *Foster regional cooperation through the creation of a virtual platform providing data on local and locally adapted breeds, their phenotypical and genetic characteristics, population status, status of crossbreeding and inbreeding, structure and status of *in-situ* and *ex-situ* conservation, monitoring and evaluation, support schemes, relevant stakeholders and cooperation partners, production of traditional products from local and locally adapted breeds, registered or protected declarations of origin, etc.*



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