



DEVELOPING A NATIONAL AGRI-ENVIRONMENT

PROGRAMME FOR SERBIA



DEVELOPING A NATIONAL AGRI-ENVIRONMENT

P R O G R A M M E F O R S E R B I A

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Abbreviations

AE	Agri-environment	IPGRI	International Plant Genetic Resources Institute
BBI Matra	“International Policy Programme Biodiversity” of the Dutch Ministry of Agriculture, Nature and Food Quality	IPA	Important Plant Areas
CBD	Convention on Biological Diversity	IPA	Instrument for Pre-Accession Assistance
CAP	Common Agricultural Policy	IPARD	Instrument for Pre-Accession Assistance for Rural Development
CEE	Central and Eastern Europe	IUCN	International Union for Conservation of Nature
CMEF	Common Monitoring and Evaluation Framework	K	Potassium
CORINE	Coordination of Information on the Environment	LFA	Less Favoured Areas
DREPR	Danube River Enterprise Pollution Reduction Project	LU	Livestock Unit
EAFRD	European Fund for Agriculture and Rural Development	MAFWM	Ministry of Agriculture, Forestry and Water Management
EEA	European Environment Agency	N	Nitrogen
EEC	European Economic Community, renamed the European Community (EC) in 1993	NAEP	National Agri-environment Programme
EC	European Commission	NGO	Non-Governmental Organization
EC	European Community	NMP	Nutrient Management Plan
EU	European Union	NRDP	National Rural Development Plan
FAO	Food and Agriculture Organization of the United Nations	OF	Organic Farming (Scheme)
HNV	High Nature Value	P	Phosphorus
HNVF	High Nature Value Farmland	PA	Protected Area
IEEP	Institute for European Environmental Policy	PBA	Prime Butterfly Areas
IBA	Important Bird Areas	SEPA	Serbian Environmental Protection Agency
		SNR	Special Nature Reserve
		STAR	Serbian Transitional Agriculture Reform
		SW	Soil and Water Protection (Scheme)
		TB	Traditional Breeds (Scheme)
		UAA	Utilized Agricultural Area

Foreword

Serbia's nature is characterized by high floristic and faunal diversity that represents a significant share of the wealth and diversity of Europe's natural heritage. The conservation of preserved natural areas, the presence of many different species of flora and fauna and the diversity of ecosystems make Serbia one of the centres of biodiversity on the Balkan Peninsula, and also at the European scale, while also laying out the important tasks in order to secure their functioning and protection.

The 461 protected natural areas in the country are significant for the protection of biodiversity. The survival of many species in these valuable ecosystems is often directly dependent on the state of the land and its uses. In the correlation between man and wildlife, protecting natural resources, ensuring the sustainable use of agricultural land, and implementing other active protection measures serve to support the development of local communities, while also ensuring nature conservation.

In recognizing the importance of establishing a programme of agri-environmental measures in Serbia, especially from the perspective of conserving biodiversity, the Institute for Nature Conservation of Serbia became involved in the implementation of the project "Support for Agri-environment Policies and Programming in Serbia". It contributed by providing important data on Serbia's biodiversity and protected natural resources and on the country's 61 Important Plant Areas (IPA), 42 Important Bird Areas (IBA) and 40 Prime Butterfly Areas (PBA).

Agricultural practices recognized as *High Nature Value Farming* (HNVF) represent a manner of managing and using the land which also provides added value to biodiversity protection, including the development of local communities.

The Institute's involvement in this project follows its long-term activities and its contribution in preparing for the application of European nature conservation standards in Serbia. The protected natural areas Deliblato Sands and Mt. Stara Planina were selected as pilot areas for the project, as they represent typical protected natural resources with high levels of biological diversity. They are, at the same time, a good example for confirming that the aims and priorities of High Nature Value Farming are compliant with the protection measures for areas of protected nature value.

This project and similar projects are especially important as they represent a step forward in confirming the necessary legal regulations and agri-environmental programmes at the national level, and therefore represent a sound basis for achieving social development objectives that are complementary to nature protection objectives. The importance of this project will be clearly recognized in the near future, and the commitment of all project participants has contributed to a clear definition of the objectives and future measures necessary for the conservation of biological diversity and the application of good agricultural practices.

The conservation of biodiversity and ensuring sustainable development, through the support to traditional farming methods and the development of agritourism, could also facilitate in decreasing or stopping the emigration of the rural population.

Nenad Stavretović
Director,
Institute for Nature Conservation of Serbia



Project Partners

Avalon



Avalon is a not-for-profit organisation based in the Netherlands. It was established in 1991 to stimulate the development of sustainable rural development in Central and Eastern Europe (CEE). During its early years, Avalon focused specifically upon introducing the concept of organic farming. From 1996, it began to diversify its activities and from 1997–2001, a consortium led by Avalon (together with several CEE and EU-partners) implemented a programme of projects funded by the Dutch government, entitled “Agri-Environmental Programmes in Central and Eastern Europe”. These projects were undertaken in the ten CEE Accession Countries preparing to join the European Union in response to the urgent need at that time to introduce, promote and develop the concept of agri-environment payments. The projects made a significant contribution to introducing the principles and practice of agri-environment policy-making in the CEE region and left a clear legacy, including a number of active national Agri-environment Working Groups. These working groups continued to elaborate pilot agri-environment projects for pre-accession funding and full national agri-environment programmes for EU co-financing after accession. This approach was further successfully replicated in Croatia during 2002–2004 and in Turkey in 2006–2008.

IUCN



IUCN, International Union for Conservation of Nature, helps the world find pragmatic solutions to our most pressing environment and development challenges.

IUCN works on biodiversity, climate change, energy, human livelihoods and greening the world economy by supporting scientific research, managing field projects all over the world, and bringing governments, NGOs, the UN and companies together to develop policy, laws and best practice.

IUCN is the world’s oldest and largest global environmental organization, with more than 1,000 government and NGO members and almost 11,000 volunteer experts in some 160 countries. IUCN’s work is supported by over 1,000 staff in 60 offices and hundreds of partners in public, NGO and private sectors around the world.

IEEP



The Institute for European Environmental Policy (IEEP) is an independent policy studies institute established in 1982 with particular expertise in agriculture, the environment and rural development policy in EU Member States and Accession Countries. In addition to working regularly for the European Commission, the European Parliament and the European Environment Agency, IEEP undertakes studies for a wide range of national and international organisations. IEEP has over 20 years experience in studying the environmental aspects of EU agricultural policy and first developed the concept of High Nature Value (HNV) farming systems in the early 1990s in conjunction with the Dutch government. IEEP staff members follow environmental policy developments closely and stay in regular touch with relevant officials in the European Commission and national governments.

Natura Balkanika



The Natura Balkanika Nature Society is a regional NGO founded in 2000 to support the revival, protection and promotion of the natural and cultural values of the Stara Planina Mountains and Gornje Ponishavlje region in south-east Serbia. Its activities are primarily directed towards the promotion of environmentally-friendly agricultural practices, the conservation of domestic animal genetic resources, natural biodiversity and local cultural heritage, and providing support for participatory approaches and bottom-up initiatives as the basis for the region’s sustainable rural development.

Natura Balkanika has acquired a high level of knowledge and experience in the field of rural development and cooperates with a large network of agricultural, environmental and social experts and partner organisations at the local and national levels to implement activities including development-orientated action, research, education and training, and cooperation in various national and international projects.





CHAPTER 1:

INTRODUCTION

1.1 The Project

Agri-environment support payments are an obligatory measure for all EU Member States to implement under Pillar II of the Common Agricultural Policy (European Fund for Agriculture and Rural Development). They are intended to encourage farmers to adopt more environmentally-friendly and sustainable farming practices, including the conservation of biodiversity, landscapes and other natural resources.

Agri-environment payments are commonly administered within the framework of a National Agri-Environment Programme (NAEP), which has a clearly defined and logical hierarchy of objectives pursued through the implementation of specific sub-measures organized and promoted to farmers as national, regional or local schemes.

The Republic of Serbia has not yet adopted a NAEP. However, some agri-environment measures were implemented under the Rural Development Grant Scheme of the Ministry of Agriculture, Forestry and Water Management (MAFWM) during 2005–2007, while others were included in the recently drafted National Rural Development Plan (NRDP) for 2010–2013.

The main goal of this project was to assist Serbia in the process of preparing for candidature and future accession to the EU by supporting the development of the capacity and organizational structures necessary for agri-environment policy-making and programming. An important priority for the project was to support policy makers and key stakeholders on the development of proposals for a NAEP, with a particular emphasis on biodiversity conservation.

The specific objectives of the project were to:

1. introduce the concept of high nature value (HNV) farming to governmental organizations and NGOs in Serbia;
2. introduce the concept of AE support payments to the same organizations;
3. support the development of two pilot agri-environment schemes in contrasting protected areas where the continuation of traditional agricultural practices is important for the conservation of biodiversity associated with HNV farming systems;
4. apply the results and lessons learnt from this process to the development of proposals for a NAEP;
5. establish a range of “tools” to support the necessary

capacity and organizational structures for agri-environment policy-making and programming in the future, including a typology of HNV farming systems, a draft map of the distribution of HNV farmland in Serbia and various technical documents in the Serbian language;

6. widely disseminate and promote the project results to relevant governmental and non-governmental organizations to build a ‘body of informed opinion’ on agri-environment issues amongst policy and decision-makers, together with key stakeholders in Serbia.

This project follows a suite of similar projects undertaken by several of the project partners in other EU pre-accession countries of Central and Eastern Europe¹ between 1997 and 2006, and in Turkey in 2006–2008. Although these previous experiences have been drawn upon extensively, this project has been developed specifically for Serbia, in accordance with the stated interests and needs of the Ministry of Agriculture, Forestry and Water Management (MAFWM) of the Republic of Serbia.

The project was jointly implemented by Avalon, IUCN, IEEP and Natura Balkanika, in close co-operation with the Ministry of Agriculture, Forestry and Water Management and with the valuable contribution of Serbian Environmental Protection Agency (SEPA), Institute for Nature Conservation of Serbia and the Green Network of Vojvodina.

1.2 About This Handbook

This Handbook presents many of the key outputs, recommendations and accumulated expertise from the project “Support for Agri-environment Policies and Programming in Serbia” that was undertaken between 2008 and 2010 by the project partners, with the financial support of the Dutch Ministry of Agriculture, Nature and Food Quality through its BBI Matra Programme.

It is produced in both Serbian and English and is intended to serve as a reference document to support the future programming of agri-environment measures in Serbia. Special attention is given to introducing the concept of high nature value (HNV) farming and the biodiversity benefits associated with using agri-environment and other rural development measures to maintain low intensity farming systems typically found in Serbia.

The Handbook is intended to serve practitioners in the agriculture sector, policy and decision makers,

1. Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia.

officials in the Ministries responsible for agriculture and environment, regional government agencies and services, and nongovernmental and scientific organizations addressing these issues at the interface of agriculture and the environment.

The publication is the first attempt to systematically introduce the concepts of HNV farming and agri-environment policies and payments to a Serbian audience. The report begins, in Chapter 2, with an introduction to the main changes in Serbian agriculture over the past half century and the resulting environmental impacts. Chapters 3 and 5 cover the principles of the HNV Farming and agri-environment concepts, their development over the time, and the lessons to be learnt from EU Member States with regard to their application and implementation.

The project develops a typology of HNV farming systems in Serbia, with an indicative map of their distribution. The typology and map are found in Chapter 4.

In order to make this effort as useful as possible for the target recipients, Chapter 6 presents proposals for agri-environment policies and measures for Serbia, with a particular focus on those targeted at supporting low-intensity farming systems that help to maintain high levels of biodiversity. Chapter 7 discusses the implementation of agri-environment schemes, including the necessary institutional arrangements and administrative structures. The final chapter identifies the social, economic and environmental benefits that arise from implementing agri-environment measures to support HNV farming systems in Serbia.





CHAPTER 2:

AGRICULTURE AND THE ENVIRONMENT IN SERBIA

The Republic of Serbia, which covers 88,361 km², is located in the south-eastern part of Europe, at the heart of the Balkan Peninsula. Serbia is landlocked, and is traversed by the Danube River valley which dominates the north of the country and provides shipping access to inland Europe and the Black Sea. Its watershed, including the Morava River tributary, covers most of Serbia's southern mountainous regions. Serbia has diverse terrain, ranging from the rich, fertile plains in the northern Vojvodina region, to the limestone ranges and basins in the east.

The country can be divided into three broad zones on the basis of geography and climate, land quality, farming systems, socio-economic development, and political and administrative boundaries. These include the regions of Vojvodina, Central Serbia and Southern Serbia. The Southern Serbian zone is the largest, covering 44% of the total land area. It is also the poorest, least developed region and includes the majority of Serbia's mountains. Of the total area of Southern Serbia, 37% is classified as forest and 55% as agricultural land.

In terms of altitude, hilly-mountains terrains (altitudes greater than 500 metres) cover 33,992 km², or 38.47% of the Serbian territory; mountain terrains (exceeding 1,000 m) cover 9,887 km² (11.19%); medium high mountains with altitudes of 1,000–1,500 m are spread over 9,681 km²; and the high mountains (over 1,500 m) cover just 206 km², or 0.23% of the territory.

2.2 Basic Environmental Profile of Serbia

The Republic of Serbia has a moderate-continental climate with pronounced local variations. The north experiences a continental climate, with cold winters, hot, humid summers and a uniform pattern of rainfall. The south has an Adriatic climate, with hot, dry summers and autumns and relatively cold winters with heavy snowfall inland. For areas up to 300 m in altitude, average annual air temperatures were 10.9°C for the period 1961–1990; around 10.0°C for areas with altitudes between 300 to 500 m; and around 6.0°C at altitudes over 1,000 m.

On average, annual precipitation rates increase with altitude. In lower regions, annual precipitation ranges from 540 to 820 mm; from 700 to 1000 mm in areas over 1,000 m; and some mountain summits in south-western Serbia have rates of precipitation of up to 1,500 mm. The majority of Serbia experiences a continental precipitation regime, with the exception of the south-western regions, where the highest rates of rainfall occur in autumn. On average, June is the rainiest month and February and October

have the lowest precipitation rates. Snow cover is from November to March with most snow falling in January.

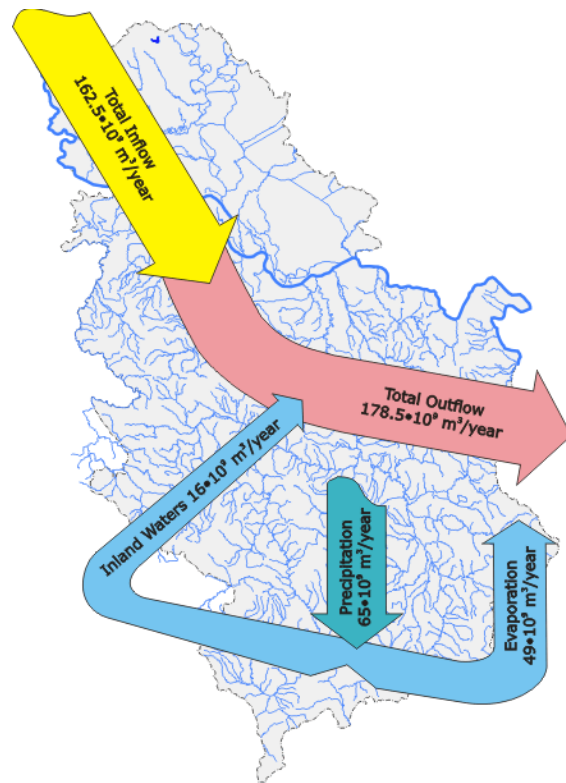


Figure 2. Average water balance for the territory of the Republic of Serbia

Water Resources

Water from Serbia's rivers flows towards the Black Sea, Adriatic Sea and the Aegean Sea. The Black Sea Basin is the largest, containing around 176 billion of m³/year of water or 93% of the total. Around 2 billion m³ of water discharges into the Adriatic Sea, and around 0.5 billion m³ into the Aegean Sea. The total inflow of water is approximately 162.5 billion m³/year, and the total outflow is around 178.5 billion m³/year of water.

In 2008, a total of 4 billion m³ of water was abstracted for household use, industry and crafts, agriculture, energy sector and to supply other commercial users.

Soil

The soils of Serbia are extremely heterogeneous as a result of a varied geological base, climate, vegetation and paedo-fauna. They are divided into eight fertility classes, reflecting the relative suitability for agricultural production, with classes I–IV representing higher quality soils. It is estimated that about 45% of total territory belongs to the soil classes IV–VIII which are not suitable for tillage and profitable crop production. Instead, this land is used for semi-subsistence vegetable or fruit production or as meadows.

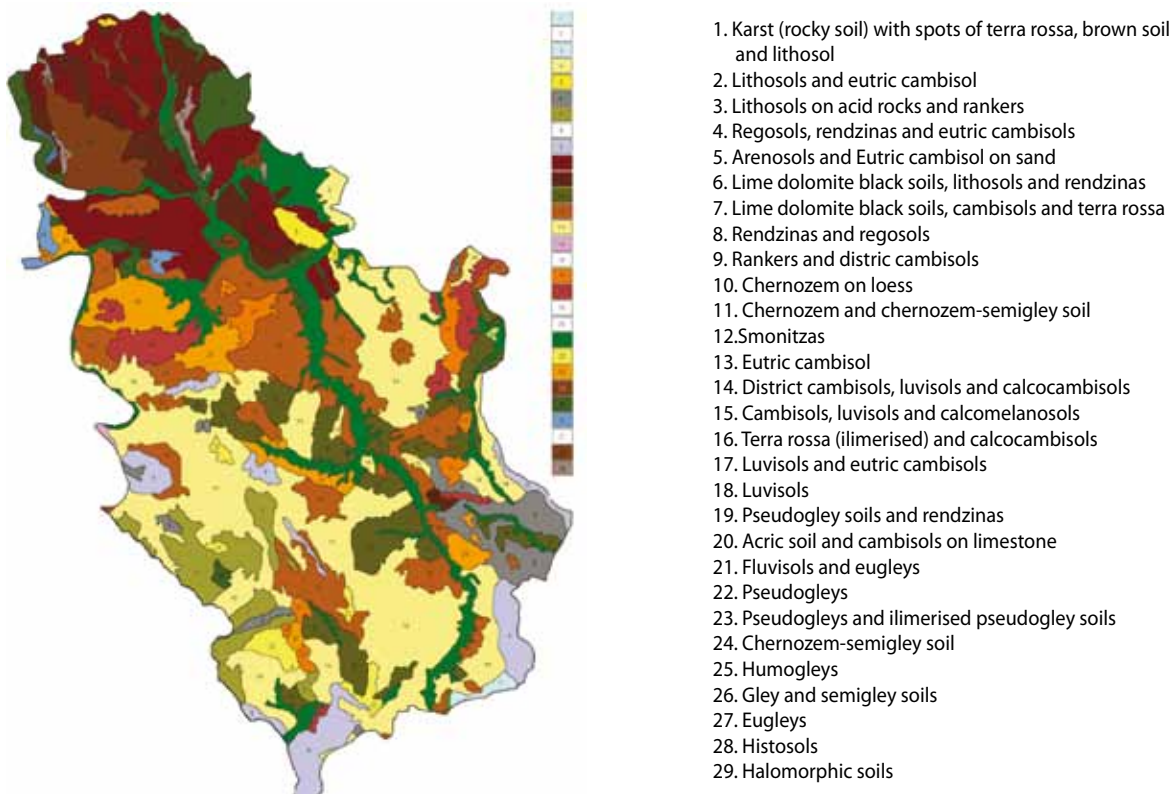


Figure 3. Soil map of Serbia (1:2,000,000)

Erosion is one of the major causes of soil degradation, affecting up to 80% of agricultural soils in Serbia. While water erosion is predominant in the central regions and the hilly and mountainous regions, wind erosion is the primary cause of soil degradation in Vojvodina, affecting 85% of agricultural soils with an annual loss of over 0.9 tonnes of material per hectare.

Figure 3 shows the soil map of Serbia (1:2,000,000), based on the classification of soils of Yugoslavia (Škorić *et al.*, 1985).

Biodiversity and protected natural resources

The diverse landscape, climate and hydrography have

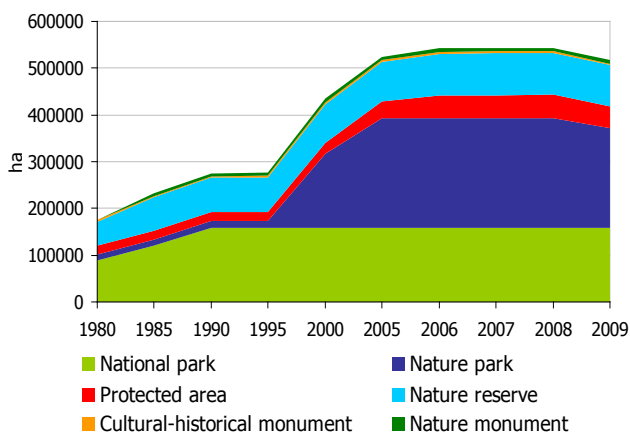


Figure 4. Cumulative coverage of protected areas in Serbia

resulted in great ecosystem diversity. Five of the twelve global and six European biomes are represented in the Republic of Serbia. With an estimated 3,662 taxa, (39% of Europe's entire flora), Serbia has one of the highest levels of floristic diversity in Europe. Faunal diversity is also highly represented: 67% of mammal species, 74% of ornithofauna, 51% of ichthyofauna and 40% of the herpetofauna reported in Europe are present in Serbia. It also represents a significant centre of flora endemic to the Balkan Peninsula.

2.3 Basic Agricultural Profile of Serbia

Agricultural land occupies some 65% of the total area of Serbia, equivalent to approximately 5.7 million¹ hectares. Of this, arable land totals 3.3 million hectares (65% of agricultural land), orchards cover an area of 2.4 million hectares (5% of agricultural land), vegetable production covers 295,000 hectares and vineyards 70,000 hectares (1% of agricultural land). Permanent grasslands cover 1.4 million hectares, equivalent to 28% of agricultural land.

Three main farming regions can be identified. These include:

1. mixed crop-farming/livestock-raising region, which includes lowlands and flat areas in river valleys;
2. mixed livestock-raising/fruit-growing/wine-growing region, extending over rolling and hilly land with varying climates and soils; and

3. livestock-raising in mountain areas dominated by semi-natural grasslands, meadows in forest zones and high altitude pastures.

Not all of the agricultural land area is utilized. Results from a survey conducted in 2007² indicate that farm holdings in Serbia's mountainous regions do not use a quarter to a third of their land due to poor soil quality, high water levels and inaccessibility by road.

Agricultural Land Use

Crop production is growing considerably. Cereals dominate crop production, accounting for 45% of arable land, or 60% of the total cultivable land. The most important cereals are wheat and maize, whereas only 10% of the area under cereals is used for the production of rye, barley and oats.

Fruit and vegetables occupy about 12% of the total agricultural land area and are predominantly cultivated on private holdings in central Serbia on small, family owned farms. Serbia has ideal climatic conditions for growing many varieties of fruit, rendering it well suited for the production of organic fruit.

Livestock production in Serbia is dominated by privately owned farms, operating at the small and medium scale. The number of farm animals in Serbia decreased after World War II, and this trend has accelerated since the early 1990s. According to official statistics (2009), there were approximately 1,002,000 cattle, 3,631,000 swine, 1,504,000 sheep, 143,000 goats, 14,000 horses and 22,821,000 poultry in the territory of Serbia and the Vojvodina Province. At present, more than 99% of Serbian livestock are allochthonous (exotic) breeds and crossbreeds, with autochthonous breeds representing a tiny proportion of the total. The production of meat and meat products is a vital component of Serbian agriculture. There are an estimated 143,000 farms with 456,000 dairy cattle producing 1.6 million tonnes of milk per year in Serbia. Most of this is produced in the lowland areas, with only a small proportion in the highland areas of southern and south-western Serbia.

Farm Structures

Privately owned farms in Serbia are, on average, much smaller than those in many other European countries. According to the 2002 Census, there are about 778,900 agricultural households in Serbia, owning approximately 80% of the total agricultural land area, with an average holding size of 2.5 hectares of arable land and 3.6 hectares of agricultural land. Over 75% of private farms have less

than five hectares and fewer than 5% have more than 10 hectares. Typically, the holding is divided into an average of four plots per farm.

Owing to their small size, most of these farms produce for their own household consumption and sell only a small proportion of their output. They are classified as non-commercial agricultural households or "private subsistence farms".

Within the private farming sector, it is possible to identify an emerging group of more commercial farms, "private commercial farms" which produce primarily for the market. Of this latter category, two further groups of producers may be identified: those who own larger estates and are primarily oriented to farming and those with just a few hectares dedicated to the production of high quality fruit and vegetables.

Agricultural Productivity

Both in terms of land and labour, agricultural productivity is below the EU average. One reason for this is the low level of capital (machinery, modern equipment, and infrastructure). Across most of Serbia's agriculture sector, the level of mechanisation is low, thereby representing one of the main structural barriers to productivity gains. The situation is most critical in small rural households.

The agriculture sector is supported by a state funded extension service, which is primarily delivered through 34 sub-contracted agricultural stations.

Employment and Trade

In Serbia, agriculture continues to employ a significant share of the total labour force. Employment in the primary sector accounts for 22% of total employment and 10% of total employment in the food processing industry³.

Compared to other sectors of the Serbian economy, the agro-food sector plays a very prominent role in overall trade, accounting for some 20% of total exports. Serbia's main export commodities are cereals (maize, wheat), raw and processed fruit (frozen raspberries, prunes), refined sugar and some livestock and meat products.

2.4 Main Changes in Serbian Agriculture since the 1950s

Agriculture has always been the most important sector in the Serbian economy, especially in rural areas. Small-scale private farming dominated Serbia prior to World

1 Serbia has 5,109,177 hectares of agricultural land, excluding data for Kosovo and Metohia territory under UN Resolution 1244.

2 Natalija Bogdanov (2007): Need Assessment of small rural households in Serbia, UNDP, Belgrade.

War II though significant changes occurred in rural areas after 1945. Part of the agricultural land was nationalized and consolidated to create the new state and collective/cooperative farm structures. These farms were encouraged to expand, intensify and specialize their production activities. Consequently all available land was brought into production, fields were made larger, inputs of fertilizers and pesticides were greatly increased and huge animal breeding “complexes” were constructed. At the same time, many traditional farming systems were destroyed as land was abandoned due to a government policy to promote industrialization and an exodus from rural areas. Strongly discouraged from holding on to privately-owned farms, farmers and the wider rural population were persuaded to leave their holdings to work in industrial centres.

Subsequently, the state-owned sector has altered much of the traditional farming structure imposing at first a Communist model of co-operatives and later one of large, state-owned industrialized farms. This process served to transform peasants into industrial workers. A centralized market offered few opportunities for small, private farmers to survive and many mountain regions became increasingly abandoned. Some farmers were able to continue farming and gradually to improve and modernize agricultural production, especially in the 1970s and early 1980s, when government funds became more accessible to farmers.

The structure of Serbia’s agriculture sector was transformed again in the 1990s and early 2000 with the privatization of state owned farms. After privatization, several key investors appeared as the new owners of huge agricultural plots, especially in the Vojvodina Province.

2.5 Impact of Serbian Agriculture on the Environment

Agriculture’s impact on the environment has been both positive and negative, with extensive farming practices shaping valued cultural landscapes, and supporting impressive levels of biodiversity. On the other hand, the dual processes of agricultural intensification and abandonment have had adverse effects.

Maintenance of Biodiversity and Cultural Landscapes

From the hills and mountains of eastern, western and southern Serbia to the plains of northern Vojvodina Province and central Serbia, a wealth of important habitats for birds and other wildlife—many of which are of European and global significance—have been created and maintained by low-intensity farming. Mountain pastures

host a great variety of plant communities. However, with the decline in the number of grazing livestock, these species-rich grasslands have been invaded by *Junuiperus*, *Vaccinium* and other competitive shrubs, with a loss of biodiversity, including the disappearance of vultures (Egyptian and Griffon Vultures - *Neophron percnopterus* and *Gyps fulvus*).

The decline in biodiversity, including domestic animal and plant biodiversity, largely occurred during the Socialist period, when state agricultural policy favoured intensive production and the use of allochthonous/exotic breeds and modern plant varieties. Locally adapted breeds were not deemed desirable as their yields were relatively low, despite their greater resistance to diseases and better adaptation to local climatic and physical conditions. For example, a Federal Act of the Former Yugoslavia in the early 1950s prohibited goat breeding, and served to undermine the long-standing work on the selection and breeding of the Balkan goat. Local Zackel sheep breeds/strains faced a similar fate as they underwent State directed and obligatory crossbreeding with merino sheep breeds. Other highly valued landscapes have been lost, including terraced vineyards (in Negotinska Krajina, Vršac, Fruška Gora and others), and the orchards of Šumadija.

Fertilizer Use

Fertilizer use has noticeably declined on many farms during the past 15 years, to approximately one-third of the 1985 levels, due to the economic crisis that hit Serbia and Montenegro. Approximately 1.45 million tonnes of fertilizer were used per year in the period from 1982–1987. During 1982–1991, this declined to approximately 1.25 million tonnes per year, and fell still further to 0.411 million tonnes from 1991–1998 (State of the Environment 2000, National Environmental Priorities 2002). Over time, the threat posed to the environment has decreased, resulting in a significant reduction in the eutrophication of water bodies.

This trend may reverse as the economy recovers. According to the Report on the State of the Environment 2001, which conducted its analysis in the Vojvodina Province as the area marked by the highest pollution pressure, 25% of analysed soils had a high phosphorus content and 56% of the analysed territory is in danger of further acidification. According to the same source, analysed soils contain 5 mg/kg of pesticides and their metabolites, or 100–200 g/kg of organo-chloride insecticides and the same amount of triazine herbicides (atrazine, simazine and prometryne).

Water

Currently, soil contamination and the eutrophication of shallow groundwater, watercourses and lakes in Serbia is largely a result of uncontrolled effluents from livestock farms. Research conducted by the Standing Conference of Towns in Serbia (Stalna Konferencija Gradova) has shown that polluted water supply is an issue for every third municipality in Serbia. The main agricultural sources of nitrate pollution in Serbia are animal manures, crop wastes and chemical fertilizers. Good environmental management on large livestock farms is extremely rare and an urgent reduction in pollution from livestock farms is required.

Serbia is one of the largest contributors of nitrogen (N) and phosphorus (P) pollutants to the Danube River and its tributaries. Runoff from large pig farms is a major contributor to the nutrient load into the Danube. Construction of proper manure storage facilities and the purchase of manure spreading equipment are still in their infancy, though the first steps to improve the situation have been taken through the Danube River Enterprise Pollution Reduction project (DREPR).

Slaughterhouse waste also constitutes a significant source of nutrient pollution, especially in Vojvodina where there are 240 slaughterhouses. Slaughterhouses typically collect animal waste in storage tanks which is then taken away by tankers for disposal into the municipal wastewater system or municipal landfill lagoons. Improved nutrient management through the recycling of livestock manure and rationalization of the use of mineral fertilizers has been introduced in the most intensive agriculture areas through the DREPR project.

2.6 Existing Policy Responses to the Environmental Impact of Serbian Agriculture

Although the Republic of Serbia does not yet have a national strategy for the protection of biodiversity or specific agricultural policies to support ecosystem protection, natural habitat protection and endangered species protection, these are in the development process. With the adoption of various international commitments and the prospect of becoming a member of the European Union, the environment is becoming an increasingly important issue on the political agenda.

The following institutions play a crucial role in defining Serbia's agri-environmental policy: Ministry of Agriculture, Forestry and Water Management (primarily through the

Sector for Rural Development), Ministry of Environmental and Spatial Planning (through the Environmental Protection Directorate) and the Institute of Nature Conservation.

Following Serbia's application to join the EU, the Government of Serbia is working both to establish new standards and to align existing standards with EU policies to mitigate agriculture's negative environmental impacts and to ensure the maintenance of beneficial farming activities. Several important policy documents have either been adopted or are being prepared:

1. National Biodiversity Strategy and Action Plan;
2. Strategy to Conserve Locally Adapted Animal Breeds;
3. National Agricultural Strategy;
4. National Rural Development Programme;
5. National Agricultural Programme;
6. Organic Farming Act, Livestock Act, GMO Act;
7. Subordinate legislation: Decree on Less Favoured Areas, Decree on Conservation and Sustainable Use of Animal Genetic Resources, etc.;
8. National Programme for Environmental Protection.

The Draft National Biodiversity Strategy and Action Plan was prepared by the Ministry of Environment and Spatial Planning with UNDP/GEF technical and financial assistance. This document is expected to emphasise the importance of preparation and implementation of a national agri-environmental programme.

The Strategy to Conserve Locally Adapted Animal Breeds was adopted in 2002 by the Federal Government of Yugoslavia with the aim to "preserve locally adapted breeds that are becoming extinct, for social and economical purposes, as well as future scientific research and education purposes".

The Agricultural Strategy of the Republic of Serbia was adopted in 2005. For the first time, this strategic document recognizes the importance of biodiversity (including agro-biodiversity), conservation and sustainable forestry management. In this regard, one of the strategic goals set out by the Strategy is "...to ensure support for rural development, protection of the environment from the destructive influences of agricultural production, preparation of Serbian agriculture for its integration to the EU..." In addition, the Strategy states that agriculture can protect and enhance the natural environment, bringing enjoyment to the citizens of Serbia and the potential to develop a profitable tourism industry. Planned activities include the preparation and adoption of a National Programme on the Conservation

and Sustainable Use of Genetic Resources in Agriculture; alignment of the existing national database on plant and animal genetic resources to international standards (FAO and IPGRI); support for the use of autochthonous domestic animals and plant breeds; research on agro-biodiversity and the setting up of a national gene bank.

The Draft National Agricultural Programme was prepared by the MAFWM and identifies three priority goals for the period 2010–2013:

- define an environment protection policy to address the harmful effects of the agricultural sector;
- begin preparations for the introduction of the Nitrates Directive;
- improve co-operation with the Ministry for Environmental Protection through the formation of long-term working groups.

The Draft Programme plans to: establish support for farm investments aimed at pollution reduction and the adoption of EU standards; support the development of organic agriculture including the certification process and the implementation of Good Agricultural Practices (GAP); improve the database relating to organic production; establish the legislative basis for introducing GAP and a related budget; develop GAP principles aimed at soil, water, air and animal protection; develop the guidelines for integrated pest management; develop strategic, legislative, administrative and technical instruments for controlling the use of Genetically Modified Organisms (GMO) and reducing the respective risks; and adopt a National Programme for the conservation of genetic resources and support its implementation.

The Draft National Rural Development Programme was prepared in 2008, for the period 2008–2013, in advance of Serbia's accession to the European Union. Under Axis 2 – Preservation of the Environment and Countryside – the following measures have been included:

- support for organic conversion and for ongoing management;
- support for the conservation of genetic resources;
- preparation of the rural development support system to assist local rural development implementation and planning.

In 2006, a new Organic Farming Act was adopted and introduces subsidies to support organic certification and production methods. Organic farming is supported per capita or head (or per beehive) of organically raised animal or hectare of organically produced crop, fruits or vegetables, etc.

Since 2006, farmers have received advice and training from advisory service representatives to support the introduction of GAP, particularly targeted at small, private farmers and the organic sector, through rural development funds. During 2005–2006, trainers in the area of integrated fruit and vegetable production were trained through an Assistance Programme funded by the Italian Government, and several small extension projects have served to disseminate knowledge on the application of best agricultural practices in livestock farming to encourage a reduction in agricultural pollution.

Serbia designated the first Less Favoured Areas (LFA) in 2005, in marginal areas where opportunities for agriculture intensification are limited. In 2002, Government support for agro-biodiversity conservation was introduced in the form of payments per head of autochthonous endangered breeds. Until 2008, measures existed to support the conservation of autochthonous plant varieties, but these were stopped as a result of the financial crisis.

The Livestock Act (Official Gazette, 2009) introduces measures to support the conservation of endangered breeds, development of organic farming and compliance with environmental standards in the livestock sector. The Act also allows for the establishment of a Register of Autochthonous Breeds which was published in 2010 with the aim of identifying priority breeds in danger of extinction.

2.7 Conclusions

Natural resources, traditional landscapes and the biodiversity maintained by traditional agricultural practices are important components of Serbia's national heritage. The mutual relationship between agriculture and environment has a long history in Serbia. Farmers have played an invaluable role in shaping the rural landscape for centuries. In many areas, semi-natural habitats maintained by farming practices have become crucial substitutes for natural habitats, though in recent decades, many of these agricultural areas have come under pressure from intensification, changes of land use and cropping patterns and the discontinuation of traditional practices. At the same time, other areas have been affected by marginalization and abandonment as farmers have left rural areas for a life in the city. There is an urgent need to find the best possible balance between guaranteeing food supply, the necessity to preserve the rural environment and the need to stimulate economic growth, including the creation of new job opportunities in rural areas.





CHAPTER 3:

HIGH NATURE VALUE FARMING IN EUROPE

The concept of High Nature Value (HNV) farming is attracting increasing interest from agricultural policy-makers and environmentalists in Europe due to its importance for biodiversity conservation. The concept is described below along with an approach to its identification. Chapter 4 provides information on the types of HNV farming systems in place in Serbia.

3.1 What is HNV Farming?

The concept of “High Nature Value” (HNV) farming has emerged and been developed over the past 15 years in response to the growing recognition that certain types of farming are extremely valuable for wildlife and for maintaining biodiversity.

HNV farming systems were first described by Baldock *et al.* (1993) as “predominantly low-intensity systems which often involve a relatively complex interrelationship with the natural environment. They maintain important habitats both on the cultivated or grazed area (e.g., cereals steppes and semi-natural grasslands) and in features such as hedgerows, ponds and trees, which were historically integrated with the farming systems... The semi-natural habitats currently maintained by HNV farming are particularly important for nature conservation in the EC because of the almost total disappearance of large scale natural habitats.”

This observation challenges the widespread understanding that farming activities have a mainly negative impact on biodiversity and recognizes instead that many of the habitats upon which we place high nature conservation value in Europe were created by farmers and their traditional farming practices and, in order to conserve these habitats and prevent further declines in biodiversity, it is necessary to maintain these farming systems.

In many parts of Europe, these types of farming systems also sustain rural communities and shape rural culture and traditions.

The HNV concept brings an alternative and complementary approach to conventional nature conservation. Instead of focusing solely upon the maintenance of rare or endangered species and habitats on protected sites, it embraces the need for significantly larger areas of land (including a high proportion of semi-natural habitats) to continue to be occupied by farmers and managed according to traditional farming methods (Beaufoy *et al.*, 1994).

However, whilst HNV farming is an increasingly popular and attractive concept for communicating the biodiversity benefits provided by certain types of farming, there remain many challenges associated with ensuring the ongoing existence of these farming systems. One key challenge is the fact that HNV farming systems tend to be found in the more marginal areas of Europe where agricultural productivity is constrained by factors such as poor soils, steep slopes, high altitude and low rainfall. The other key challenge these farming systems face relates to their economic viability. Due to the constraints on their productivity, their distance from markets and the fact that a significant proportion are semi-subsistence farms, HNV farmers tend to have much lower incomes than those farming in more fertile agricultural areas.

Those farmers delivering the greatest biodiversity benefit are therefore typically farming under the most difficult circumstances (economic, social and environmental) and are subject to the greatest pressures to abandon their traditional way of life. Consequently, across Europe many traditional agricultural landscapes rich in biodiversity and culture are being lost to abandonment, intensification and changes in land use.

3.2 Approaches to identifying High Nature Value farming systems

Drawing on a definition developed by Andersen *et al.* (2003), HNV farming in Europe is defined as occurring where:

- agriculture is a major (usually the dominant) land use;
- agriculture supports or is associated with a high diversity of wildlife species and habitats, or the presence of species of European conservation concern, or both; and
- the conservation of these wildlife habitats and species is dependent upon the continuation of specific agricultural practices.

HNV farming systems are typically characterized by a combination of:

Low intensity land use—biodiversity is usually higher on farmland that is managed at a low intensity. The more intensive use of machinery, fertilizers and pesticides and/or the presence of high densities of grazing livestock greatly reduces the number and abundance of species on cropped and grazed land.

Presence of semi-natural vegetation—the biodiversity value of semi-natural vegetation, such as unimproved

grasslands used for grazing, is significantly higher than intensively-managed agricultural land. Furthermore, the presence of natural and semi-natural landscape features such as mature trees, shrubs, uncultivated patches, ponds and streams, rocky outcrops, etc. greatly increases the number of ecological niches for wildlife to co-exist alongside farming activities.

Diversity of land cover and land use—biodiversity is significantly higher when there is a “mosaic” of land cover and land use, including low intensity cropland, fallow land, semi-natural vegetation and numerous landscape features. This creates a much wider variety of habitats and food sources for wildlife and therefore supports a much more complex ecology than the simplified landscapes associated with intensive agriculture.

It is not necessary for all three characteristics to be present within one farming system for it to be considered as HNV. Instead, the three characteristics can be considered to interact as shown in Figure 3.1.

As shown in this diagram, the dominant characteristic of HNV farming is low intensity land use. A significant presence of semi-natural vegetation is also essential. In some situations, however, this may also be found in combination with low intensity cropland creating a mosaic landscape with a greater diversity of land cover than simply semi-natural vegetation. In line with this approach, three types of HNV farmland are commonly identified (Andersen *et al.*, 2003), as outlined in the table below.

The definition of three types of HNV farmland is a useful aid in identifying HNV farmland on the ground. The three types of HNV farmland are not intended to be precise categories with a sharp boundary between them. Rather they should be seen as a continuum, ranging from those with a higher proportion of semi-natural vegetation and lower intensity use (Type 1) to more intensively managed

Type 1	Farmland with a high proportion of semi-natural vegetation, such as species rich grassland
Type 2	Farmland with a mosaic of low intensity agriculture and natural and structural elements, such as field margins, hedgerows, stone walls, patches of woodland or scrub, small rivers, etc.
Type 3	Farmland supporting rare species or a high proportion of European or World populations

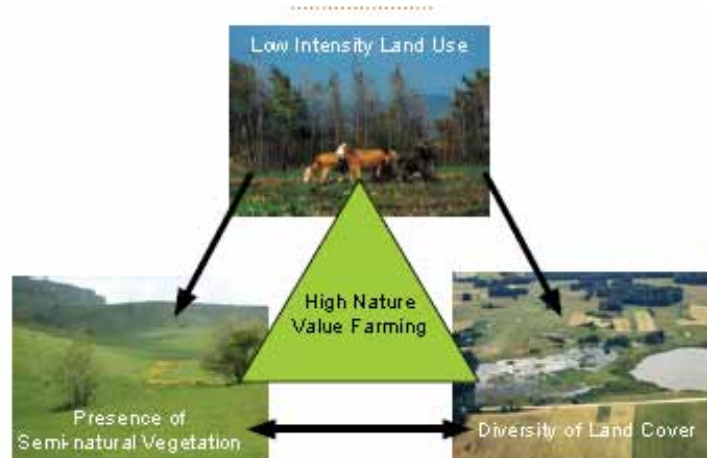


Figure 3.1: The three key characteristics of HNV farming

farmland that still supports species of conservation value (Type 3) as shown in Figure 3.2 (IEEP, 2007).

HNV Farmland Type 1: High proportion of semi-natural vegetation

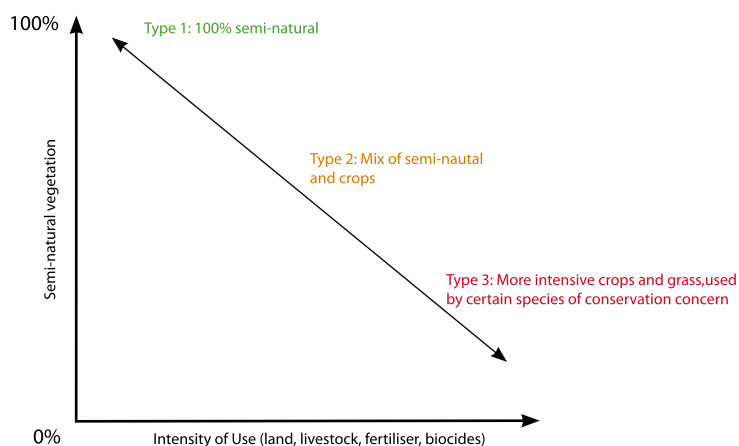


Figure 3.2: The continuum of HNV farming types 1, 2 and 3
Source: Beaufoy and Cooper (2008)

The most widespread type of HNV farmland consists of semi-natural vegetation grazed under low intensity by livestock, often with traditional local breeds. The grazed semi-natural vegetation may be grassland, scrub or woodland, or a combination of different types. Often the semi-natural grazing is not part of the farm holding, but has some other form of ownership (common land, state-owned land, etc).

HNV livestock farms will usually have more than one type of forage land. This can range from the least altered semi-natural vegetation (never cultivated, sown or fertilized), through to grasslands that may be occasionally cultivated and/or lightly fertilized, to more productive or

“improved” pastures, and cereal crops for fodder. Although more productive, these fields are still managed at low intensity compared to mainstream farming. They can be an important part of an HNV farming system and can also contribute to ‘nature value’ when combined with a sufficient area of semi-natural grazing.

Determining which pastures are semi-natural and which are not is to some extent a value judgement. One approach is based on the presence of certain indicator species. Another approach is to decide, for example, that a pasture that has not been resown or fertilized for 20 years can be considered semi-natural. Occasional cultivation may be compatible with semi-natural status. This is especially relevant in Mediterranean regions, where grasslands may be cultivated occasionally for scrub control, without significantly reducing their natural value. Spontaneous vegetation in olive groves and on low-intensity fallow land may also be counted in the same category if it is not affected significantly by fertilizers or biocides.

The fact that the vegetation is grazed by livestock or mown for hay is important, as this confirms that it is part of a farming system. Semi-natural grazing land is not necessarily always grassland. Scrub and forest are an important forage resource in some parts of the EU (especially the southern and eastern regions). However, semi-natural woodland that is not grazed should be considered a separate, non-farming land use. Semi-natural vegetation that is grazed primarily by wild herbivores, such as deer, should not be considered HNV farmland (Beaufoy and Cooper, 2008).

HNV Farmland Type 2: Mix of Semi-Natural Vegetation and Low Intensity Cropland

Farms and landscapes with a lower proportion of semi-natural vegetation, existing in a mosaic with arable and/or permanent crops, can also be of high nature value. Nature values will tend to be higher when the cropped areas are under low intensity use, providing a mix of habitats that are used by a range of wildlife species.

Because the proportion of land under semi-natural vegetation is less in Type 2 HNV compared to Type 1, and the proportion of cultivated land is greater, the management of the cultivated land and the existence of an “ecological infrastructure” of landscape features is especially critical for wildlife. More intensive use of the cultivated land and the removal of features will lead to a rapid decline in biodiversity values.

Peripheral unfarmed semi-natural features, such as hedges, other field margins and trees are often found on Type 2 HNV farmland. These provide additional habitats and will tend to increase nature value. However, their total surface area is usually small compared to the area of productive farmland. It is therefore the characteristics of the productive area that determine whether the farmland in question is HNV, i.e. the presence of unfarmed features alone is not sufficient (Beaufoy and Cooper, 2008).

HNV Farmland Type 3: Intensive Crops and Grassland Used by Certain Rare Species

At the more intensive end of the HNV spectrum are farmland types whose characteristics of land cover and farming intensity would not necessarily suggest HNV farming, but which nevertheless continue to support species of conservation concern—either rare species or a high proportion of European or World populations (Beaufoy and Cooper, 2008).

3.3 Why is HNV Farming a Priority for the European Union?

The European Environment Agency has estimated that around 30% of the EU’s total agricultural area can be considered to be HNV, covering about 74 million hectares (Paracchini *et al.*, 2008). As shown in Figure 3.3, however, HNV farmland is not evenly distributed and much larger concentrations are found in southern and Eastern Europe.

Unfortunately, the extent and condition of HNV farmland in Europe declined greatly during the 20th century (with serious knock-on effects for biodiversity such as farmland birds) due to the combined pressures of: i) abandonment of all farming activities; ii) intensification and conversion of HNV grassland to arable land, and iii) loss of HNV farmland through changes in land use.

Most recently, since the early 1990s, millions of hectares of farmland in central and Eastern Europe have been abandoned during the re-structuring of agriculture following the collapse of Communism. This abandoned farmland includes vast areas of species-rich semi-natural grasslands and low intensity arable land with a subsequent loss of floral diversity, feeding areas for wintering birds, breeding sites for birds of European importance and many other important habitats (Keenleyside and Baldock, 2007). Prior to this, the expansion and intensification of agriculture throughout Europe following World War II contributed to a significant loss of biodiversity due to

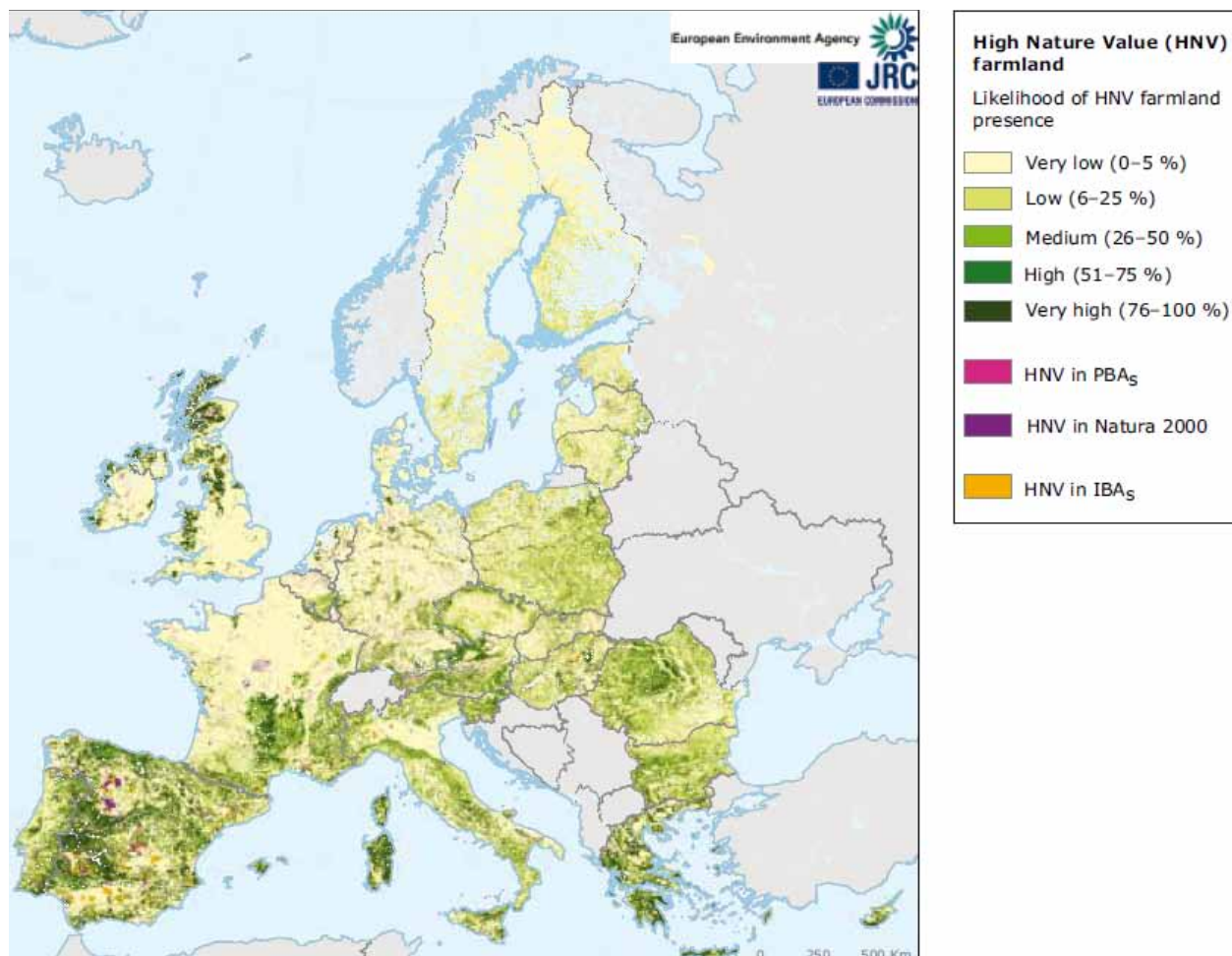


Figure 3.3: Likelihood of the presence of HNV farmland in the EU-27 Member States

Source: High Nature Value Farmland in Europe — an estimate of the distribution patterns on the basis of land cover and biodiversity data (Paracchini *et al.*, JRC-IES and EEA, 2008) http://agrienv.jrc.ec.europa.eu/activities_HNV.htm.

the conversion of grassland into arable land, drainage of wetlands, removal of field boundaries and other unfarmed features to create larger field sizes, and the increased use of fertilizers and pesticides.

In 2001, the European Council made a commitment to halt the decline in biodiversity in the EU by 2010 as a signatory to the Convention on Biological Diversity (CBD). Two years later, European Ministers of Environment recognised the specific importance of farmland biodiversity, and the urgent need to take care of it when they agreed that: “By 2006, the identification, using agreed common criteria, of all high nature value areas in agricultural ecosystems in the pan European region will be complete. By 2008, a substantial proportion of these areas will be under biodiversity sensitive management by using appropriate mechanisms such as rural development instruments, agri-environment programmes and organic agriculture, to inter alia support their economic and ecological viability” (UNEP, 2003).

The 2010 biodiversity target has not been met. As a result, in March 2010, the European Council adopted a new biodiversity headline target for 2020, ‘to halt the loss of biodiversity and the degradation of ecosystem services in the EU by 2020, restore them in so far as feasible, while stepping up the EU contribution to averting global biodiversity loss’. To achieve this, additional policy efforts to maintain HNV farming will be needed. Indeed, the EU’s current Biodiversity Action Plan refers to “optimising the use of available measures under the reformed CAP...to prevent intensification or abandonment of High Nature Value farmland, woodland and forest” and to ensure that adequate financing is provided for HNV farmland and forests.

The preservation of HNV farmland first appeared as an EU policy priority in 1999 when the Rural Development Regulation (Council Regulation No. 1257/1999) stated that support for rural development should be directed towards “the preservation and promotion of a high nature value and a sustainable agriculture respecting environmental

requirements". The same Regulation continued to state that support for agri-environment measures shall "promote the conservation of high nature value farmed environments which are under threat".

Under the current European Agricultural Fund for Rural Development (EAFRD) (Council Regulation No. 1698/2005) and the accompanying Community Strategic Guidelines for Rural Development (2007–2013) (Council Decision 2006/144/EC), the provisions made for maintaining HNV farming are much more robust and put a number of obligations upon EU Member States. This includes identifying the preservation of HNV farming as a strategic priority for Member States as follows:

'To protect and enhance the EU's natural resources and landscapes in rural areas, the resources devoted to axis 2 should contribute to three EU level priority areas: biodiversity and the preservation and development of high nature value farming and forestry systems and traditional agricultural landscapes; water; and climate change.' (emphasis added).

This translates into an obligation upon EU Member States to conserve HNV farmland and associated farming systems:

1. firstly, each Member State should identify what "HNV farming" means in their own national context;
2. secondly, they should support HNV farming systems and the preservation of HNV farmland by including appropriate measures in their national rural development programmes; and
3. thirdly, they should monitor and report changes in the total (baseline) area and quality of HNV farmland in order to assess the impact of rural development programmes and measures.

These are ambitious objectives, but with the political will to ensure that appropriate policy measures are in place and sufficient budgetary resources made available for their implementation, these valuable farming systems can be maintained for future generations.





CHAPTER 4:

HIGH NATURE VALUE FARMING SYSTEMS IN SERBIA

4.1 Introduction

This chapter addresses three key questions of importance to agri-environmental policy-making in Serbia:

- Which types of farming systems in Serbia are likely to be HNV and important for the conservation of biodiversity?
- What is the approximate distribution of HNV farmland in Serbia?
- What are the general characteristics of HNV farming systems that make them so beneficial for biodiversity conservation?

A range of agricultural and biodiversity experts involved in the project set out to answer these questions in 2009 and 2010. Their work aimed to:

- develop a generic typology of farming systems in Serbia and the identification of those farming systems that are most likely to be HNV;
- use selected indicators to prepare a preliminary map showing the possible distribution of HNV farmland in Serbia;
- conduct two local case studies to examine several HNV farming systems in greater detail, to identify the farming practices that are beneficial for wildlife and biodiversity and to demonstrate the types of threats faced by these farming systems.

Each of these three steps is described in detail in the sections that follow. They are broadly in line with the methodology used for identifying HNV farming systems and farmland that has been proposed by the European Commission to assist EU Member States in applying the “HNV farmland indicator” that forms part of the Common Monitoring and Evaluation Framework for national rural development programmes in the current EU programming period, from 2007–2013 (IEEP, 2007).

4.2 Typology of HNV Farming Systems for Serbia

The first step towards applying the HNV farming concept in Serbia is to use the available data, information and expert knowledge to identify and describe the broad types of farming systems that are likely to be beneficial for wildlife. This does not need to be an exhaustive or definitive process.

Figure 4.1 summarizes the basic typology of farming systems in Serbia prepared for this project. The typology was kept as simple as possible to provide an overarching organizing framework for the subsequent descriptions, characterizations and analysis. The main farming systems identified fall into three categories: livestock production,

annual crops and permanent crops. Within each, examples of low-intensity farming systems can be found, which have the potential to be High Nature Value farming systems.

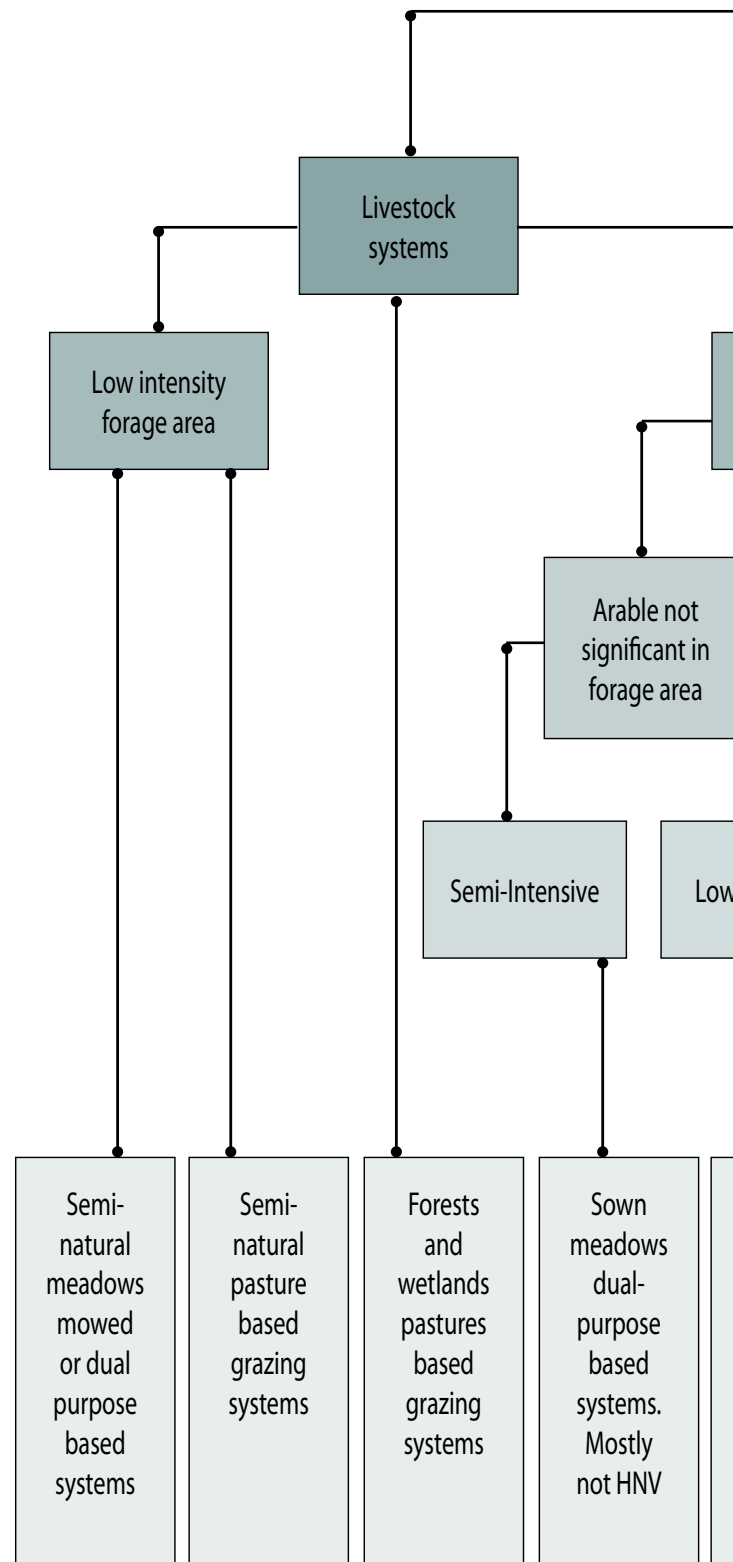
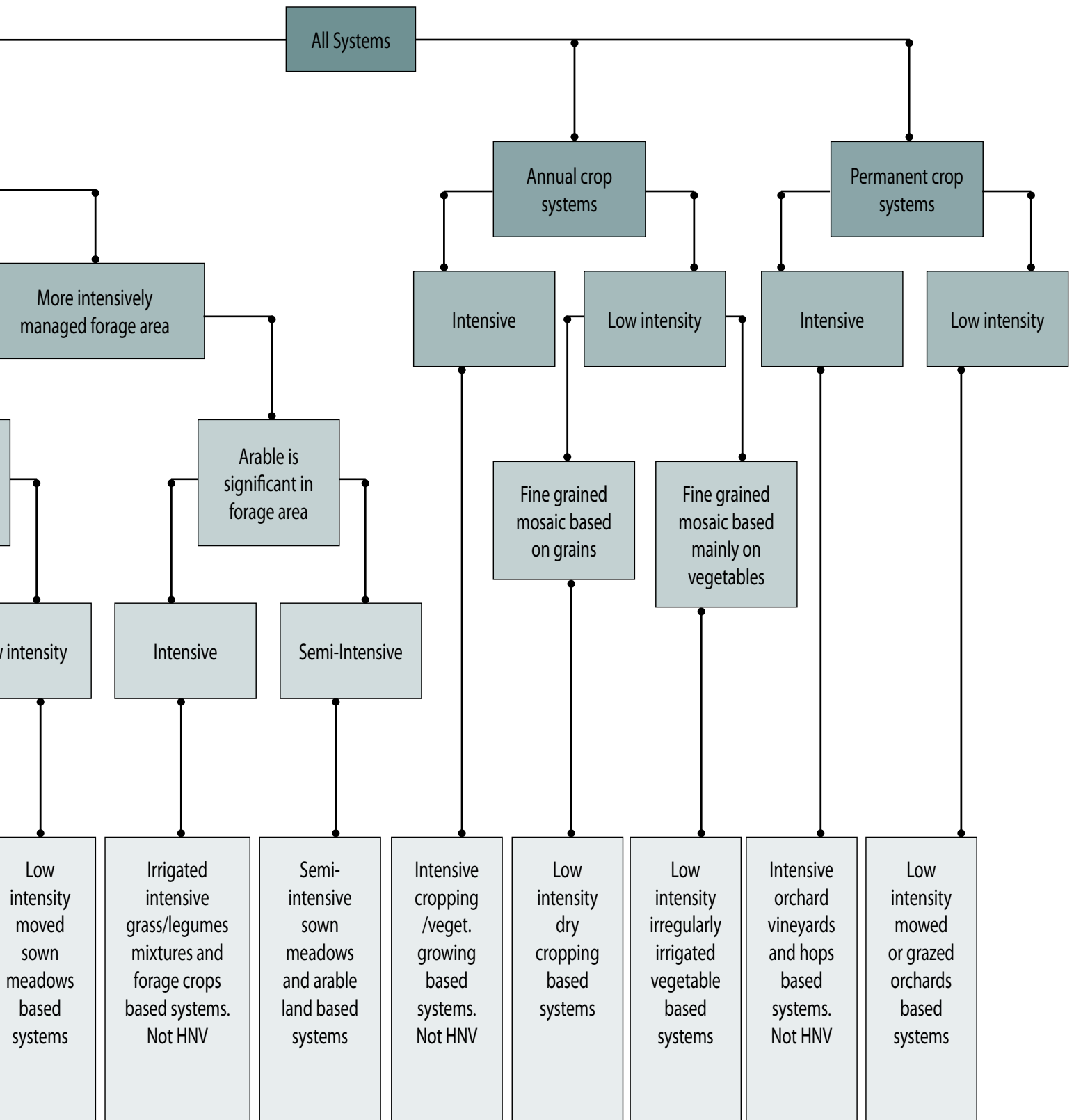


Figure 4.1 Typology of the main farming systems in Serbia



Ten examples of low intensity livestock systems in Serbia are described below, many of which have the potential to be High Nature Value farming systems. As described in Chapter 3, HNV farming systems are typically characterized by a combination of:

- low intensity land use;
- presence of semi-natural vegetation and the presence of natural and semi-natural landscape features;
- diversity of land cover and land use.

1. Deciduous forests with high proportion of grassland cover

Low intensity agroforestry systems with semi-natural grasslands grazed by sheep and cattle in flooded forests on the banks of the Sava, Danube, Tisa and Tamiš Rivers and other lowland rivers of Vojvodina.

This is one of the oldest agro-forestry systems in lowland Serbia. Examples are found in the lowland valleys of the Sava, Danube, Tisza, Tamiš and Karaš Rivers, and in the watershed of the Morava River. The best example is in the Zasavica Special Nature Reserve found along the banks of the Sava River, where autochthonic breeds of cattle, pigs and donkeys have been reintroduced alongside the adoption of traditional pasturing practices.

Recent efforts have been made to revitalize traditional “salaš” farms through support for rural tourism and for the development and branding of local speciality products. This in turn is vital for the conservation of rare domestic animal breeds.

2. Winter nomadic pastures on ruderal lands and stubble



These pastures are mainly located in the Srem region, in Banat and in the river valleys below high mountain ranges across the whole of Serbia – *popaša* practice (now an extinct practice).

Transhumance grazing practices have recently disappeared from Vojvodina. The horizontal migration of Balkan

transhumance communities used to reflect seasonal changes in vegetation, which shaped the way of life of livestock raising communities. These practices had high cultural value and their disappearance has not only led to a decline in landscape character, but also to a loss in the genetic diversity of sheep populations. Without grazing or mowing, most grasslands in lowland areas will vanish, as they lie in forest zones and zones of anthropozoogenic origin.

3. Semi-natural meadows or meadows with sown mixtures used for hay production



This farming system is responsible for creating the familiar landscapes of the Šumadija Mountains in Serbia. Up until the 1960s, the meadows were under extensive management. Mowing was late and the meadows were reseeded with native species. Both practices resulted in the maintenance of a high diversity of plant and animal communities. From the 1960s to the 1980s, management was intensified. The grasslands were reseeded with simple grass-legume mixtures and mowing was conducted earlier. As a result, species richness declined and certain grassland nesting birds were threatened.

In the last decade, the intensity of land management has decreased with the return of more traditional practices. The traditional mowing feast of Rajac Mountain serves to reinforce local traditions, including the communal mowing of mature grasslands, as well as generating income from tourism, attracting thousands of tourists every year. Throughout the Šumadija region — Mt. Valjevo, Suvobor, Rajac, Rudnik — the appeal for rural tourism derives from the beautiful and diverse meadows maintained through traditional grassland management practices. The best example of the benefits provided can be found in Ljig and Valjevo surroundings, supported by local NGOs “Moba” and “Domaćin” and tourism boards of the municipalities of central Serbia.

4. Semi-intensive grazing of highland semi-natural grasslands in forest zones and natural grasslands above the forest zone



Semi-intensive livestock systems are based on grazing by sheep, cattle and horses of highland semi-natural grasslands in forest zones and natural grasslands above the forest zone. They are typically found in the more humid zones of western Serbia.

These zones are created and maintained through low-intensity grazing by cattle and sheep, with mainly stationary summer grazing, and these pastures are often found in the coniferous forest zone, and less frequently as openings in mixed forest or at higher altitudes. This type of management has created some of the most attractive mountainous areas of Serbia, found in the Tara, Zlatibor, Zlatar, Golija and Sjeničko-Pešterska plateaus, punctuated with mountain summer shelters for animals and people, called *katuni*. Unfortunately, grazing animals are hardly seen in this region today except for on the Sjeničko-Pešterska plateau. The absence of humans and animals in these landscapes, coupled with the arrival of invasive species, has led to a reduction in the economic and ecological value of these grasslands.

The most attractive tourist areas in western Serbia, famous for their beauty and the quality of their dairy and meat products, depend on cattle and sheep for their existence. Traditional recipes have been kept, though it is increasingly difficult to source food products from native domestic species. Zlatibor cheese now comes from suburban Valjevo, and soon the famous Sjeničko lamb may be replaced completely by the German Virtemberg lamb. South American beef dominates the national and international markets and the authentic smoked ham from Zlatibor Mountain has suffered a similar fate to that of the traditional village from where it originates.

5. Extensive nomadic grazing of highland grasslands

Extensive livestock system, with sheep, goats and cattle grazing highland grasslands in southern, southeastern and eastern Serbia.

Over 100,000 hectares of pasture are under extensive

grazing, mainly by indigenous sheep breeds, such as Pramenka (Zeckel). These breeds have coarse wool, good milk production and excellent meat quality. Grazing is traditional and seasonal, locally referred to as “under sheep feet”. These pastures are found in the area of natural mountain pastures above the forest zone and in openings in coniferous forests cleared by deforestation.

In the past, higher levels of grazing often led to the depletion of resources in some locations. Although it decreased productivity, selective grazing had a positive effect on the open canopy meadow, helping to maintain high levels of biodiversity. For example, extensive



livestock herding supports the survival of birds of prey and grassland birds. However, due to the depopulation of these areas in recent decades, these values are on the verge of disappearing.

6. Extensive grazing of closed village pastures

In an extensive livestock system, free range pigs, sheep and poultry graze on semi-natural vegetation in managed orchards (mainly plums) and in forests patches.

This farming system is practised across central Serbia. At present, it is not a HNV farming system, because the rearing of free-range pigs removes grassland cover, leading to a loss of biodiversity. However, it has the potential to be HNV with appropriate management.

Today this type of small-scale farming is being modernized, with animals increasingly reared in sheds. One of the benefits of this system is the maintenance of valuable domestic animal genetic resources. Depending on the type of village, this system was often combined with an agroforestry system, where outdoor reared pigs roamed in oak woods and grazed on acorns. This system has now been almost completely abandoned (still present in the Posavina region) after acorn collection was forbidden due to the threat of infection by trichinellosis, although some free range animals continue to be kept in yards.

The survival of this system is closely linked to the tradition of the Serbian feast, during which family guests enjoy home-reared lamb. Due to limited grazing resources in central Serbia, this semi-subsistence farming system is likely to survive, as long as the slaughtering of animals in situ for family consumption remains legal.

7. Combined use mountain grasslands

This is a livestock system based on grazing by sheep and cattle in valley meadows, mid-mountain combined purpose meadows and highland pastures.

Sheep production across two specific zones has been preserved in southeastern and eastern Serbia as the successor to a form of production in which nomadic flocks roamed from the south to the north of the country. It represents a semi-nomadic livestock system that follows seasonal changes in vegetation at different altitudes. The system is based on winter-spring grazing in the lowlands with daily spring and early summer migrations to meadows found in the deciduous woodland zone. On St. George's day at the beginning of May, the flocks are moved to highland pastures, above the zone of mixed woods, where they are free to roam during the day and kept within fenced meadows overnight (*trlo, bačilo*).

The recent abandonment of highland pastures is jeopardizing the survival of pastures in the lowlands due to overstocking. This in turn leads to soil degradation and erosion on slopes, while the abandoned grasslands are being invaded by juniper, blackberry and other shrubs. However, keeping this system alive could provide farmers with considerable economic benefits, through the development, processing and sale of valuable and high quality products, such as Pirot and Stara Planina Kačkavalj hard yellow cheese.

8. Deciduous forests pruned for winter forage

This is an extensive mountain sheep system, with winter forage collected from deciduous forests.

In certain mountain areas having limited resources for the production of winter feed, an ancient practice evolved and has resulted in the creation of valued cultural landscapes. It involves the pruning of deciduous trees and the collection of branches and leaves which were then dried and stored for animal feed. As this practice impacted the commercial value of certain woodlands, it was forbidden in state owned forests, although it is still carried out in the

lower Danube region and eastern Serbia. In these areas, additional economic benefits could be generated through tourism and the production of traditional handicrafts, providing a rationale for maintaining the system within sustainable limits and at a relatively small scale.

9. Marginal grazing on land with light, salted or hard soils

These are semi-intensive grazing systems with grazing by sheep, cattle and donkeys on sandy dunes, salted or hard soils with a high water table, typically found in the Banat region.

The formation of steppe vegetation in the Deliblato Sands has been influenced by anthropozoogenic factors, especially mowing and grazing, in addition to natural, environmental forces. A significant amount of scientific research has been conducted in the Deliblato Sands area and has demonstrated that a well-balanced grazing regime, with appropriate stocking densities, is required to maintain this valuable environment. The return of extensive grazing by indigenous animals is the best way to preserve the area's landscape character and heterogeneity, and to maintain biodiversity, including species such as the Imperial Eagle, which depends on open grassland habitats for its prey.

10. Grazing of wet leas in lowland villages



The centuries old practice of exploiting communal pastures for grazing by non-ruminants continues in some parts of Serbia today. Until the 1960s, communal pastures were used for the rearing of geese (for meat, liver, feathers). However, the grazing of communal lands by pigs and poultry, mostly duck, geese and turkeys, is currently declining due to the threat of infection from trichinella and avian influenza. There is little economic value in such practices, except perhaps for "salaš" rural tourism, which is associated with local events and celebrations such as the 'Geese Fight' in Mokrin, etc.

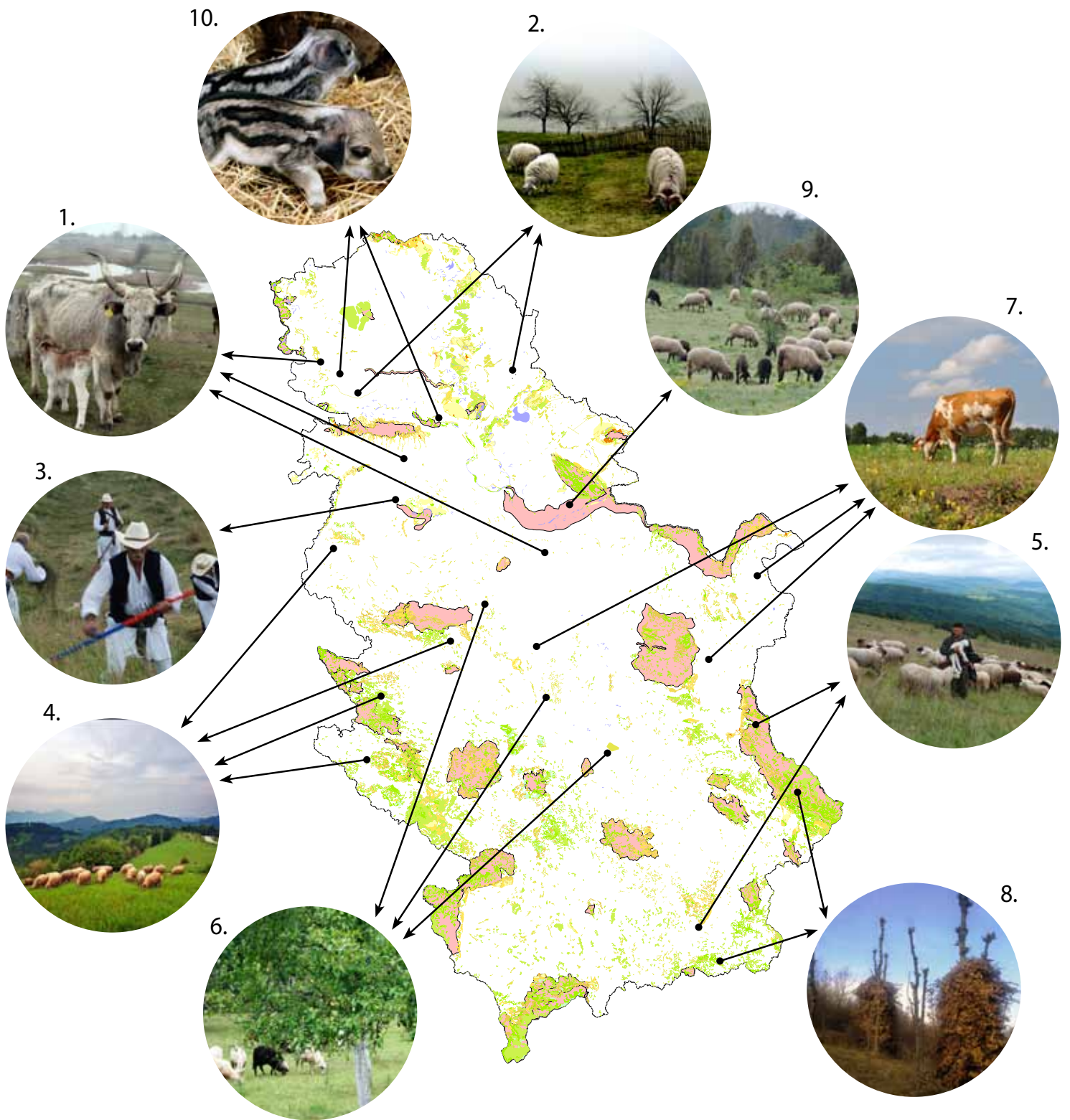


Figure 4.2. Indicative distribution of selected low intensity farming systems in Serbia

HNV Farming System*	Key characteristics
<p>Semi-natural meadows moved or dual purpose moving-grazing based systems</p>	<ol style="list-style-type: none"> 1) Land used semi-intensively. Semi-natural vegetation used for grazing livestock in spring and autumn and late moving over summer, livestock density never exceeds 1 LU per ha, mineral nitrogen and biocides not used, low levels of manure applied very rarely or not used at all due to lack of labour. 2) Unimproved grasslands are highly biodiverse, with an average number of plant species greater than 60 per grassland community, scrub invasion controlled by shepherds and through mowing, field margins preserved. 3) Land use mosaic present on a limited scale and diversity of land cover mainly derived from various plant communities of semi-natural grasslands resulting from diverse soils, their depth, elevation and geological substratum rather than management practices; arable land (mainly potato, carrots and similar or wheat, barley and oats) no longer present at a large scale; majority of mosaic consists of natural vegetation forests and grasslands. 4) Traditional livestock breeds (agro-biodiversity) associated with this system are Zeckel sheep of diverse strains, such as Svrlijig sheep, Pirot sheep, Krivovir golden sheep, domestic spotted cattle, Balkan goat, mountain pony, etc. 5) Semi-subsistence farmers and mid-commercial farms mostly producing milk products.
<p>Semi-natural pastures based grazing systems</p>	<ol style="list-style-type: none"> 1) Land used extensively/low intensity of production; semi-natural vegetation used for summer grazing, livestock density never exceeds 0.1 LU per ha, mineral nitrogen and biocides not used. 2) Unimproved grasslands, highly biodiverse, average number of species less than 60 per grassland community due to scrub invasion, which used to be traditionally controlled by shepherds through physical eradication or burning, field margins do not exist. 3) Land use not mosaic - diversity of land cover mainly derived from various plant communities associated with semi-natural grasslands resulting from diverse soils and their depth, elevation and geological substratum rather than from management practices. 4) Traditional livestock breeds (agro-biodiversity) connected to this system are Shara sheep, Karakachan sheep, Bardoka sheep, Valachian sheep, Bucha cattle, domestic buffalo, Balkan donkey, etc. 5) Semi-subsistence farmers organised to manage grazing together, but very rarely for marketing purposes, mostly using private meadows for moving and grazing and public meadows for summer grazing; very few large farms privatised such as the one on Vlasina with thousands of hectares of pastures, meadows and arable land; medium farms contracted, e.g. to deliver milk to processors and lambs to slaughterhouses.
<p>Forests and wetlands pastures based grazing systems</p>	<ol style="list-style-type: none"> 1) Extensive land use/extensive production based on semi-natural vegetation for grazing livestock during the winter season with the addition of concentrated feed while animals are housed at night and during severe climatic conditions, livestock density varies, mainly low and immeasurable, nitrogen and biocides not used. 2) The presence of semi-natural features (unimproved grass and weed cover in lower forest floors, scrub, field margins and remains of crops not plugged after harvest). 3) Land use mosaic consisting of wetland forests, harvested fields of various crops – mainly wheat, maize and sunflower and young fields of wheat and alfalfa stands in winter dormation or slow development phase. 4) Traditional livestock breeds (agro-biodiversity) connected to this system are Mangalitza pig, Resavka pig, Moravka pig, Vlašička sheep, Tzigaja sheep, Podolian cattle, etc. 5) Mid-size commercial farmers mainly oriented towards direct sale of meat to processors or middlemen, rarely processing products themselves.

Approximate extent of the farming system, its distribution and geographic location	Trends / tendencies	Associated wildlife
<p>Widespread farming systems - found across the complete range of Serbia's mountains; in clearings in the forested zone of mountain areas of central Serbia, western mountains and southern mountains (mountains of the Dinaric Arc such as Zlatibor, Golija, Zlatar and Valjevske Mt., Kopaonik and Shara Mt.), southwest, south (Rhodopes such as Dukat, and mountains of Vlasina area), southeast (Balkans – Suva and Stara Planina) and eastern Mountains (Carpathians – Homoljske Mt., Miroch, etc.)</p>	<p>Emigration of the rural population leads to decline in the number of farmed animals, poor infrastructure, lack of shepherds and of well-trained shepherds, high losses of sheep to large predators leading to abandonment of grazing on higher altitude pastures.</p> <p>Also, further division of the region through the introduction of borders with neighbouring countries has put an end to the last transhumant practices for sheep flocks, cutting through traditional migration routes spanning from south to north and from the mountains to the lowlands of the Pannonian basin. Meanwhile, the ageing population in mountain regions is no longer capable of maintaining vertical migrations at the local-micro level which used to provide possibilities for long-term or permanent sustainability of grazing/mowing systems based on semi-natural vegetation.</p>	<p>Variety of birds nesting in late mowed grasslands</p> <p>Hunting game – hare, roe deer, wild boar, Grey Partridge (<i>Perdix perdix</i>), Rock Partridge (<i>Alectoris graeca</i>) and Common Quail (<i>Coturnix coturnix</i>).</p> <p>Large predators such as wolf and jackal represent a problem for livestock farming</p> <p>Variety of grassland communities</p> <p>Variety of medicinal and aromatic plants</p> <p>Wild fruits such as blueberry, blackberry, raspberry and other hedgerow species, etc.</p>
<p>Widespread highland areas in eastern, southern and western Serbia high mountains of the Dinaric Arc, Carpathian-Balkan mountain range and Rhodope mountains, including pastures above the forest zone and pastures on sand dunes, salty terrain and lands with hard soils and a high water table. Huge area of mountain pastures and ecological island in the Pannonian plains of the Banat region.</p>	<p>The long-term neglect of agricultural extension services and grassland science in marginal areas has resulted in a lack of exposure to new marketing patterns, certificates and standards which can add value to products derived from traditional farming. A simplified rural economy with little scope for diversification to exploit natural resources and conditions threatens the survival of HNMF of exceptional value from the biodiversity conservation perspective, cultural heritage and conservation of cultural landscapes, etc. HNMF in Serbia is progressively being degraded.</p> <p>The recent trend towards rehabilitating the rural economy in certain areas by following an old pattern of intensification in spite of the natural capacity of soils and the planned intensification of mineral fertilizers is still limited due to the lack of favourable credit lines for financing production and lack of experience and mechanization for reseeding grasslands. If this trend continues, most of the valuable semi-natural grasslands might be destroyed through establishment of grass-legume mixtures; lack of systematic and multiannual planned financial support and problems with marketing products might cause vacuum in farmers' decision-making to intensify or keep HNMF practices alive. In the meantime, these vulnerable habitats will be lost due to natural succession.</p>	<p>Variety of birds nesting on pastures</p> <p>Hunting game – hare, roe deer, wild boar</p> <p>Birds - Grey Partridge (<i>Perdix perdix</i>), Rock Partridge (<i>Alectoris graeca</i>) and Common Quail (<i>Coturnix coturnix</i>).</p> <p>Birds of prey such as Imperial Eagle, Golden Eagle and Griffon Vulture, which are positively related to extensive grazing practices.</p> <p>In some cases, large predators such as wolf represent a serious threat for flocks and herds of domestic animals grazing on semi-natural and natural pastures in high mountains. With revitalization of grazing practices in highlands of Serbia, wolves and jackals become a serious threat.</p> <p>Variety of grassland communities</p> <p>Variety of rare and endangered plants including medicinal and aromatic plants</p> <p>Wild fruits such as blueberry</p> <p>Orchids and other rare flowering species</p>
<p>Small areas of mainly lowland wet forests of Vojvodina in valleys of large rivers such as Sava, Danube, Tamish, Tisza, Karas, etc.; deciduous woodlands of lower altitudes of central Serbian mountains such as Rudnik; terraces of central Serbian rivers with wide valleys such as the Morava River.</p>	<p>The recent trend towards rehabilitating the rural economy in certain areas by following an old pattern of intensification in spite of the natural capacity of soils and the planned intensification of mineral fertilizers is still limited due to the lack of favourable credit lines for financing production and lack of experience and mechanization for reseeding grasslands. If this trend continues, most of the valuable semi-natural grasslands might be destroyed through establishment of grass-legume mixtures; lack of systematic and multiannual planned financial support and problems with marketing products might cause vacuum in farmers' decision-making to intensify or keep HNMF practices alive. In the meantime, these vulnerable habitats will be lost due to natural succession.</p>	<p>Hunting game – Hare, Pheasant, Quail, Mallard Duck, Bean Goose, Greater White-fronted Goose, Roe Deer, Red Deer, Wild Boar. Variety of wetland birds including migratory species, some of these areas are IBA, and Ramsar sites. From the perspective of bird conservation, livestock is not welcome in all of these areas since they may disturb nesting birds. Shepherds are often accused of collecting eggs and destroying nests. The coexistence of traditional farming practices in wetland pastures is required wherever grazing maintains grassland cover and prevents invasion of shrubs and trees. The problem with balancing diverse interests of grazing animals and wildlife is only part of the livestock breeders' problem, they also come into frequent conflict with crop producers who attribute the destruction of young crops to sheep, pigs or cattle. For this reason the "popaša" system has already been prohibited in Vojvodina in recent years, resulting in a loss of agro-diversity connected with this system (Vlašička sheep).</p>

4.3 Mapping HNV Farming Systems in Serbia

The next step towards applying the HNV farming concept in Serbia involves developing and applying indicators to identify the distribution of HNV farmland. Maps of HNV farmland have been prepared in all EU Member States and are a useful tool for visualizing which parts of a country are likely to be most relevant for the targeting of measures, such as agri-environment payments, to support HNV farming systems.

However, such maps should be interpreted with caution (Beaufoy, 2008) since the available data sources are usually partial and can only indicate the approximate location and the approximate area (in hectares) of HNV farmland. Secondly, the biological diversity of farmland ranges along a gradient between the lowest and the highest values, and there is no clear dividing line that can be drawn on a map between HNV farmland and non-HNV farmland.

The mapping of High Nature Value (HNV) Farmland in Serbia was carried out in several steps, as described below. Relevant CORINE 2006 land cover classes were selected (Table 4.1) and divided into two groups on the basis of available botanical data. The first group includes land cover classes 231, 321 and 411, and the second includes classes 211, 221, 222, 242, 243, 324, 333.

Mapping of the first group of CLC classes was based upon a comprehensive set of literature and other data sources relating to grassland vegetation. This group includes the habitats and plant communities of pastures (231), natural grasslands (321) and inland saline habitats, i.e. inland salt marshes (411) for which phyto-sociological records are available (data collected and kept at the Department of Applied Botany, Faculty of Agriculture, University of Belgrade). The second group of CLC classes serves as an indicator of all other potential HNV farmland types, for which no detailed botanical data exist.

Table 4.2 CORINE land cover classes selected as a basis for the identification of HNV farmland in Serbia

211	Non-irrigated arable land
221	Vineyards
222	Fruit trees and berry plantations
231	Pastures
242	Complex cultivation patterns
243	Land principally occupied by agriculture, with significant areas of natural vegetation
321	Natural grasslands
324	Transitional woodland-shrub
333	Sparsely vegetated
411	Inland marshes

CORINE land cover data, information on Important Bird Areas (IBA), Important Plant Areas (IPA), Prime Butterfly Areas (PBA) and Protected Areas (PA) were transformed into a national coordinate system so that these data could be analysed and represented spatially.

The location and distribution of IPA, PBA, PA, Important Bird Areas (IBA) and protected areas in Serbia, including national parks, nature parks, landscapes of outstanding features and nature reserves (where data are available), were mapped.

A layer of habitat areas was added to the map. This process was performed using botanical (phyto-sociological) records of grassland communities from individual sites and localities situated within broader geographical units, such as mountains, lowlands, sands, plateaus, canyons and gorges, etc. In a biological and ecological sense, habitats usually fully correspond to particular vegetation types, including types of grassland and their related grassland communities.

The corresponding layers were created and translated into a single coordinate system.

The indicative location and distribution of HNV farmland in Serbia was identified as follows:

- areas identified by the following CORINE land cover classes - 231, 321 and 411;
- areas identified by the following CORINE land cover classes - 211, 221, 222, 242, 243, 324, 333 – AND which overlap with one of the IPA, PA, IBA, PBA or Habitats layers.

CORINE land cover classes 231, 321 and 411 were automatically assumed to correspond to HNV farmland. Class 231 (Pastures) does not distinguish between pastures grazed at low intensity and those under more intensive grazing. Therefore this broad identification of HNV farmland should be considered as indicative only and further analysis is warranted in the process of targeting agri-environment measures in the future. That said, it is likely to be a fairly good estimate of Type 1 HNV farmland given that the area of intensively-grazed grasslands has dramatically decreased in recent decades and the majority of grasslands are grazed extensively at very low stocking densities.

The extent of HNV farmland was calculated and the map processed.

The indicative distribution of High Nature Value (HNV) farmland in Serbia is presented in the enclosed map.

This is not a final and definitive map, but a preliminary version using available data within a limited time frame. It indicates that approximately 11,872 km² of agricultural

land in Serbia is High Nature Value. This is equivalent to approximately 19% of the total agricultural area, and 13% of the total territory of Serbia. It should be stressed that the area of HNV farmland in Serbia is likely significantly higher, as the approach followed supports the identification of Type 1 HNV farmland (farmland with a high proportion of semi-natural vegetation) and does not fully capture Types 2 and 3 HNV farmland (farmland with a mosaic of low intensity agriculture and natural and structural elements or that which supports rare species or a high proportion of European or World populations; see Chapter 3 for definitions of different types of HNV farmland).

4.4 Case studies to understand HNV farming systems in Serbia

Two case studies were carried out to examine several HNV farming systems in more detail, to identify the farming practices that are beneficial for wildlife and biodiversity and to demonstrate the types of threats faced by these farming systems. The work was carried out between 2009 and 2010 in Stara Planina Nature Park and the Banat region (Deliblato Sands).

The objectives of each case study were to:

- develop a clear understanding of the relationship between the local farming systems and biodiversity value of the associated farmland;
- clearly identify the driving forces and pressures (positive/negative) upon this biodiversity;
- set appropriate priorities and objectives for the conservation of farmland habitats and species;
- develop appropriate agri-environment measures, including indicators;
- provide an overview of the necessary administrative arrangements for making the pilot scheme operational.

A summary of the two case studies is provided below while the conclusions and recommendations for further actions are described in Chapter 6.

4.4.1 Stara Planina Case Study Introduction to the Case Study Area

Stara Planina Nature Park includes parts of the territories of the municipalities of Dimitrovgrad, Piroć, Zaječar and Knjaževac, and is located along the eastern border of Serbia with the Republic of Bulgaria. The region covers an area of approximately 1,143 km², just over a quarter of the Stara Planina region, which extends over 4,000 km². The hilly and mountainous territory of the nature park

ranges in altitude from 200 to 2169 metres, forming a belt approximately 100 km long and between 4 and 30 km wide (Figure 4.3).



Figure 4.3 Location of Stara Planina on a satellite map

Stara Planina Nature Park was established in 1997 as the largest protected area in Serbia to be afforded category 1 status (according to Serbian legislation – an area of exceptional national importance). This is in recognition of its exceptional geological diversity, morpho-hydrological dissociation and the diversity of its flora and fauna. The nature park is divided into three zones with differing degrees of protection: 1) Zone I, which incorporates the most valuable and safeguarded parts of the nature park, is mostly situated in the central part of the main mountain massive, covering an area of 41.60 km²; 2) Zone II covers an area of 196.79 km²; and Zone III covers an area of 904.93 km². Stara Planina was proclaimed a peace park in 1996 after a memorandum was signed between the then Federal Republic of Yugoslavia and Bulgaria. Significant interaction among communities on both sides of the border has occurred subsequently under the “Promotion of Networks and Exchanges in the Countries of South Eastern Europe – Stara Planina, Serbia and Montenegro”. It is also a candidate for the UNESCO – MAB (Man and Biosphere reserve) programme.

Stara Planina is one of the richest plant areas of Serbia, with about 1,190 plant and 51 moss species, equivalent to 34% of the nationally identified plant species (Mijović,

2006). The main vegetation formations are forests, shrub vegetation, grasslands (cutting meadows and grazing pastures) and bog plant associations.

Formerly prosperous, this region was famous for good pastures, sheep cheese, lamb meat, wool carpets (*kilim*) and pottery, with traders transporting their products to the historical Republic of Dubrovnik and to remote markets in Egypt, America, and Canada. Agriculture, dominated by low intensity grazing systems, has been a mainstay of the rural economy in the 46 settlements in the nature park. However, rural emigration, an ageing population, the collapse of agro-enterprises and cooperatives and general poverty have led to the abandonment of agricultural land and the degradation of these valuable grasslands.

High Nature Value Farming in Stara Planina

Within the nature park, the agricultural land structure is as follows: pastures occupy 45.2% of the total agricultural area; land used for special crops and gardens - 27.8%; meadows - 23.5%; orchards - 2%; and vineyards - 1.5%. The most valuable agricultural resources are large natural swards, created by anthropogenic factors and the mountain climate.

As described in Chapter 3, High Nature Value farming is a useful descriptor and means of identifying those management practices and farming systems which are beneficial for wildlife. The three agricultural land use categories in the nature park identified by Zlatković (2006) can be used as a starting point for identifying HNV farmland in the case study area. These include:

A - the zone of livestock production covering high mountain areas, and to a lesser extent the lowland grazing areas (including the region of the municipality Dimitrovgrad, most of area of the municipality Pirot, and part of the municipality Knjaževac);

B - the zone of crop production situated in the river valleys; and

C - the transitional zone situated between the two above mentioned zones.

Drawing on the definition of HNV farmland (Andersen *et al.*, 2003), the following types of HNV farmland can be found within the case study region:

HNV farmland type 1 (high proportion of semi-natural or natural vegetation) found in Zone A (high mountain areas managed by extensive grazing by sheep, cattle and goats and by mowing).

HNV farmland type 2 (mosaic of habitats and/or low-intensity land uses) can be associated with Zone B (crop production situated in the river valleys) and Zone C (transitional zone situated between Zones A and B) of the nature park. Low intensity grasslands and arable mosaics are predominantly present in the valley floors where crop production, mowing and some grazing takes place.

HNV farmland type 3 (supports a few rare species and are otherwise low in biodiversity) is found where more intensive management of grassland or arable land takes place within Zones B and C in the case study region. This type is present in the intensive grassland systems, or more intensive arable systems which support rare species and species of global or European importance such as Rough-legged Buzzard (*Buteo rufinus*), Eagle Owl (*Bubo bubo*), Rock Partridge (*Alectoris graeca*), Tawny Pipit (*Anthus campestris*), Red-backed Shrike (*Lanius collurio*), and Ortolan Bunting (*Emberiza hortulana*).

Stara Planina Nature Park is one of Serbia's most important centres for *in situ*, on farm conservation of autochthonous endangered breeds including the domestic mountain pony, Balkan donkey, Busha cattle, Pirot Zackel sheep, Karakachan sheep, Bardoka sheep, Balkan goat, Mangalitza pig, East Serbian hen, etc. Unfortunately, the populations of these breeds have declined in recent years, though the area still supports a valuable gene pool. According to the 2002 agricultural census, the number of animals in this region is 5.5 times less than the minimum necessary to ensure the long term fertility of the soil.

During the "golden" era of sheep production, a large proportion of the landscape was shaped by the grazing practices of local and nomadic tribes breeding more than 300,000 sheep. For centuries, transhumance was the traditional system of livestock production in the Balkan Peninsula. After World War II, the State encouraged intensification which led to overgrazing on lower elevation grasslands and undergrazing or abandonment of higher elevation grasslands.

High Nature Value Farming and Biodiversity

Many organizations have carried out assessments of the biodiversity of Stara Planina Mountain. Out of a total of 1,500 species, 210 are threatened and in need of urgent conservation measures (Wilderness Fund, 2010). The vegetation of Stara Planina consists of 52 plant communities, whose spatial distribution depends on abiotic influences, including altitude, relief, soil and climate. According to a detailed study of plant

communities and habitats in the Stara Planina mountain area published by the Serbian Academy of Science (Mišić *et al.*, 1978), the grassland vegetation is divided into the six distinct groups: 1) hilly cutting meadows and grazing pastures, 2) thermophilous cutting meadows and grazing pastures, 3) mountainous grazing pastures and cutting meadows, 4) sub-alpine grazing pastures and cutting meadows, 5) alpine grazing pastures and 6) bog vegetation. Some of grassland communities are unique. For example, the association *Agrostio-Asphodeletum albae* has a restricted distribution, but it is very important from a biodiversity perspective. The community is spread across an altitude range of 1,200 and 1,400 m within the oak belt, and it occurs on soils of varying depth and moisture. The phytocoenose is primarily characterized by its edificatory species, *Asphodelus albus*, typical of the Mediterranean region.



particularly impressive in the *Arrhenatherion* communities of the valleys. These species' favourite habitats are mosaics with bushes and edges. Common Buzzard (*Buteo buteo*), Kestrel (*Falco tinnunculus*) and Quail (*Coturnix coturnix*) are abundant in the valley grasslands. Corncrake (*Crex crex*), a flagship grassland species breeds in rich, dense and tall mesophile meadows. It is usually absent from grazed areas, primarily in mowed meadows. The mosaic of small plots of cereals, mixtures of maize-beans *Cucurbitaceae* and alfalfa has a positive effect on many passerine species such as Goldfinch (*Carduelis carduelis*), Linnet (*C. cannabina*), Buntings (*Emberiza spp.*) and Chaffinch (*Fringilla coelebs*). They feed on the seeds of arable weeds and arthropod insects in this mosaic of crops and forage plants. Lucerne is also a source of nutritious leaves and arthropods for species like Quail (*Coturnix coturnix*) that nest in cereals and meadows and feed in



Pilot pasture in the area of Mučibaba-Pregrada, with Buša Cattle (left) and *Asphodelus albus* (right)

Some grassland related species occupy open spaces in alpine grasslands and cover a very small part of the Stara Planina mountains or are found in the subalpine belt, such as European Ground Squirrel (*Spermophilus citellus*), Alpine Accentor (*Prunella collaris*) and White-winged Snowfinch (*Montifringilla nivalis*). Other species are more closely linked to grasslands grazed by livestock and disappear if grasslands are abandoned for a long period, including Egyptian Vulture (*Neophron percnopterus*), Griffon Vulture (*Gyps fulvus*), Horned Lark (*Eremophila alpestris*), Yellow-billed Cough (*Pyrhocorax graculus*). *N. percnopterus* and *G. fulvus* are extremely rare but their populations are expected to grow if the sheep densities in high altitude grasslands increase. The densities of the populations of Red-backed Shrike (*Lanius collurio*) and Turtle Dove (*Streptopelia turtur*) are

alfalfa and in other arable crops. Wagtails (*Motacilla spp.*) are widespread; the White Wagtail (*Motacilla alba*) is one of the most common species in the villages with House Sparrow (*Passer domesticus*), Starling (*Sturnus vulgaris*) and Barn Swallow (*Hirundo rustica*). The Yellow Wagtail (*Motacilla flava*) and Grey Wagtail (*M. cinerea*) are mostly found at distance from human habitats.

Quail (*Coturnix coturnix*) is present in these grasslands if the sward is tall enough to ensure protection against predators. Common Buzzard (*Buteo buteo*), Kestrel (*Falco tinnunculus*), Raven (*Corvus corax*), Skylark (*Alauda arvensis*) and Water Pipit (*Anthus spinoletta*) are found in all high altitude grasslands. Whinchat (*Saxicola rubetra*) is present when tall herbaceous plants emerge from the short swards of high altitude grasslands.

Threats to HNV Farming and the Loss of Biodiversity

Two contrasting trends are unfolding in Stara Planina—the under-management of natural resources and the overuse of natural resources, both of which result in the loss of biodiversity, and are associated with the disappearance of cultural customs and traditions. These trends result from a rapid decline in traditional agricultural practices through the:

- intensification of agricultural activities in the valleys;
- the use of inappropriate chemicals and practices for pest control (uncontrolled use of pesticides and fertilizers);
- lack of appropriate manure management resulting in nitrate leaching into streams;
- overgrazing around settlements and early cuts in the meadows resulting in erosion;
- eutrophication in some peat bogs as a result of intensive livestock production;
- abandonment of high mountain grasslands, traditional orchards and mosaic cropland in the valleys;
- ongoing disappearance of agro-biodiversity autochthonous farm animal breeds and autochthonous crop, vegetable and fruit varieties.

Many of the higher mountain grasslands have been abandoned. Several plant and animal species are now threatened, endangered or extinct, especially those associated with the sub-alpine and alpine vegetation belts. Thousands of hectares of natural pastures are being degraded due to a lack of regular grazing or mowing. The extremely low stocking rates have resulted in the spontaneous spread of undesirable shrubs, mainly dwarf juniper (*Juniperus nana*), trees and herbaceous weeds. The expansion of poor quality grasses, such as *Nardus stricta*, *Calamagrostis arundinacea*, *Brachypodium pinnatum*, *Festuca spadicosa* and others additionally reduces grassland quality and yield. Reportedly, vultures have disappeared from Stara Planina, which is related to the lack of traditionally managed flocks of domestic ungulates on open grasslands. In particular, autochthonous breeds of domestic animals have the characteristics to survive in high mountain pastures during unfavourable forage, climate and weather conditions. Today, most of the locally adapted livestock breeds typical of the Stara Planina region are now rare, endangered or threatened by extinction.

In addition to the loss of genetic diversity among domestic species, wild species are also negatively affected by the over- and under-utilisation of grasslands and meadows. This includes wild relatives of crop, forage and medicinal plants and fruits. The diversity of wild fauna is also strongly affected by the decline of meadows and

pastures. Meadow birds and insects (including numerous butterfly species) are being threatened due to the decline in the communities of wild flowering plants that provide nectar and seeds. In addition to the vultures, many birds of prey, such as Golden Eagle (*Aquila chrysaetos*), Short-toed Eagle (*Circaetus gallicus*), Rough-legged Buzzard (*Buteo rufinus*) and Saker Falcon (*Falco cherrug*) rely heavily on the presence of domestic livestock in high elevation pastures.

4.4.1. Deliblato Sands Case Study Introduction

The Deliblato Sands occupy an area of over 300 km² in the southern part of the Banat region of Serbia between the Danube River and the western slopes of the Carpathian Mountains. Previously known as the “European Sahara”, this is the largest and most unique area of wind-blown continental sand dunes in Europe. In addition to its extraordinary geological value, the area supports high levels of biodiversity associated with a complex mosaic of rare steppe grassland, sand, wet meadow/marsh and natural forest habitats surrounded by fertile agricultural areas.

The Deliblato Sands are famous for their high degree of endemism, including many unique plants, reptiles and insects associated with the fragile ecosystems characteristic of the region. The sands are also home to a great diversity of bird and mammal species, many of which are of European and global conservation importance.

In 1977, part of the Deliblato Sands was declared a special nature reserve, which currently covers an area of almost 35,000 hectares. It is managed by the Vojvodina Forests (Vojvodina šume) public enterprise. Part of the area have been classified as a Ramsar site - Labudovo okno; Emerald Network of Areas of Special Conservation Interest (ASCI); Important Plant Areas (IPA), Important Bird Areas (IBA) (Labudovo okno, Deliblato Sands), and Prime Butterfly Areas (PBA).

The Deliblato Sands experience a semi-arid climate. Maximum precipitation occurs in June and November, while minimum precipitation occurs in February and September. The average annual rainfall is between 637 and 720 mm, which is higher than the average for the surrounding Vojvodina Province (611 mm). The pedological cover of Deliblato Sands has evolved over a relatively short period of time and comprises several types and sub-types of soil. These include: sierozem with a significant presence of calcium-carbonate and small quantities of humus and clay; organo-genetic pararendzine; and sandy chernozem. The dunes are covered with a layer of black sand (50–100 cm in depth) over which greyish-yellow

sand is piled up. The borders of the Deliblato Sands can be characterized as a transition zone from sand to loess and sandy chernozem to pure chernozem.

High Nature Value Farming in Deliblato Sands

Agriculture in the peripheral parts of Deliblato Sands is characterized by:

- intensive and semi-intensive crop and livestock production;
- fragmented land parcels with an average parcel size of three hectares;
- regular application of chemicals for plant protection and fertilizers, and high levels of machinery use;
- low productivity and efficiency;
- lack of awareness about the importance of preserving natural resources and biodiversity.

Although surrounded by intensively managed farmland, the biodiversity value of Deliblato Sands has largely been maintained through traditional, low intensity farming practices, especially extensive grazing by Podolian cattle, sheep and goats. Once widespread both within the area of Deliblato Sands Special Nature Reserve and its wider surroundings, these low-intensity farming practices are now only found in the pastures at the edge of the sands. This decline in livestock production stems from the prohibition of grazing in the Deliblato Sands Special Nature Reserve in the 1970s, resulting in the loss of traditional grazing and hay-making. Valuable open habitats of the Pannonian sand steppes disappeared through the invasion of meadows and pastures with tree and shrub species, including blackthorn and acacia. The disappearance of the European Ground Squirrel (*Spermophilus citellus*) from many localities, and the decline of the nesting population of Imperial Eagles (*Aquila heliaca*) in recent decades are directly connected to the scrubbing up of former grazing areas. In an attempt to reverse this trend, extensive grazing by Podolian Cattle has been reintroduced in Korn in 2006, in the “heart” of the sands.

High Nature Value Farming and Biodiversity

The key species found in Deliblato Sands which are dependent on the maintenance of open habitats through low-intensity grazing include:

Mammals: European Ground Squirrel (*Spermophilus citellus*), Southern Birch Mouse (*Sicista subtilis*), Lesser Mole Rat (*Spalax leucodon*), Geoffroy's Bat (*Myotis emarginatus*), Natterer's Bat (*Myotis nattereri*), Brown Long-eared Bat (*Plecotus auritus*).

Birds: White-tailed Eagle (*Haliaeetus albicilla*), Imperial Eagle (*Aquila heliaca*), Greater Spotted Eagle (*Aquila clanga*), Lesser Spotted Eagle (*Aquila pomarina*), Griffon Vulture (*Gyps fulvus*), Black Kite (*Milvus migrans*), Red Kite (*Milvus milvus*), Common Buzzard (*Buteo buteo*), Common Raven (*Corvus corax*), Saker Falcon (*Falco cherrug*), European Bee-eater (*Merops apiaster*), Roller (*Coracias garrulus*), Lesser Grey Shrike (*Lanius minor*), Whinchat (*Saxicola rubetra*).

Amphibians and reptiles: European Lizard (*Lacerta viridis*), Schmidt's Whip Snake (*Coluber caspius*), European Copper Skink (*Ablepharus kitaibelii*), Meadow Lizard (*Darevskia praticola*), Balkan Wall Lizard (*Podarcis tauricus*), Aesculapean Snake (*Zamenis longissimus*), Green Toad (*Pseudepidalea viridis*).





Plants: Fern-Leaf Peony (*Paeonia tenuifolia*), Pancic's Wormwood (*Artemisia pancici*), Rindera (*Rindera umbellata*), Dwarf Everlast (*Helichrysum arenarium*).








Threats to HNV Farming and the Loss of Biodiversity






High Nature Value farming systems in the Deliblato Sands face two major threats: agricultural intensification and abandonment, both triggered by socio-economic factors. Certain species-rich steppe grasslands are being overgrazed, threatening rare plant species, whereas others are being converted into fast-growing forest (acacias and pines), arable land and vineyards. Other valuable habitats are rapidly vanishing due to the abandonment of land and traditional practices such as extensive grazing by local traditional breeds. The abandonment of extensive grazing practices contributes to the loss of open steppe habitats and a reduction in ecosystem and landscape diversity. The presence of invasive species (acacia, western lute tree, sour wood and gleditsia) is additionally favoured by an absence of grazing while the scrubbing up of steppe habitats and grazing areas with blackthorns remain a major challenge.

Annex Table 4.3 Low-Intensity livestock farming systems with biodiversity, landscape and wildlife benefits

Note: * This table may be read in conjunction with Figure XX in Chapter 4 of the report. The number in this column serves to locate the farming system on a map of Serbia, indicating its broad distribution.

Short Description	No on the map*	Valuable Serbian landscapes associated with potential High Nature Value farming systems	Associated Autochthonic Breed	Associated Landscapes
Deciduous forests with a high proportion of grassland cover	1	Deciduous forests with high proportion of grassland cover/ agroforestry systems – grazing by sheep and cattle in flooded forests on the banks of Sava, Danube, Tisa, Tamiš and other lowland rivers of Vojvodina. Extensive pig production, foraging on acorns in oak forests.	Tz cigaya sheep Podolian cattle Mangalitza pig	Podolian cattle on banks of the Danube and Karaš Rivers – Labudovo okno 
Winter nomadic pastures on ruderal lands and stubble	2	Winter nomadic pastures on ruderal lands and stubble mainly in Srem region, but also in the Banat and river valleys below high mountain ranges across the whole of Serbia – “popaša practice” (extinct practice)	Vlašička sheep Valachian sheep Balkan donkey Pulin dog	Valachian sheep in Banat region 
Semi-natural meadows or meadows with sown mixtures used for hay production	3	Meadows with sown mixtures or semi-natural, intensively used for hay production for winter feeding of sheep and cattle	Sjenička sheep Svrlijska sheep Domestic spotted Simmental cattle	Meadows of Central Serbia Mowing feast on Mt. Rajac 
Semi-intensive grazing of highland semi-natural grasslands in forest zones and natural grasslands above the forest zone	4	Semi-intensive grazing systems. Grazing of sheep, cattle and horses on highland semi-natural grasslands in forest zones and natural grasslands above the forest zone in the more humid zones of western Serbia	Sjenica sheep Domestic spotted Simmental cattle Domestic buffalo Mountain pony	Pastures of west and south-west Serbia 

Extensive nomadic grazing of highland grasslands	5	Extensive nomadic grazing systems – grazing of sheep, goats and cattle on highland grasslands of south, southeast and east Serbia	Šarplanina sheep Bardoka sheep Karakatchan sheep Piroćki zeckel sheep Krivovirska golden sheep “Žuja” Domestic spotted Simmental cattle Busha primitive cattle Balkan donkey Mountain pony Karakachan pony Šarplanina dog Karakachan dog	<p>Bardoka and Karakachan sheep on Stara Planina – extensive grazing above forest zone</p>  <p>Balkan goat in the forest zone of Stara Planina</p>  <p>Busha primitive cattle in the forest zone of Stara Planina</p>  <p>Mountain ponies on Stara Planina highlands above forest zone</p> 
Extensive grazing of closed village pastures	6	Closed village pastures, extensively managed orchards, mainly plums – farm yards with free range pigs, sheep and poultry	Sjenička sheep Moravka pig Resavka pig	<p>Extensive orchards in central Serbia</p> 
Combined use mountain grasslands	7	Valley meadows, mid-mountain combined purpose meadows and highland pastures for two zone grazing of sheep and cattle	Domestic spotted Simmental cattle Svrlijig sheep Native Zeckel and other sheep, including pure breed and cross-breeds	<p>Domestic spotted cattle on meadows of Mt. Miroč in eastern Serbia</p>  <p>Zeckel sheep on Mt. Miroč in eastern Serbia</p> 

<p>Deciduous forests pruned for winter forage</p>	<p>8</p>	<p>Deciduous forest shaped by the harvesting of branches for "lisnik" - hard winter forage for livestock, mainly sheep, in lower Danube region and eastern Serbia</p>	<p>Zeckel sheep breeds</p>	<p>Forest landscape shaped by cutting leaves and branches as food source for extensive sheep breeds</p>  <p>Sheep fed on tree leaves over winter in southeast Serbia</p> 
<p>Marginal grazing on land with light, salted or hard soils</p>	<p>9</p>	<p>Semi-intensive grazing on sandy dunes, salted and hard soils with high water table with sheep, cattle and donkeys in Banat region</p>	<p>Cigaja sheep Valachian sheep Balkan donkey Domestic spotted Simmental cattle</p>	<p>Deliblato Sands with Cigaja sheep grazing on permanent pastures with <i>Adonis vernalis</i></p> 
<p>Grazing of wet leas in lowland villages</p>	<p>10</p>	<p>Wet leas of lowland villages for grazing of pigs, ducks, geese and other poultry, sometimes also individual cattle, mainly in Vojvodina, but also across the whole of Serbia</p>	<p>Mangaliza pig Various domestic poultry and cross-breeds</p>	<p>Typical scene on lowlands wet leas of Vojvodina with grazing by pigs and poultry</p>  <p>Wet leas of Ponišavlje area with Busha cattle</p> 

Annex 2 – Methodology for HNV Mapping

The methodology for developing the criteria for identifying HNV farmland in Serbia and mapping its distribution was developed using the following sources:

- List of the Habitat Directive Annex 1 habitats depending on agricultural practices
- Final Report of Workshop on High Nature Value farming in the Western Balkans HNV Farmland, 2006, Belgrade (UNEP, WWF *et al.*)
- Draft minutes of EEA expert meeting on High Nature Value farmland, 2006
- Corine Land Cover (EEA, 2006)
- Guidance document to the Member States on the application of HNV impact indicator, 2008 (EEN for Rural Development)
- Habitats of Serbia – The results of Project Harmonisation of national nomenclature in habitat classification with international standards, 2005, Faculty of Biology, University of Belgrade (ed. D. Lakušić)
- Red Book of Flora of Serbia 1 – extinct and critically endangered taxa, 1999. Ministry of Environment Protection of the Republic of Serbia, Faculty of Biology, University of Belgrade and Institute for Nature Protection of the Republic of Serbia (ed. V. Stevanović)
- Phyto-geographical affiliation, distribution and centres of diversity of Balkan's endemic flora in Serbia. PhD thesis by G. Tomović, 2007, Faculty of Biology, University of Belgrade
- Protected Natural Resources in Serbia, 2007. Institute for Nature Conservation of Serbia (ed. S. Dragin and L. Amidžić).

The preliminary map of the distribution of HNV farmland in Serbia drew extensively on a variety of data sets, including hard copy literature (see Annex 1), biodiversity data (total number of species – the alpha diversity, the presence of endemic and endangered species), electronic databases (TURBOWEG database of semi-natural grasslands of Serbia created by Department of Agricultural Botany at Faculty of Agriculture, University of Belgrade), as well as an electronic database containing phytosociological records of natural and semi-natural grasslands of Serbia courtesy of D. Lakušić from the Faculty of Biology and Jevremovac Botanical Garden, University of Belgrade). All data sheets (references in hard copies and electronic databases) were performed using the principles of French-Swiss phytosociological methodology (Braun-Blanquet, 1965). This information was interpreted and supplemented by our own expertise and experience in the survey of grassland flora and vegetation since 1990 (drawing on both published and unpublished results and data), at the Department of Agricultural Botany, Faculty of Agriculture, University of Belgrade.





CHAPTER 5:

AGRI-ENVIRONMENT POLICY MAKING IN THE EU

5.1 What are agri-environment policies?

Agri-environment policies use financial incentives and advice to encourage farmers to protect and enhance the natural environment on the land they manage. This includes the protection and conservation of soil, air quality, ground and surface water, wildlife habitats and species, traditional agricultural landscapes and high nature value (HNV) farmland.

Agri-environment policies offer farmers regular payments in return for providing an environmental management service, though these are not typical subsidy or income support payments. Farmers must work to deliver the environmental benefits, either by maintaining or introducing clearly defined management practices. These practices produce a specific environmental benefit, above and beyond the level of protection already provided by environmental regulation. The practices targeted by agri-environment policies can be very diverse, but generally speaking have one of two broad objectives: to either stop or avoid negative impacts on the environment (by discouraging harmful practices) or to maintain or create positive impacts on the environment (by encouraging beneficial practices).

Whether a farmer qualifies for agri-environment payments will depend on the nature of the farming system and the specific environmental benefit required. There are three general types of action, which may occur in different places on the same farm:

- continuing current management if this already provides a high level of environmental benefit (e.g., providing biodiversity benefits by grazing local breeds of sheep and cattle on summer mountain pastures that would otherwise be abandoned, or making hay in small traditional meadows rather than reseeding and fertilizing the grassland for silage production);
- modifying management (e.g. improving water quality by reducing fertilizer use, using water-saving irrigation techniques, or using biological rather than chemical methods of pest control);
- significantly changing management or land use (e.g., conserving fragile soils by converting arable land to permanent grassland, or introducing grass into an arable rotation).

Agri-environment payments are usually offered to farmers within the framework of a scheme or programme which may include a list of options detailing the relevant management requirements for each and the associated payment. Participation in the scheme is voluntary, but in order to receive the agri-environment payment, farmers

are required to sign a management contract with the government authority responsible for the administration of the agri-environment scheme or programme.

This contract will usually specify the:

- a) management requirements that must be followed by the farmer;
- b) specific areas of land to which the management requirements must be applied;
- c) period of time over which the management requirements must be followed (i.e. duration of the contract);
- d) payment that will be made to the farmer in return for following the management requirements (usually once or twice a year); and
- e) penalties that will be applied if the management requirements are not followed.

Agri-environment management requirements and payments can be adapted readily to the characteristics of particular farming systems and environmental conditions, and agri-environment policies may be designed, targeted and delivered at the national, regional or local level. This makes them a very useful tool for influencing the behaviour of farmers and for achieving a wide range of environmental objectives.

During the current rural development programming period (2007–2013), all EU Member States must offer voluntary agri-environment payments to farmers throughout their territory, and this arrangement is likely to continue in the forthcoming period (2014–2020). Agri-environment payments are also available in many non-EU countries.

5.2 History of agri-environment policy making in the EU

Agri-environment policies originated in the early 1980s as national initiatives in several EU Member States (including the UK and the Netherlands). The first schemes were designed as a means of resolving conflicts between farmers and conservation authorities over the drainage and ploughing of important semi-natural areas such as lowland wet grassland and upland heaths. The first agri-environment programmes under the Common Agricultural Policy (CAP) were introduced in 1985 as zonal schemes, designed to protect the farmland habitats and landscapes of Environmentally Sensitive Areas from the threat of agricultural intensification. Monitoring and evaluation studies during the 1990s showed that agri-environment payments led to significant benefits

for the conservation of valuable semi-natural habitats, biodiversity, landscape, water and soil resources. It was also concluded from the socio-economic evaluation of the schemes that "...agri-environment payments can be expected in certain circumstances to be the determining factor that enables a farmer to stay in business when he or she would otherwise have left farming" (EC, 1998). This beneficial effect of the increased income from agri-environment payments was most noticeable in marginal areas.

By 1999, it became compulsory for all Member States to offer voluntary agri-environment contracts to farmers, within the framework of the new EU Rural Development policy (see Box 5.1). This policy, now co-financed by the CAP through the European Agricultural Fund for Rural Development (EAFRD), offers Member States a wide choice of measures to address a range of environmental, social and economic needs in rural areas. Agri-environment payments are grouped with other payments supporting the sustainable management of agricultural and forestry land, in Priority Axis 2.

Box 5.1: Brief History of Rural Development Policy in the European Union (EU)

The EU Common Agricultural Policy (CAP) was first established in 1962 with the strategic objective of ensuring food security after World War II. For the next 30–40 years, it was a major driving force for agriculture in Western Europe, encouraging the expansion, specialization and intensification of agricultural production.

The CAP was significantly reformed in 1999 and existing rural development measures (including agri-environment payments) were brought together to form the second pillar of the CAP, with approximately 10% of the total budget for the period 2000–2006. The Rural Development Regulation No. 1257/1999 that defined the new Pillar 2 of the CAP established five key objectives for rural development. One objective, included for the first time, was "to encourage the promotion of environmentally-friendly agriculture".

The process of CAP reform continued in 2005 with the establishment of the European Agricultural Fund for Rural Development (EAFRD) which committed approximately 24% of the total CAP budget to rural development. According to the EAFRD Regulation No. 1698/2005, rural development in EU Member States should be supported according to four priorities:

- Priority Axis 1 – Improving the competitiveness of agriculture and forestry;
 - Priority Axis 2 – Improving the environment and countryside – including agri-environment payments;
 - Priority Axis 3 – Improving quality of life in rural areas;
- The LEADER approach, through area-based, bottom-up, local public-private partnerships.

In order to guide this process, the European Commission created the first ever EU strategy document for rural development—the Community Strategic Guidelines (CSG) for Rural Development. This was intended to guide Member States whilst developing their rural development programmes and to ensure they are focused on EU priorities and are complementary to other EU policies.

Each Member State has been obliged to prepare a National Strategy Plan (NSP) for Rural Development (2007–2013) in order to transpose the EU priorities in line with the national situation and context. This is intended to ensure that Community aid for rural development is a) spent consistently within the framework of the EU strategy document and b) that Community, national and regional priorities are co-ordinated.

Environmental protection and sustainable development are very important objectives for rural development under Priority Axis 2.

The inclusion of agri-environment payments in Rural Development policy is a very significant development in EU policy-making, since it recognizes that:

1. agriculture is an activity that delivers a range of goods and services to society in addition to the production of food and fibre, and that
2. agri-environment payments provide both environmental and socio-economic benefits and should be supported within the framework of an integrated rural development policy.

The Community Strategic guidelines, introduced for the 2007–2013 RDPs, for the first time formally link Member States' agri-environment schemes to EU environmental policies for farmland biodiversity and landscapes, water and climate change. These schemes are clearly expected to

be a key means of managing the farmland in the Natura 2000 network, for delivering the EU target of reversing biodiversity decline and the closely related objective to 'preserve and develop' high nature value farming systems and traditional agricultural landscapes².

The total amount of public money spent on agri-environment schemes in the EU has increased rapidly since the early 1990s. For example, Figure 5.1 shows the evolution of total actual EU expenditure on agri-environment payments from 1993 to 2006, together with the total EU funds allocated to agri-environment measures from 2007 to 2013.

Almost one-quarter of all farmland in the EU has been included in an agri-environment scheme, although this figure varies greatly among the Member States (see Figure 5.2).

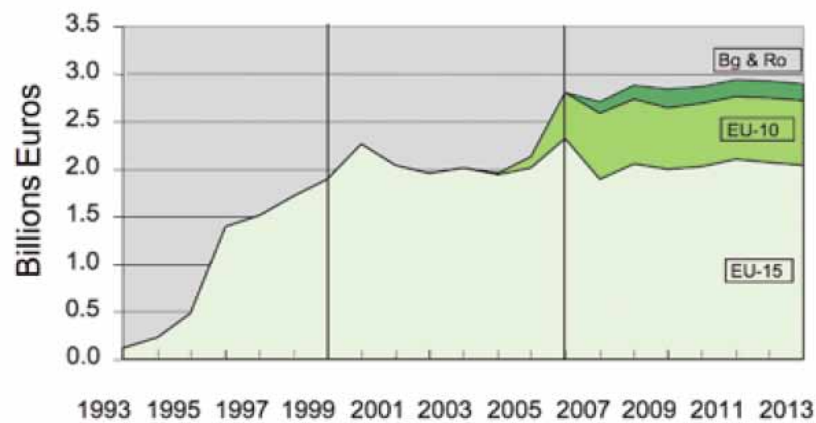


Figure 5.1: Evolution of EU expenditure (billions Euros) on agri-environment payments
Source: IEEP from various data sources.

Note: includes actual expenditures from 1993–2006, plus allocated funds from 2007–2013; national co-financing and additional national financing are not included.

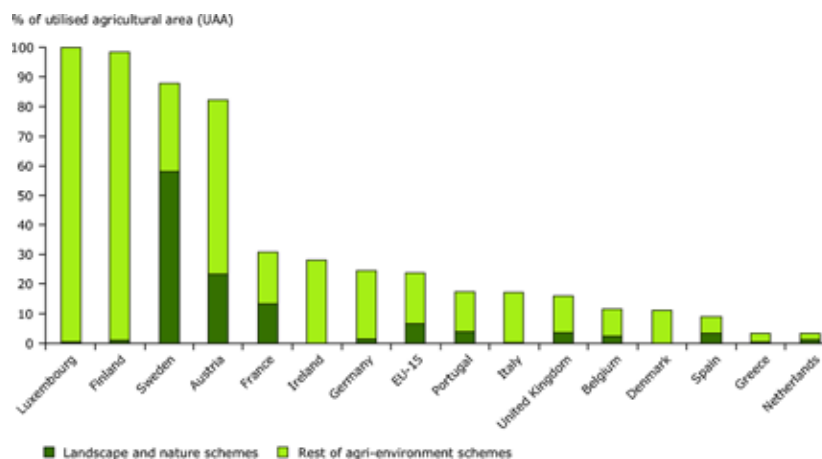


Figure 5.2: Share of farmland (UAA) under agri-environment schemes in the EU-15 Member States, 2002.
Source: EEA, 2005

Note: the 'landscape and nature' category only includes the area under new agri-environment contracts signed in 2000–2002 under Regulation (EC) 1257/1999 (equivalent to a total of 8.2 million hectares) as data are not available for the 'old' schemes.

2. Council Decision (2006/144/EC) of 20 February 2006 on Community Strategic Guidelines for rural development (programming period 2007 to 2013) Section 3.2; and Council Decision (2009/61/EC) amending Decision 2006/144/EC.

5.3 Basic principles of agri-environment scheme design

Agri-environment payments offered to farmers are partly financed by the EU's rural development budget (EAFRD), and partly by the Member State's national or regional budget. In Convergence Areas—areas where the per capita GDP is less than 75% of the EU average—the EAFRD budget contributes up to 80% of the eligible public expenditure on agri-environment payments, and up to 60% in other areas. Member States may additionally finance agri-environment schemes entirely with their own funds, though all agri-environment schemes implemented in Member States (even if not co-financed by EAFRD) must be approved by the European Commission and must follow certain basic principles. In summary, these are as follows:

1. **The primary objective of any agri-environment payment must be environmental.** In particular, agri-environment schemes co-financed by EAFRD should contribute to achieving three EU priorities identified in the Strategic Guidelines:
 - biodiversity and the preservation of high nature value (HNV) farming and forestry and traditional agricultural landscapes;
 - sustainable water management;
 - climate change.
2. **Participation in agri-environment payment schemes is voluntary for farmers.** To ensure a high level of interest and uptake by farmers, experience suggests that it is essential to design schemes that are clear and simple to understand. The land management requirements must be carefully described and the environmental objectives and benefits explained in terms that are meaningful to farmers. The farmer must clearly understand what practical action is required, when it must be done and why; what the payment will be for this action; and how to join the scheme and claim payment.
3. **The duration of agri-environment contracts offered to farmers is normally between five and seven years,** but can be shorter for pilot schemes. Contracts can be offered to other land managers, not just to farmers, but only if this achieves the environmental objectives of the scheme. The farmer (or other land manager) must have sufficient control over the management of the land to be able to meet the agri-environment requirements for the entire contract period. Normally this means ownership or legal tenancy (not informal grazing or cropping arrangements), though special contracts can be set up for communally owned land.
4. **Agri-environment payments are made only for actions that go beyond the defined, minimum (baseline) requirements.** This is to ensure that paying for agri-environment management actions creates greater environmental benefits than if farmers simply complied with environmental regulations and codes of good agricultural practice. In the EU, this baseline includes “cross compliance” requirements defined at the Member State level, which are the same as the baseline requirements for claiming Pillar 1 direct farm payments. There is no payment for any action taken by the farmer to comply with the baseline requirements, though compliance is mandatory as part of the agri-environment contract.
5. **Agri-environment payments** in the EU are not a form of income support, nor are they investment support. They are **annual management payments** made over a number of years, as a standard amount per hectare (or livestock unit) for each agri-environment management action. In EU Member States, the payments are calculated to cover both the additional costs and the income foregone as a result of implementing each agri-environment action. Member States can choose to add up to 20% of this figure to cover the farmer's “transaction costs” (such as time spent finding out about the scheme and setting up the contract, but not time spent doing the work on the land). Because agri-environment participation is voluntary, payments must compete with potential income from other, more profitable land uses or employment. Agri-environment payment levels have to be set sufficiently high to attract farmers to join schemes while avoiding over-compensation. This requires the careful calculation of appropriate payment levels by Member States using the best available data. It may be necessary to have different standard payments for the same type of agri-environment actions in different farming systems, e.g., if the quality of the land (and hence the possible alternative cropping or livestock systems) cost of labour, or length of the growing season (and hence productivity) varies from one part of the country to another.
6. **In the EU, there are defined maximum rates for agri-environment payments** offered to farmers (though Member States may increase these in certain cases, if they justify the need for higher rates):
 - 600 EUR per hectare for annual crops;
 - 900 EUR per hectare for specialized perennial crops;

- 450 EUR per hectare for other land uses;
- 200 EUR per livestock unit for endangered breeds of domestic animal³.

7. All agri-environment management requirements must be verifiable, for example, by examining record documents, on-the-spot field checks and sampling for laboratory analysis. The verification or “control” process is an essential part of the agri-environment programme, enabling the government to check that farmers have done what they are being paid for.

Agri-environment schemes are very flexible and adaptable. Member States are therefore expected to design agri-environment programmes, schemes and actions which will deliver their own and EU environmental priorities, and are well adapted to the agricultural, environmental and social context. For example, they may adopt payment schemes (or combinations of schemes) which are:

- local and site specific, e.g. for habitat/ species conservation;
- regional, e.g. for erosion control on vulnerable soils;
- national, e.g. for organic farming.

Schemes restricted to certain areas are described as “zonal”, and schemes available across the entire territory of a country are called “horizontal” schemes. Most Member States have both types of scheme within their agri-environment programme.

5.4 Examples of agri-environment payment schemes from the EU

There is an enormous variety of possible agri-environment payments. The detail of individual schemes and sub-measures depends on the environmental objectives, and the type of land and farming systems—all of which vary within and between regions and countries. To illustrate this, examples have been chosen from Slovenia and Bulgaria, countries with significant similarities to the situation in Serbia. More details on these and other agri-environment payments can be found in the relevant Rural Development Programmes (Republic of Slovenia, 2007; Republic of Bulgaria, 2007).

In Slovenia, the broad objectives of agri-environment actions are:

- stopping biodiversity decline;
- conservation of high nature value farming systems;
- conservation of Natura 2000 sites;

- improving water quality;
- remedying marginalization and land abandonment; and
- reducing soil erosion and maintaining soil quality.

Slovenia has 21 agri-environment sub-measures, in three groups:

- **reducing the negative impacts of agriculture on the environment** (maintaining crop rotation, greening arable land, integrated vine production, integrated fruit production, integrated horticulture and organic farming);
- **conserving natural conditions, biodiversity, soil fertility and traditional cultural landscape** (mountain pastures, mowing steep slopes, mowing ‘humpy’ meadows, meadow orchards, rearing indigenous and traditional domestic breeds or growing indigenous or traditional varieties of agricultural plants, sustainable livestock rearing and extensive grassland management);
- **maintenance of protection areas:** animal husbandry in the range areas of large carnivores, management of special grassland habitats, management of grassland habitats of butterflies, preservation of litter meadows, bird conservation in wet extensive meadows in Natura 2000 sites, and permanent green cover in water protection areas.

The agri-environment programme in Bulgaria has a similar structure, illustrated in Figure 5.3.

In both countries, farmers receiving agri-environment payments also undergo training in environmental management. The specific management requirements for which agri-environment payments are made are illustrated below, for a selection of these schemes. In some cases, farmers can combine different agri-environment payments on the same land – for example, organic farming, mowing steep slopes and management of grassland habitats for butterflies.

5.5 Lessons to be learnt from EU Member States

Agri-environment schemes have been widely used in Europe for many years, and many important lessons have been learnt about their design and implementation. Some Member States are now delivering their fourth or fifth agri-environment programme, having started initially with pilot or experimental programmes and incorporated improvements or redesigned elements of schemes along the way.

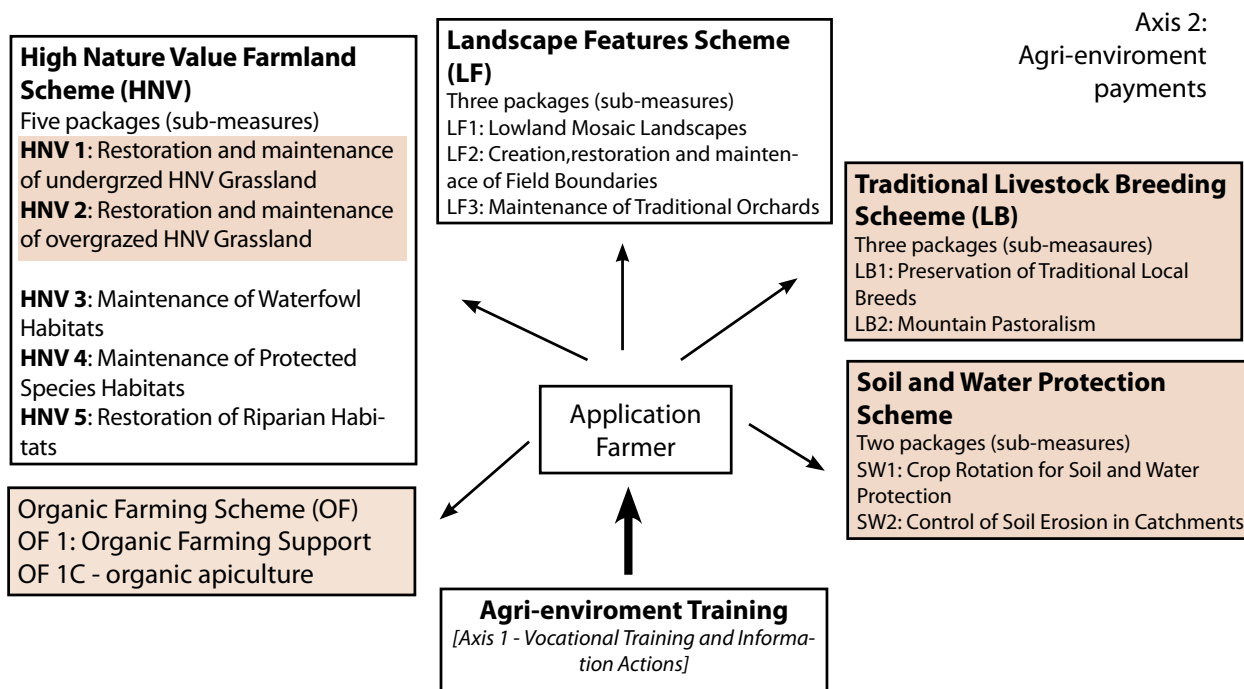


Figure 5.3 Structure of the agri-environment programme in Bulgaria
Source: Republic of Bulgaria, 2007

Examples of management requirements for different agri-environment payments

Integrated vine production (Slovenia) — Payments cover: reducing use of plant protection products, and using only those listed in the guidelines for integrated vine production or organic production; using mechanical/physical techniques of weed control under vines (only if this fails may herbicides be used, and then on no more than 25% of the vineyard, and only before 15 July); obtaining a certificate of integrated vine production; using green cover, soil cover and cultivation; keeping no more than 20 shoots per running row metre.

Organic farming (Slovenia) — of fields-crops; vegetables grown outdoors; vegetables grown in protected indoor areas; olive groves with a tree density of minimum 150 trees/ha, orchards with a minimum 100 trees/ha for walnut and chestnut and a minimum 200 trees/ha for other fruit varieties; grassland high-trunk orchards with a tree density of 50-200 trees per ha; vineyards, hop gardens, tree nurseries; grasslands (grasses, grass-clover mix in fields, extensive grassland). Payments cover: restrictions on the application of fertilizers, including organic fertilizers and livestock manure; the use of organically produced seeds and vegetative propagating material; drawing up an annual production plan and organic livestock management plan; not using growth regulators and genetically modified organisms; stocking density of 0.5-1.9 LU/ha; no tethered breeding; no surplus of livestock manure; and organic beekeeping (only in designated areas).

Alpine summer pastures (Slovenia) — on traditional alpine pastures used, for example, for cheese production: payments cover traditional grazing methods at a stocking density during the pasture season of 0.5-1.9 LU/ha; animals remain at pasture for a minimum of 80 days, returning to domestic care daily; the presence of a shepherd/herdsman is mandatory and the shepherd/herdsman must be under contract; removal of bushes and weeds at the end of the season.

Restoration and maintenance of undergrazed HNV grasslands (Bulgaria) — payments cover: clearing unwanted vegetation; not using mineral fertilizers and application of pesticides, and not making new drainage and ploughing; allowing free grazing on meadows after the last mowing (except for meadows in the forests); maintaining minimum and maximum density of livestock to secure good ecological conditions of the meadows and pastures and to keep permanent grass cover (0.3-1.5 LSU/ha outside protected areas; as detailed inside the protected area management plan or if there is no plan, then between 0.3-1.5 LSU/ha); mowing after 15 June for lowlands and hilly areas and between 30 June and 15 July for mountainous areas (exact dates depend on altitude, geographical situation and species requirements; mowing manually, or with a slow grass cutting machine from the centre towards the periphery

of the meadow and at low speed, to allow ground nesting birds and other animals to escape). Bulgaria has also designed a pilot scheme to support traditional mountain pastoralism in areas where there are still a few farmers or shepherds left. Payments cover: the use of traditional local livestock breeds; re-establishing the infrastructure for pastoralism; and the use of Karakachan dogs to protect grazing livestock from wolves or bears.

Soil erosion control (Bulgaria) — the farmer participates in defining the problems of soil erosion and selecting measures to be applied. Payments cover: establishment and maintenance of grassy buffer strips, run-off holding furrows and crop strips; conversion of arable land to pasture; practices for the improvement of pastures; creation of terraces, anti-erosion practices in vineyards and orchards, and participation of farmers' group representatives in the preparation of municipal anti-erosion plans.

Preservation of endangered local breeds (Bulgaria) of cattle, sheep, goat, horse and pigs (but only for animals with a certificate of origin). Payments cover: application of breeding programme for the relevant breed, and avoiding any cross-breeding of female animals; keeping a record of the sales and purchases of all livestock on the farm; obtaining written permission from the Association for Breeding of Local Indigenous Breeds and the Executive Agency for Selection and Reproduction prior to the slaughter or sale of any livestock supported by payments from this sub-measure; free grazing of pigs only at designated sites; following guidelines and technical advice on animal health and welfare.

The importance of good scheme design

Experience and evidence shows that if agri-environment schemes are to deliver positive environmental outcomes they must be well designed. A number of key elements of successful design have been identified (Birdlife, 2005; Brunner, 2007; Cooper *et al.*, 2010):

1. Agri-environment schemes should reward the delivery of public benefits in the form of clearly defined environmental "goods" and "services".
2. Schemes must have a secure budget sufficient to achieve their aims, including resources needed for delivery (which can be a significant proportion of the budget in early years).
3. Schemes must be based on good science, with a clear understanding of the relationship between farm management actions and the environment — a relationship which may be specific to particular circumstances and types of farming.
4. Management requirements must be feasible and practical for farmers to implement. Where the requirements are not simple enough to be self-explanatory, additional advisory support must be provided for farmers.
5. Schemes and management requirements should be continuously improved and adapted as experience is gained, knowledge develops and situations change.
6. Agri-environment schemes must be targeted at the right environmental priorities, areas, habitats, species, and type of farm.
7. The impact of schemes must be effectively monitored and the results fed into further stages of scheme design.

8. Farmers and local environmental experts should be consulted and involved throughout all stages of scheme design and implementation. This can both significantly improve the acceptability of schemes to farmers and greatly enhance uptake and environmental effectiveness.
9. Schemes must be effectively promoted to farmers, using information sources that they trust and supported with appropriate advisory services both initially and during the lifetime of the agri-environment contracts.

The Importance of Stakeholder Involvement

Experience from the new Member States suggests that successful agri-environment programmes are not designed and delivered by small teams of officials working in isolation. Development and implementation of successful programmes requires the involvement of a range of individuals and organizations with different insights, experiences and expectations. All these stakeholders are important to the success of the scheme.

Some will be individuals or organizations with a particular interest or expertise who may be working outside government in non-governmental organizations, universities or independently. Others will be farming organizations, national park authorities, research groups, regional and municipal administrations, all with an opportunity to influence farmers' opinions and actions. Their involvement in the process is important and can take a variety of forms – joining an agri-environment working group on scheme design, informing and advising

farmers when the scheme is launched, or participating in data collection for on-going monitoring and evaluation of the scheme's effectiveness.

The key point is that stakeholders should be welcomed and involved from the start of scheme design, irrespective of the nature of their involvement or their initial views. It is crucial to make them feel that they have a share in, and ownership of the process, and to develop trust and mutual understanding among all partners. Otherwise, if groups feel excluded, there can be rapid loss of support for the programme, which will make implementation very difficult.

5.6 Agri-environment payments as a tool for supporting HNV farming

The EU's Strategic Guidelines place a high priority on using Axis 2 funds to support HNV farming systems and traditional agricultural landscapes. Agri-environment schemes are one of the most important mechanisms for securing effective and long term delivery of the full range of environmental and biodiversity benefits associated with a particular HNV farming system. Indeed, they can be used to support existing HNV good management or to re-introduce management to neglected or abandoned HNV farmland, offering farmers payments in return for meeting the management of requirements of specific habitats, species and landscape features (for example, moving grazing stock to distant pastures, providing shepherding, making hay rather than silage, and flooding water meadows).

In designing agri-environment schemes that support HNV farming systems, there are a number of issues and potential challenges to be aware of:

1. It is important to address the specific needs of HNV farming communities and the biodiversity they support, which means zonal schemes restricted to particular areas or types of farming, rather than horizontal schemes available throughout the country or to all farm types.
2. There may be a lack of understanding of HNV farming systems in many institutions, and the perception that they are of lower value than more intensive (and less marginal) farming systems. This seems to be a cultural issue to a certain extent, and varies among Member States, but can be seen within agricultural authorities (who may not have the technical skills to deliver appropriate support for habitat management and HNV low-input systems, and instead rely on environmental agencies and NGOs for technical advice on HNV management).
3. The habitat management requirements for some plants and animals are very precise and although in the recent past these may have fit well with the day-to-day traditional management of the farm, this is often no longer the case. Today, following or reintroducing such management may increase a farmer's costs, especially if the land has been partially abandoned, but this can be taken into account when setting agri-environment payments, even if the farm is at present generating little or no income and the alternative is abandonment.
4. Local farmers, particularly older farmers, may have a very detailed understanding of the management needed on HNV farmland to support characteristic and valued habitats and species, but they may not at first understand that the government values such management and is willing to pay for it. Involving these farmers in the development of agri-environment prescriptions will have benefits both in terms of biodiversity management and scheme uptake.
5. Often farmers cannot implement annual agri-environment management requirements without first investing time and effort in preparing the land for the reintroduction of livestock grazing or mowing. Payments can be provided to deal with these 'front-end loaded' agri-environment costs. For example, in other parts of the EU, such payments have been used for scrub clearance of indigo bushes from grasslands of the Tisza River floodplain in Hungary, the provision of winter housing for mobile flocks of sheep used to maintain the scattered dry grasslands of southern Germany, or the restoration of limestone grasslands using seed collected from local meadows in the White Carpathians.

Whilst very important, the agri-environment measure alone will not be sufficient to support HNV farming systems. What is needed is a coherent package of CAP measures targeting the environmental, economic and social needs of the farming system as an inter-dependent whole, not as a series of separate issues. This package could include specifically targeting rural development measures for farm investment and quality products and supporting these extensive systems of production and securing the HNV infrastructure of the farm. When all these elements are in place, agri-environment support could be targeted at providing incentives for the farming practices needed to ensure the continued management of HNV farmland. Meanwhile, the social and economic problems of HNV areas could be addressed by using other rural development measures to develop the skills and capacity of the farmer and his family, and to develop and promote sustainable tourism opportunities in order to help secure the future of rural communities in HNV farming areas.





CHAPTER 6:

DEVELOPING AN AGRI-ENVIRONMENT PROGRAMME FOR SERBIA

6.1. Rural Development Policy-making in Serbia

Support for rural development has been available in Serbia since 2004. Initially, rural development priorities were predominantly social and economic in nature, i.e. up-grading rural infrastructure, encouraging the diversification of economic activities, or improving the competitiveness of the agricultural sector in order to improve rural livelihoods and

to attract and retain investment in rural areas. More recently, some support measures with an environmental dimension have been introduced to the agricultural sector, including support for organic production and traditional livestock breeds. However, rural development support in Serbia has not included a formal agri-environment programme thus far. The range of rural development measures available to the agricultural sector in Serbia since 2004 is set out in Table 6.1.

Table 6.1 Rural development measures provided in Serbia from 2004-2008

2004	2005	2006	2007	2008
Measures for Improvement of Rural Areas	Measures for Improvement of Rural Areas	Rural Development Support	Support for livestock purchasing and cattle breeding	Support for livestock purchasing
<i>Households improvement:</i> - improvements in composition of livestock breeds, improvement through purchasing on national and international markets - investments in households	<i>Households improvement:</i> - improvements in composition of livestock breeds improvement through purchasing on national and international market - investments in households	<i>Improvements in production and marketing:</i> - improvements in composition of livestock breeds improvement through purchasing on international market - investments in households <i>Strengthening of rural infrastructure</i> <i>Diversification of rural economy, organisation of rural people, environmental protection</i>	Support to rural development through increasing agricultural competitiveness and diversification of rural economy: - purchasing of agriculture equipment - support for development of agro and rural tourism (equipment, accommodation)	Support to rural development through increasing agricultural competitiveness Support to rural development through diversification of rural economy - rural tourism
<i>Improvements in marketing and quality:</i> - organic production certification - investments in sorting and packing machines	<i>Improvements in marketing and quality:</i> - organic production certification - investments in sorting and packing machines		Support for agriculture and rural development - support system establishing Network for Rural Development	Support for agriculture and rural development -support system establishing regional and local offices of the Network for Rural Development
<i>Rural development:</i> - education, association, environmental protection	<i>Rural development:</i> - non-farm economy - infrastructure - education, association, environmental protection,	Organic production development support (organic producers support)	Organic production development support (organic producers support)	Organic production development support (organic producers support)
Support for the conservation of plant and animal genetic resources	Support for the conservation of plant and animal genetic resources	Support for the conservation of plant and animal genetic resources	Support for the conservation of plant and animal genetic resources	Support for the conservation of plant and animal genetic resources

As set out in Chapter 2, the current draft National Rural Development Programme in Serbia runs from 2010–2013. The Ministry of Agriculture, Forestry and Water Management of the Republic of Serbia (MAFWM) is responsible for the implementation of all measures relating to agriculture and rural development through its Rural Development Sector. Within this Sector, the Rural Development Support Division is specifically responsible for the strategic, programming and monitoring activities in relation to rural development. The Division has a particular focus on developing a range of schemes and measures that could be rolled out using IPARD funding once Serbia attains full candidate status, as well as developing its own capacity to operate as a Managing Authority for the implementation of these funds.

It is evident that a series of simultaneous measures and activities are necessary to improve the current state of rural areas in Serbia. The following measures are planned currently under the draft NRDP, divided according to the priorities defined under IPARD:

IPARD Priority Axis 1: Improving market efficiency and implementation of Community standards.

Serbian NRDP proposed Axis 1 type measures:

- investments in agricultural holdings (machinery, orchards and livestock);
- support for co-operatives and farmers associations;
- investments in processing in line with the introduction of food quality and food safety standards.

IPARD Priority Axis 2: Preparatory actions for implementation of the agri-environmental measures and local rural development strategies.

Serbian NRDP proposed Axis 2 type measures:

- activities for the improvement of the environment and villages;
- support to educational activities in the field of environmental protection;
- empowerment for the establishment of local partnerships and development of local rural development strategies through activities of the Rural Development Support Network.

IPARD Priority Axis 3: Development of rural economy.

Serbian NRDP proposed Axis 3 type measures:

- diversification and development of rural economic activities;
- support to advice and training for farmers.

6.2 The need for a national programme of agri-environment measures in Serbia

Some progress has been made in addressing environmental concerns associated with agriculture in the current NRDP. Within the suite of planned and existing measures, however, there are no plans for the development of agri-environment measures beyond the continuation of current support for organic farming and the conservation of traditional livestock breeds. As identified in Chapter 2, there is also a clear need for the maintenance of traditional farming practices, particularly in those areas where there are significant swathes of semi-natural grassland, rich in biodiversity. This could be achieved through the introduction of support for High Nature Value farming systems.

Introducing such measures is also compatible with Serbia's biodiversity commitments under various international agreements, including the Convention on Biological Diversity (CBD), signed by 150 countries, and ratified by Serbia in 2002. It commits Serbia to two key actions:

- the development of national strategies and action plans for the conservation and sustainable use of biological diversity; and
- the integration (as far as possible and appropriate) of the conservation and sustainable use of biological diversity into relevant national policies.

Serbia has not yet "identified management practices, technologies and policies that promote the positive, and mitigate the negative impacts of agriculture on biodiversity, and enhance productivity and the capacity to sustain livelihoods"¹. Many of these key management practices are likely to be found within HNV farming systems, which will need carefully targeted support during and beyond any period of restructuring and adaptation of the agricultural sector.

Significant improvements could be made to the proposed suite of Axis 2 type measures by:

- expanding the range of agri-environment schemes made available to farmers to cover a broader range of environmental priorities, including biodiversity conservation, maintenance of landscape features, and the protection of soil and water resources;
- bringing the range of agri-environment schemes together under a strategic multi-annual framework with a dedicated budget to allow agri-environment commitments to be made to farmers for a five year

1. Third National Report of The Republic of Serbia to the United Nations Convention on Biological Diversity, July 2010 <http://www.cbd.int/countries/?country=cs>

period, thereby providing farmers the ability to plan and allowing sufficient time for environmental benefits to become evident;

- enhancing the awareness of relevant government, public and private institutions about the importance of maintaining Serbia's rich natural and cultural heritage, starting with encouraging better awareness and communication between ministerial departments responsible for biodiversity and landscape, soils, water, rural development and regional development;
- improving the capacity of MAFWM staff in relation to the administrative, delivery and monitoring needs associated with the implementation of agri-environment schemes.

It is therefore recommended that Serbia should establish a **National Agri-environment Programme (NAEP)** as a central part of the future National Rural Development Plan 2010–2013 in preparation for the granting of full Candidate status and the allocation of IPARD funds that would flow from this for developing and piloting agri-environment schemes.

The NAEP should:

1. **Integrate** the existing schemes for organic farming and the conservation of genetic resources with a range of other schemes focused on maintaining High Nature Value farming systems, conserving landscape features and soil and water protection (see Section 6.4 for further details of proposed measures).
2. Be **designed** with:
 - a clear overarching rationale, a comprehensive set of general objectives, and set of measurable and specific objectives;
 - a dedicated co-ordination unit in the Ministry of Agriculture, Forestry and Water Management (MAFWM), such as the current Rural Development Division;
 - a common payment system and a single Paying Agency; and
 - a common framework for monitoring and evaluation.
3. Have a **clearly defined "baseline"** relating to relevant legislation, notably those required under EU law. Farmers will only be compensated for actions that go beyond/above this baseline.
4. Be **linked to a permanent Agri-environment Working Group to include, as a minimum, representatives from other relevant Ministries** in order to encourage greater

communication and co-ordination on all agri-environment issues relating to the NAEP.

Effective Implementation of a NAEP

Additional issues to bear in mind to help ensure that the NAEP is implemented effectively include:

1. formulate a clear communication strategy for the promotion of agri-environment measures to farmers and ensure that there are adequate resources for promotional materials, information days, media advertising etc. This is particularly important when introducing agri-environment measures for the first time;
2. ensure that all advisors and technical staff who are in direct contact with farmers receive on-going training on the agri-environment measures, including feedback on implementation issues;
3. develop a culture of "learning by doing" and the open exchange of information and experience amongst policy-makers and administrators;
4. provide adequate funding for advisory and extension services to support farmers throughout the full period of their participation in an agri-environment scheme, including the initial selection of measures and completion of application forms;
5. training should be included as an obligatory requirement for farmers either prior to or after entry into an agri-environment scheme, as this can significantly improve compliance with management requirements, and raise general environmental awareness;
6. encourage complementarity with other rural development measures. Agri-environment payments should be seen as part of an integrated package of measures that work together to promote the sustainability of rural areas for the benefit of both the environment and rural communities. For example, encourage development of the market for products arising from beneficial agri-environmental management (e.g. organic and HNV farming practices) with strategic support and investment. Other rural development measures which can be targeted at the support of HNV and organic farming systems include:

- investment in farm modernization, including manure stores and spreading equipment;
- participation in food quality schemes and the promotion of products in food quality schemes;
- establishment of producer groups with the objective of adapting to market requirements;
- investment in small-scale food processing facilities;
- “non-productive” investments in environmental management, such as clearing scrub from unused land, improving facilities for grazing livestock and shepherds, creation of farmland features to benefit specific features;
- diversification into non-agricultural activities (e.g., green tourism) and setting-up micro-businesses.

Section 6.3 sets out the opportunities offered by IPARD funding and Section 6.4 sets out a proposed set of measures that could be included in the NAEP to meet the agri-environmental needs facing Serbia.

6.3 Opportunities under IPARD for introducing a NAEP in Serbia

There are five main components to the IPA Regulation, including Rural Development. The main aim of the Rural Development component (commonly referred to as the IPARD programme) is to contribute to the sustainable adaptation of the agricultural sector and rural areas in preparation for the implementation of the Common Agricultural Policy (CAP) and related policies. Serbia will be eligible for IPARD funding once it is granted formal candidate status.

Priority Axis 2 of the IPARD Programme includes provision for preparatory actions for the implementation of pilot agri-environment measures and local rural development strategies. Pilot agri-environment measures can be implemented in selected pilot areas with the general objective “to develop practical experience with regard to the implementation of agricultural production methods designed to protect the environment and maintain the countryside”.

As proposed in Section 6.2, Serbia has the opportunity to take preparatory action to develop a NAEP that can take full advantage of IPARD funds once these are made available. IPARD pre-accession funding for rural development can be used to:

- develop practical experience at the administrative and farm level of the EU approach to agri-environment measures;

- pilot new agri-environment measures, especially to support HNV farming. IPARD could be used specifically to further develop and promote the concept of High Nature Value (HNV) farming as a tool for targeting biodiversity conservation on agricultural land.

Before agri-environment measures can be piloted, certain information must be established. This includes:

- the rationale for the pilot project;
- geographic definition and description of the pilot areas;
- a description of the proposed objectives (general and specific) of the pilot measures and their justification in view of the characteristics of the pilot area;
- a description of the type of pilot actions to be implemented and the conditions for entering into management agreements;
- type of beneficiaries and eligibility criteria for aid;
- amount of support;
- aid intensity;
- selection procedures;
- plans and procedures for the control of payments;
- indicators for the monitoring and evaluation of pilot measures.

In order to create the best opportunities for practical experience and learning by doing it is recommended to:

1. Start pilot actions as early as possible and connect them to the on-going policy-making process.
2. Implement simple, well-defined pilot actions which are appropriate to the national/regional context. For example, the pilot measures should:
 - address specific environmental problems;
 - be easily controlled;
 - be few in number to simplify administrative work;
 - be easy for the farmers to understand;
 - have a payment rate that is attractive for the farmer, but not excessively high.
3. Adopt administrative procedures which:
 - ensure rapid implementation of pilot actions;
 - are appropriate for the continuation of or adaptation to future agri-environment schemes; and
 - develop relevant experience and long-term capacity amongst administrators.
4. Test the pilot actions and administrative procedures under a variety of farming and environmental conditions. This means that the pilot areas selected should ideally be contrasting with respect to the basic natural factors which shape the landscape and influence the environmental

conditions in the area (e.g., lowland or mountain); type of agricultural activity and farming systems; type of farmers (e.g., different socio-economic circumstances); and the prevailing environmental issues and priorities. The areas selected must be well justified and understood by everyone with a specific interest in the development and implementation of the pilot projects.

6.4 Recommendations for a suite of agri-environment measures to be included within the NAEP

The development and effective implementation of a National Agri-environment Programme (NAEP) in Serbia is one of the most promising instruments for achieving the conservation of natural resources affected by agriculture, and the maintenance and restoration of valuable semi-natural habitats shaped by traditional farming over many centuries.

It is proposed that the NAEP should include a range of measures that promote the maintenance and introduction of environmentally friendly agricultural production methods, including those that can help to maintain High Nature Value farming systems. The NAEP would provide payments to farmers that voluntarily manage their land/ or their animals in a manner that is beneficial for the environment and therefore provide society as a whole with a range of benefits.

The introduction of schemes to support HNV farming is extremely important in Serbia. As already noted in Chapter 2, the long history of traditional agriculture has created many important semi-natural habitats and there are vast areas of the country where low intensity agriculture still provides an important habitat for wildlife. The development of such schemes offers an alternative and

complementary approach to existing nature conservation policies and practices in Serbia. Instead of focusing solely upon the maintenance of rare or endangered species and habitats on protected sites, it addresses the need for the ongoing management of significantly larger areas of land (including a high proportion of semi-natural habitats) by farmers using traditional farming methods.

Based on the evidence set out in Chapter 4, and the information derived from the case study sites, it is proposed that the following schemes and measures should be included within the NAEP for Serbia. Many of these schemes, such as the HNV farming scheme, would be new initiatives.

The NAEP would consist of five schemes, each made up of one or more sub-measures. Each of these sub-measures would include a series of management requirements that participating farmers would voluntarily agree to follow in return for annual support payments for the five year period of their agri-environment commitment (management agreement).

Each scheme and sub-measure has clear operational objectives, management requirements and specified payment rates. Farmers would be offered a suite of agri-environment measures available in their region and would be able to select a mixture of measures depending on what is most relevant to their land. The resulting management agreement will be signed between the applicant and the Paying Agency. Each management agreement signed with the Paying Agency will be specific to the participating farmer.

All farmers participating in the NAEP and receiving agri-environment support payments will be required to follow

Scheme	Organic Farming	Traditional Breeds	High Nature Value Farming Scheme	Landscape Features Scheme	Soil and Water Protection
Sub measures	Organic farming support package	Conservation of autochthonous breeds	Restoration and management of undergrazed HNV grasslands	Maintenance of traditional orchards	Crop rotation for soil and water protection
		Restoration of traditional shepherd systems (mountain pastoralism)	Restoration and management of overgrazed HNV grasslands		Control of soil erosion catchments
			Maintenance of habitats of protected species in arable parts of Important Bird Areas		

certain minimum requirements and commitments on all the land they manage. Farmers will only receive agri-environment support payments for activities that go beyond these mandatory requirements.

All farmers wishing to participate in the NAEP (with some limited exceptions) will be required to undertake a basic training programme that will develop their understanding of the opportunities presented by the NAEP and provide a detailed explanation of the application procedure.

To be eligible for the agri-environment schemes, beneficiaries must:

- have their agricultural holding registered in accordance with the Act on Agriculture and Rural Development;
- sign a commitment to apply the selected agri-environment activity or combination of activities for five years on the same area;
- have a minimum agricultural area of 0.5 hectares. A lower area is acceptable in the following circumstances:
- for the maintenance of traditional orchards and organic farming, e.g. organic mushroom production, organic greenhouse production or production of seed and propagation material — 0.1 hectares;
- for organic apiculture, and traditional livestock breeding (preservation of traditional local breeds and mountain pastoralism) there is no minimum area. For organic apiculture, the applicant should have a minimum of 15 bee families.

Where more detailed eligibility criteria apply for specific measures, this information is included in the description of the individual measure.

Payment Rates

1. Payment rates would be limited to the maximum amount laid down in the Annex of Council Regulation 1698/2005: annual crops : 600 EUR/ha;
2. specialised perennial crops: 900 EUR/ha;
3. other land uses: 450 EUR/ha;
4. local breeds in danger of disappearing: 200 EUR/LU.

The Paying Agency will be responsible for checking that aid ceilings are respected in those cases where combinations of agri-environment commitments and activities on the same land occur.

Proposed Measure Fiches

A detailed summary of the proposed measures is provided below, setting out their rationale and objectives, geographical scope, management requirements and expected outcomes.

Scheme 1: Organic Farming Scheme (OF)

Environmental Objectives	To increase the area of agricultural land and the number of farms managed according to the standards prescribed by the Organic Farming Act.
Rationale for measure	Organic farming improves the natural balance of plant nutrients by using crop rotations and the integration of crop and livestock production. Due to limited use of fertilizers and pesticides, organic farming plays a positive role in biodiversity conservation, improves soil and water quality and contributes to the sustainable management of the soil, crops and livestock. Organic production encourages the use of traditional plant varieties and livestock breeds, which tend to be more resistant to pests and diseases due to their adaptability to local conditions. This type of farming helps to maintain rural landscapes by maintaining biodiversity and protecting natural habitats, which also helps to attract and retain people in rural areas. In addition, organic apiculture improves the pollination of wild and cultivated plants, contributing to biodiversity conservation.
Geographical Scope	Entire territory of Serbia.
Management Requirements	<ul style="list-style-type: none"> To follow the requirements of the Organic Farming Act and other legal acts related to organic farming. Sign a contract with a Control body approved by the MAFWM for conversion and/or on-going organic management. To receive a certificate for successful conversion to organic production during the five year period of participation in the measure.
Expected Measurable Impact:	<ul style="list-style-type: none"> 2% of all Serbian food products sold on national market to be organic by the fifth year of scheme operation. 5% of the whole utilized agricultural area to be under organic management by the fifth year of scheme operation.

Scheme 2: Traditional Breeds Scheme (TB)

TB 1 Conservation of autochthonous breeds	
Environmental Objectives	To prevent further erosion of genetic resources by increasing the numbers of breeding animals of specified endangered autochthonous breeds which are in danger of further decline in numbers or in danger of extinction.
Rationale for measure	Autochthonous breeds are well-adapted to the poor conditions of mountain agriculture, wetlands and other marginal agriculture lands and nature protected areas where extensive livestock production based on semi-natural vegetation is demanded to preserve their valuable composition and have the potential to play an important role in the maintenance of traditional grazing systems. Those breeds are also an important part of Serbian natural and cultural heritage.
Geographical Scope	Mountain, sandy, salty or wetland grasslands throughout the territory of Serbia.
Management Requirements	<p>Payments will be made for maintenance of endangered livestock breeds farming systems. The following breeds are eligible for support:</p> <ul style="list-style-type: none"> Horse - Domestic Mountain Pony and Nonius Donkey - Balkan Donkey Cattle - Busha Cattle and Podolian Cattle Water Buffalo Sheep - Pirot Zackel, Karakachan Zackel, Lipska Sheep, Bardoka Sheep, Vlaška Vitoroga Sheep, Krivovir Sheep, Baljusha Sheep, Vlašić Zackel Sheep and Čokan Cigaja and other local Zeckel sheep breeds Goat - Balkan Goat Swine - Resavka Pig, Moravka Pig, Mangalitza Pig Poultry - Svrlijig Black Hen, Sombor Kaporka and Golosijanka <p>Support will only be given to animals that are officially registered in the appropriate herdbooks kept by the Serbian Ministry of Agriculture, Forestry and Water Management.</p> <p>The following management requirements will apply:</p> <ul style="list-style-type: none"> avoid any cross-breeding of female animals supported by payments from this package – only certified pure-breds will be supported; implement a breeding programme for the relevant breed; keep a record of the sales and purchases of all livestock on the farm; notify and obtain written permission from the Breeding Organization prior to the slaughter or sale of any livestock supported under this measure; restriction of free grazing of pigs outside sites specially appointed for that purpose; closely follow all guidelines and technical advice of the regional offices and responsible authorities concerning the health and welfare of the animals supported by payments from this package.

Expected Measurable Impact	Average increase in the number of endangered breeds by at least 30% after the fifth year of scheme operation.
TB 2: Restoration of traditional shepherd systems (mountain pastoralism)	
Environmental objectives	<ul style="list-style-type: none"> To support traditional patterns of seasonal grazing of high nature value natural and semi-natural pastures in specified mountain regions using traditional breeds and methods; to promote the use of traditional breeds that are capable of grazing in the harsh mountain conditions; to promote the use of Shepherd Dogs (with emphasis on Serbian Shepherd Dogs, Sharplaninac and Karakachan Dogs) as an efficient and environmentally-friendly method of protecting domestic livestock from attack by large predators (wolves, bears, jackals and lynx); to enhance biodiversity in the pastures in specified mountain regions.
Rationale for measure	Pastoralism in Serbia is a practice that has almost become abandoned. Grazing is an important tool for the conservation and maintenance of habitats and species in the high mountain grasslands. Mountain pastoralism was once commonplace in Serbia, especially before WWII. This practice shaped the landscape and biodiversity of large tracts of Serbian mountain areas, giving them their distinctive characteristics. Similar measures have been applied in the Stara Planina Nature Park.
Geographical Scope	<p>Payments will only be available in specified nature protected areas suitable for the implementation of mountain pastoralism where there are:</p> <ul style="list-style-type: none"> significant areas of high mountain pasture under threat from abandonment; predator populations that conflict with grazing animals; opportunities for making the necessary grazing agreements between local farmers/shepherds and the owner/users/managers of the high mountain pastures (notably national park and nature park authorities).
Beneficiaries	<p>Farmers, persons or legal entities that own grazing livestock (sheep, goats, cattle and horses) and have an annual grazing agreement with the owner/manager of the high altitude pastures (e.g. nature park authorities). Grazing contracts of at least five years are recommended, but shorter periods can be accepted at the risk of the beneficiary.</p> <p>There are several different patterns of ownership and shepherding that are eligible for support:</p> <ul style="list-style-type: none"> there is one owner of the flock/herd and the shepherding is carried out by the owner plus shepherds employed by the owner; there is a group of owners who co-operate to take their animals to the high altitude pastures for summer grazing and share the responsibility of shepherding ("bachia" model); there is a group of co-operating owners that employ a shepherd or shepherd(s) ("bachia" model); <p>In each case, the direct beneficiary under this sub-measure will be the person in receipt of the agreement/license for grazing in the protected area (PA) from the official manager of the PA.</p>
Management requirements	<ul style="list-style-type: none"> The shepherd (farmer) shall have at least 50 sheep, or 70 goats, or 10 cattle or 10 horses or a combination of each, but not less than 10 LU (mixed cattle, horses and/or sheep); stocking density must be no more than 1 LU per hectare; the farmer/shepherd shall keep records of all animal losses; the farmer/shepherd must graze their livestock on the designated mountain pastures for at least three months of the year (May–October). Shorter periods will be permitted according to seasonal or epizootic conditions (e.g. in late spring or early autumn); the shepherd (farmer) must own at least two shepherd guard dogs of breeds such as the local breeds Sharplanina or Karalachan dog (a breeding pair), for the protection of livestock against predator attack. The actual number of dogs must be proportional to the total number of sheep or cattle requiring protection. A pair of shepherd dogs will guard up to 100 sheep or 30 cattle, with an additional dog required per 100 additional sheep or 30 additional cows; the shepherd (farmer) must own at least two shepherd working dogs of breeds such as breed from the region - pulin dogs. the shepherd dogs should be fully socialised with the herd/flock of cattle/sheep and follow them constantly; only pure-bred shepherd dogs of the traditional breeds from the region will be eligible for payments and these will need to have their pedigree certified by the recognized association; the shepherd must avoid any cross-breeding of the shepherd dogs supported under this measure and keep a record of the sale and purchase of all dogs.
Minimum Area	For alpine pastures, grazing permission with adequate management instructions must be issued by the Management Authority of the PA, in accordance with the specific PA Management Plan (maximal stocking rates, etc).
Expected Environmental Impact	<ul style="list-style-type: none"> Increased grazing of high mountain pastures leading to maintenance of a) high nature value of the mountain grassland and b) traditional 'open' mountain landscapes; increased numbers of traditional breeds of shepherd dogs.

HNV 1 and 2: Restoration and maintenance of HNV grasslands	
Environmental objectives	<ul style="list-style-type: none"> To prevent the further loss of high nature value grasslands and associated species through abandonment, conversion to arable land and other crops, or overgrazing; to conserve and maintain high nature value grasslands and associated species through the maintenance or re-introduction of traditional management practices on semi-natural grasslands; to protect biodiversity and to ensure protection, maintenance and/or recovery of habitat and bird populations to a favourable state; to promote traditional mowing methods without heavy machinery.
Rationale for Measure	Traditional extensive grazing practices have created many important semi-natural habitats, although many of these are now under threat from abandonment or the introduction of more intensive farming practices. The continuation of these low intensity traditional farming methods is essential to maintain biodiversity across large areas of the countryside, both in upland and lowland areas, which will also maintain the character of the landscape.
Geographical Scope	Will be defined after identification and mapping of HNVF
Management Requirements	<p>HNV1 – Restoration and maintenance of undergrazed HNV grasslands</p> <ul style="list-style-type: none"> Clearance of all unwanted vegetation; use of mineral fertilizers and application of pesticides is prohibited except those defined in Regulation (EEC) 2092/91 for use in organic systems; no new drainage and ploughing; free grazing on meadows after the last mowing (except for meadows in the forests, because they are a habitat for plant species of European conservation importance where the grazing might not be of benefit, moreover the forest meadows are used for grazing by wild fauna and human presence might disturb them); maintenance of minimum and maximum stocking densities depending on natural climatic and soil conditions in order to ensure that the meadows and pastures are in a good ecological state and that permanent grass cover is retained. The minimum and maximum levels should be as follows: <ul style="list-style-type: none"> 0.3-1.0 LSU/ha outside protected areas, for protected territory, minimum and maximum animal densities have to be defined in line with the territory's management plan (if such a plan does not exist then the density should be between 0.3-1.0 LSU/ha), farmers should maintain the appropriate stocking density across the whole grazing area under their control. Respect of stocking density will take into account all grazing livestock kept on the farm; mowing should be later than 15 June for lowlands and between 30 June and 15 July for mountain areas (mountainous LFA); mowing may be done manually or with a slow grass cutting machine if the direction of mowing is from the centre towards the periphery of the meadow and at low speed, to allow ground nesting birds and other animals to escape.
Management Requirements	<p>HNV2 – Restoration and maintenance of overgrazed HNV meadows and pastures</p> <ul style="list-style-type: none"> Re-seeding with approved native species – preferably with seed of local provenance; use of mineral fertilizers and application of pesticides is prohibited except those defined in Regulation (EEC) 2092/91 for use in organic farming systems; no new drainage, ploughing or cultivation; free grazing on meadows after the last mowing (except for meadows in the forests, because they are a habitat for plant species of European conservation importance where the grazing might not be of benefit, moreover the forest meadows are used for grazing by wild fauna and human presence might disturb them); maintenance of minimum and maximum stocking densities depending on natural climatic and soil conditions to ensure that the meadows and pastures are maintained in a good ecological state and that permanent grass cover is retained. The minimum and maximum levels should be as follows: <ul style="list-style-type: none"> 0.3-1.0 LSU/ha outside protected areas, for protected areas minimum and maximum animal density has to be defined in line with the territory's management plan (if such a plan does not exist then the density should be between 0.3-1.0 LSU/ha), farmers should maintain the appropriate stocking density across the whole grazing area under their control. Respect of stocking density will take into account all grazing livestock kept on the farm; mowing should be later than 15 June for lowlands and between 30 June and 15 July for mountainous LFA as defined in Measure 211 (Annex 5), mowing may be done manually or with a slow grass cutting machine if the direction of mowing is from the centre towards the periphery of the meadow and at low speed to allow ground nesting birds and other animals to escape; grazing on sandy dunes is not permitted.
Expected Environmental Impact	<ul style="list-style-type: none"> Improved conservation status of HNV grassland habitats; anticipated improvement in the conservation status of over 100,000 hectares of high nature value semi-natural grasslands.

HNV 3 – Maintenance of habitats of protected species in arable lands of Important Bird Areas (IBAs)	
Environmental objectives	To protect biodiversity and to ensure the protection, maintenance and/or recovery of the favourable condition of habitats and bird populations during the breeding season, in migration or during winter.
Rationale for Measure	Arable lands included in IBAs in Serbia account for around 12,596 km ² of the territory. There are 42 IBA sites. They concern important migratory routes and are very important for bird feeding, however, farmers in these areas may suffer significant losses caused by birds.
Geographical Scope	All arable UAA classed as HNV. If more than 50% of the arable land within the physical block is classed as HNV, the entire block is eligible for support as HNV arable land. If less than 50% of the physical block is classed as HNV arable land the physical block is not eligible for support.
Management Requirements	The farmer may choose one or a combination of the following activities: <ul style="list-style-type: none"> • leave small (4x4 m) areas of land with bare soil, ploughed but not sowed, amongst the autumn cropped areas (four such squares per hectare) – applicable for areas with intensive agriculture where wintering geese feed or to support other target species; • retain winter stubble on fields selected for spring-grown crops; • leave uncultivated and unploughed areas (wildlife-friendly set-a-side) for a period of two years on a five year rotational basis in intensive agricultural land with monocultures (10 to 20% of the area, but not less than 1 ha, as a single, non-fragmented block of land; with a 1 m sterile strip around the perimeter that should be ploughed 2-3 times a year (but not between March and July) to prevent the spread of weeds into adjacent crops; • No cereal harvesting before 31 July in areas with nests of Montagu's Harrier (<i>Circus pygargus</i>) and Corncrake (<i>Crex crex</i>); • pesticide use prohibited (including second generation rodenticides) and mineral fertilizers, other than localized treatment of invasive weeds, i.e. selective use of some herbicides such as fluzafop-P-butyl or similar in March to suppress rank grass swards on grass margins or wildlife set-aside areas.
Expected Environmental Impact	<ul style="list-style-type: none"> • Stabilization or increase of farmland bird populations in SPAs and IBAs; • maintenance of ecological conditions (food base, shelter, breeding substrate, etc.) for breeding or foraging Imperial Eagle (<i>Aquila heliaca</i>), and Montagu's Harrier (<i>C. pygargus</i>), Saker Falcon (<i>Falco cherrug</i>), Red-footed Falcon (<i>Falco vespertinus</i>), Roller (<i>Coracias garrulus</i>), Red-backed Shrike (<i>Lanius collurio</i>), and staging during migration and wintering of Red-breasted Goose (<i>Branta ruficollis</i>) and Lesser White-fronted Goose (<i>Anser erythropus</i>); • maintenance or recovery of the breeding populations of Imperial Eagle (<i>Aquila heliaca</i>), Montagu's Harrier (<i>Circus pygargus</i>), White Stork (<i>Ciconia ciconia</i>), Saker Falcon (<i>Falco cherrug</i>), Red-footed Falcon (<i>Falco vespertinus</i>), Roller (<i>Coracias garrulus</i>), Lesser Grey Shrike (<i>Lanius minor</i>), Red-backed Shrike (<i>Lanius collurio</i>); • maintenance or recovery of migrating and wintering populations of wildfowl, especially Red-breasted Goose (<i>Branta ruficollis</i>) and Lesser White-fronted Goose (<i>Anser erythropus</i>); • protection of habitats and biodiversity; • actions will be implemented until equivalent statutory management requirements in force in the designated SPA in Serbia under the Birds Directive.

Scheme 4: Landscape Features Scheme

Maintenance of Traditional Orchards	
Environmental Objectives	<ul style="list-style-type: none"> To support the conservation and sustainable use of traditional fruit varieties; to maintain and support the traditional extensive systems of fruit production.
Rationale for measure	In addition to contributing to the traditional Serbian rural landscape, orchards are very important for the preservation of genetic variety and cultural heritage. In addition, orchards provide habitats for valuable plant varieties and wildlife in mountainous and semi-mountainous areas. Implementation of this measure will reduce the intensive management of orchards and replacement of old traditional varieties with new intensive varieties.
Geographical Scope	<p>Traditional orchards in the whole territory Serbia that meet the following criteria:</p> <ul style="list-style-type: none"> extensive management; mature fruit trees (older than 25 years); presence of old local varieties; widely-spaced trees (less than 10 m apart). Boundaries of the traditional orchard are considered to be 10 m from the last trees. Single orchard trees on the farm, but not within the orchard are not eligible for compensation. Exceptions are permitted only for walnuts and cherries for which 15 m between trees is permitted; the orchard floor has continuous or near continuous grass cover that is commonly used for grazing animals.
Management Requirements	<ul style="list-style-type: none"> Retain all living fruit trees; ensure regular pruning to maintain the characteristic “form” of the trees (this will vary according to the tree type and variety); maintain grass cover within the orchard through grazing and/or mowing; do not burn grass or wood in the orchard; do not allow standing fruit trees to be damaged by grazing livestock or mowing equipment; plant protection treatment is allowed only in extreme circumstances - only in the case of direct threat of destruction of the trees and after consultation with a plant protection expert; only fertilizers in accordance with organic farming standards may be used.
Expected Measurable Impact	At least 5,000 hectares of traditional orchards or nut plantations maintained.

Scheme 5: Soil and Water Protection Scheme (SW)

SW 1: Crop rotations for soil and water protection	
Environmental objectives	<ul style="list-style-type: none"> Support effective nutrient management including the storage and application of livestock manures; support the increased use of crop rotations designed according to specific criteria for a) the control of soil erosion (slight to moderate) and b) the reduction of nutrient losses (especially nitrate leaching).
Rationale for measure	Crop rotation for soil and water protection has a dual environmental benefit: it contributes to a decrease in soil erosion while also improving water quality. In the case where no winter cover is left, the soil is exposed to water erosion.
Geographical Scope	Entire territory of Serbia, with priority given to nitrate vulnerable zones.
Management Requirements	<p>Farmers will be required to:</p> <ul style="list-style-type: none"> take soil samples for analysis of N, P, K (by agricultural stations); prepare and implement a five year Nutrient Management Plan (NMP) with support of an advisor or qualified agronomist; maintain at least 50% of the total cropped area under winter crops/ green cover; apply a 4-stage crop rotation; no soil cultivation prior to 1 April.
Expected Environmental Impact	This package will make a significant contribution to reducing soil erosion and nitrate leaching from arable land in areas of slight to moderate risk.

SW 2: Soil erosion control

Environmental Objectives	<ul style="list-style-type: none"> • Support farmers to plan and implement an appropriate programme of activities for significantly reducing the risk of soil erosion by water and wind on “compact” blocks of land (i.e. priority will be given to adjoining parcels in specific river catchment areas); • decrease soil erosion; • prevent degradation processes in agricultural land threatened or affected by erosion; • contribute to preservation, restoration and improvement of soil fertility and ecosystem functions of the soil cover.
Geographical Scope	This package will be implemented across the whole territory of Serbia. However priority will be given to applications concerning land within municipalities with moderate to severe erosion problems on agricultural land (arable land, pastures, orchards and/or vineyards).
Management Requirements	<p>The farmer may choose to apply one or several activities from the list below:</p> <ul style="list-style-type: none"> • creation of grass buffer strips 8 m wide and arranged perpendicularly to the slope at intervals of approximately 20-80 m, depending on the slope, soil type and other factors. The strips should cover between 10-30% of the arable area; • planting of forecrops for erosion control; • creating run-off holding ditches - arranged perpendicularly (and with a little inclination) to the slope with a distance between each other of about 20-40 m; • planting crop strips - strips 30 to 100m wide, with alternating earthed-up crops planted on the contour, perpendicular to the slope; • conversion of arable land to pasture, with subsequent management not exceeding 2 LU/ha; • applying practices for improvement of pastures, to clear the pastures of stones and detrimental vegetation, and also partial sowing and nutrition of the pastures; • applying anti-erosion practices in vineyards and orchards, to improve the availability of light to the plants, very often vines and some orchards are planted parallel to the direction of the slope, which is contrary to the prescriptions in the erosion control regulations. In such cases, farmers will be supported to create and maintain run-off furrows perpendicular to the slope.
Expected Environmental Impact	This package will make a significant contribution to reducing the risk of moderate to severe soil erosion from agricultural land (arable land, pastures, orchards and/or vineyards).





CHAPTER 7:

IMPLEMENTATION OF AGRI-ENVIRONMENT PAYMENT SCHEMES

The implementation of any agri-environment payment system is a considerable challenge in the early years. It is important that the administrative design and procedures are realistic, without endangering the minimum standards for EU approval. Many Member States have found that pilot and national schemes are just as useful in testing and improving their administrative and payment systems as they are in testing the farm level agri-environment management.

This section outlines some key practical issues relating to:

- institutional structure and capacity;
- administrative tasks and processes;
- monitoring and evaluation.

7.1 Institutional structure and capacity

Most schemes in the EU are implemented by agricultural ministries and their regional offices. However, the precise arrangements in Serbia will depend on the governmental and institutional structure. The key to success in any country is ensuring that the lead organization for implementing an agri-environment scheme has the greatest credibility with farmers.

In many cases, it will be necessary to increase staffing levels of the responsible institutions and allow time for training of new staff before the scheme can be launched. If necessary, the complexity of the scheme and contract design should be adapted to the level of available administrative resources. Adequate capacity is essential to ensure the efficient and timely delivery of agri-environment payments when they are first introduced. This is of critical importance, since any delays and problems with implementation, especially payment, tends to diminish the goodwill of farmers, with potentially serious consequences for the success of future programmes.

The two main administrative bodies required are a Managing Authority and Paying Agency. These have two very distinct functions, and are usually established separately, sometimes by adding to the role of an existing agency. The Paying Agency, for example, may already be responsible for other types of payments to farmers.

The Managing Authority is the lead organization for developing and implementing the overall agri-environment programme and should have sufficient administrative capacity and a well developed regional/local network. The Managing Authority should also have easy access to specialized expertise in other government agencies, technical and research institutions, and NGOs.

With no previous experience with agri-environment schemes, advisory and administrative staff have almost exactly the same needs and problems as farmers in understanding the agri-environment concept and putting it into practice. They must, however, be fully trained, confident, committed and always one step ahead of the farmers. It is particularly important that all front-line staff have credibility with farmers and can discuss whole farm management, not just agri-environment. These staff may be the first to hear of any problems with the scheme—and to suggest how to resolve them—so it is important to listen to their views and keep them involved.

The Paying Agency is responsible specifically for the administration and control of the agri-environment payments to farmers. Although it may not have much direct input in the development of measures, it has a key role to play in checking that farmers are doing what the agri-environment contract requires, and in tracking and reporting on expenditures. Agri-environment payments will be a completely new function for the agency, and existing administrative systems rarely have the spare capacity or skills needed. The Paying Agency will have to cope with the detail of agri-environment contracts, such as identifying small parcels of land, or measuring vegetation and other features before payment is made. Capacity building will involve the staff, equipment and skills needed to set up and use agri-environment recording systems (possibly databases), process applications, set up contracts with farmers, carry out seasonal control visits, make payments and record information for monitoring.

Excellent co-ordination or liaison procedures are important for successful and coherent implementation of agri-environment schemes. Many different people and organizations are involved in setting up and running agri-environment schemes, and it is vital that everyone understands not just what needs to be done but also why, how, when, and where. This requires very effective communication at all stages of the process, as failure to communicate not only slows progress, but also allows other, unwanted messages to come through.

Communication between the Managing Authority and Paying Agency will be frequent, especially in the early stages, though broader communication is also important. Effective co-operation between the Ministries of Agriculture and Environment is desirable for all agri-environment schemes, but is essential for the EU model, where agri-environment payments are a key means of delivering EU environmental policy.

The value of multi-stakeholder support for the development of agri-environment payment schemes has already been emphasized (Chapter 5) and this should continue during implementation. Feedback on the progress and acceptance of measures, and on possible administrative problems, is vitally important and can be gained through regular meetings of an Agri-environment Working Group or other consultative committees. These could usefully include regional or local authorities, as well as representatives of farming and conservation organizations. Though they may meet only once a year, they can bring considerable outside expertise into the running and evaluation of agri-environment schemes.

It is very easy to underestimate the time and resources needed for initial and ongoing training of the staff involved, and the importance of training the trainers. Since considerable parts of the scheme may be region-specific, the capacity of staff and project officers at the regional/local level often requires the most strengthening.

7.2 Administrative tasks and processes

An overview of the main administrative tasks associated with the implementation of an agri-environment scheme is depicted in Figure 7.1. Some additional notes and comments are provided here, working downwards from the top of the diagram.

Farmer preparation phase (black in the diagram)

The provision of good information and advice to farmers is important for ensuring high levels of scheme uptake. It is best to achieve early, small successes in communicating with farmers, as frustration can lead to a breakdown in communication. Direct contact with knowledgeable scheme staff who understand the local farming systems is the best way to convince farmers to sign a management contract. For example, in the UK it proved very successful to designate a special project officer for agri-environment schemes in each region. These people maintain continuous contact with the farmers in their area, advising them on the selection of contracts and best management practices, and organizing meetings where farmers could ask questions and share information.

If face-to-face contact with farmers is not feasible due to a shortage of knowledgeable staff, written material can be sent to farmers directly and information disseminated in other ways. It may be helpful to identify existing channels of communication used (and respected) by the farmers and others, including any informal networks. Once a contract is signed, it is important that farmers do not feel 'abandoned' by the authorities. Most of them will have problems and questions, particularly in the first year, just as they would if they were growing a new crop. The scheme should anticipate this need and make it easy for them to obtain advice.

Application phase (red in the diagram)

Bulgaria's experience of developing an agri-environment pilot measure

Valuable lessons were learnt about capacity building, in both institutions and the farming community, as Bulgaria prepared its first agri-environment scheme in 1999:

- farmers were very keen to "try" the agri-environment scheme, but the majority could only be expected to implement one agri-environment action (from a possible nine) due to the insufficient level of training and know-how among farmers, their advisers and the administrators at the start of the programme;
- good co-operation and partnerships were forged between government and NGOs for the development of pilot projects, but there was a lack of specific experience in the process of implementation, monitoring, evaluation, etc;
- the late establishment of an Agri-environment Division in the Ministry of Agriculture meant that when the scheme was implemented, most of the newly appointed experts lacked experience in agri-environment and needed time to adjust;
- insufficient resources were allocated for the targeted development of pilot projects.

(Source: IEEP, 2001)

Fast and efficient processing of applications helps to keep farmers engaged in the scheme. Conversely, bureaucratic delays and problems are a serious deterrent for farmer participation and thus, sufficient administrative resources need to be made available for this task. Complex application forms should be avoided, both for ease of administration and to simplify the process for farmers.

There are several well-tried ways of ensuring a smooth application process:

- arrange local Question and Answer (Q&A) sessions for groups of farmers, when details of the scheme have been finalized but before applications start. These must be run by an organization that farmers respect, and by someone who can answer questions fully and accurately;
- provide farmers, community leaders and the farming press with Q&A information sheets in language that is easy to understand, and which clearly outline who is eligible to apply, how and when;
- make the initial application form a simple expression of interest, perhaps just name, location of farm and land tenure details. Follow this with a visit from a government trained adviser or project officer who checks that the farm is eligible and prepares the detailed application or contract. The adviser may be employed by the government, or by a farmers' organization or an NGO;
- management contracts (sometimes known as management agreements) are usually for five years in EU countries, but for pilot schemes can be as short as one or two years to make it easier to revise the scheme after the first year (almost all schemes need some improvements!);
- if applications have to be refused for administrative or budgetary reasons, it helps to notify farmers as quickly as possible with an explanation and perhaps an invitation to apply again next year;
- successful farmers should have a copy of the signed contract and very clear information about how they will be paid.

Agri-environment payments require area-based, legal contracts and therefore need to be administered at the level of the "land parcels" managed by farmers. An effective and functional system of land parcel identification is therefore essential, including the possibility of providing farmers with copies of accurate maps of their land.

For example, during the introduction of agri-environment pilot schemes in Bulgaria and Romania in 2006 and 2007,

paper-based cadastral maps were used to identify and control the land entered into management agreements. The cadastral maps gave a unique number and gross area of land parcels, and were easily available and familiar to farmers. Although this system worked in the short term and enabled pilot actions to start, it had two major limitations:

- the land cadastre was rapidly becoming outdated and was not an appropriate basis for future agri-environment schemes, and
- it did not develop relevant experience and long-term capacity amongst administrators.

Ideally agri-environment measures should be administered using a graphical Land Parcel Identification System (LPIS), such as that required by the EU for the administration of all area-based support payments to farmers.

Annual payment phase (blue in the diagram)

This phase is entirely the responsibility of the Paying Agency. An agri-environment "management agreement" is a legally-binding contract between a farmer and the relevant authority. The contract specifies the activities which the farmer is required to undertake in exchange for public monies, and reinforces the idea that the farmer is being paid from public funds to deliver environmental outputs and services. The contract links payments to quantifiable outputs and states how compliance will be verified.

Indeed, agri-environment schemes can only achieve their goals if farmers comply with the commitments as set out in their contract. This requires transparency, accountability and effective control procedures. These include administrative controls as well as on-the-farm checks. Making detailed checks on the farm, involving measurement of areas and stocking densities, on specific dates if necessary, is probably the most efficient means of ensuring contract compliance.

In the EU, at least 5% of holdings in an agri-environment scheme need to be inspected by this method every year, but a much higher proportion would be checked in a pilot scheme, sometimes 100%. All the conditions agreed to by the farmer should be investigated in one inspection visit, to the greatest possible extent. Penalties should be proportional to the degree of failure to comply, usually by withholding a proportion of the payments. Repeated and deliberate failures, however, can lead to exclusion from the scheme. During the early years of the scheme, as farmers become accustomed to it, penalties should not

<p>Farmer Preparation Phase</p> <p>Tasks and responsibilities may be divided between with Managing Authority and Paying Agency</p>	<p>Publications and Information e.g. preparation of promotion and information materials for applicants</p> <p>Supporting the application process e.g. distribution of application forms in pilot areas, provide maps to farmers, telephone consultation, invitation of visit by farm advisor (if funding is available) etc.</p>
<p>Application and Selection Phase (preparation of "Management Agreements")</p> <p>Clearly defined "window" (e.g. 2-3 months) for applications "Management Agreements are only prepared once per successful applicant during the programming period (unsuccessful applicants may re-apply next year)</p> <p>There should be close cooperation and communication between the Managing Authority and Paying Agency</p>	<p>Process application forms and supporting documents - open file for each application received, perform checks for 1) timelines for submission and completeness for application and 2) cross-check to relevant databases for compliance eligibility criteria</p> <p>Select eligible applications according to pre-defined criteria e.g. "first come, first served" or (where budget is over-subscribed) priority ranking criteria agreed by managing authority</p> <p>Selected applications are visited by "Project Officers" in each pilot areas - verify on-farm details in application form and marked on map (applicants may still be rejected at this stage), discuss/clarify management requirements (including baseline obligations) and make any final amendments to application</p> <p>Prepare "management agreements" (5 year duration) for successful applicants - calculation of support payments, statement of legal basis, notification of any special conditions, signed and DATED decisions letter, etc.</p> <p>Notify unsuccessful applicants - implement appeals procedures if necessary</p> <p>Received signed "management agreements" back from agreement holders (beneficiaries) - begin period of compliance with "management agreement"</p>
<p>Annual Payment Phase</p> <p>There is a separate phase from application and repeated annually for all "management agreement holders" Sole responsibility of the Paying Agency</p>	<p>Agreement holders submit annual claim for payment, including statement of compliance with terms of "management agreement"</p> <p>"on-the-spot" control according to risk analysis - of compliance with a) baseline obligations b) terms of individual management agreement</p> <p>Adjustment of support payments subject to control procedures - taking account penalty and sanction system agreed with managing authority</p> <p>Annual payment to beneficiary - at the end of each year of management agreement (advance payments may also be made)</p>
<p>Reporting Phase</p> <p>This should be close cooperation and communication between the Managing Authority and Paying Agency</p>	<p>Reports - preparation of financial declaration and progress reports for managing authority and EU, notification of irregularities, etc.</p> <p>Inspection and audit procedures</p>

Figure 7.1 Overview of the main administrative tasks in implementing an agri-environment scheme

Early implementation of the Slovenian Agri-Environmental Programme (SAEP)

Slovenia found that a twinning programme was the best way to obtain EU technical assistance, but rejected pre-accession SAPARD support, relying instead on national sources of funding to implement a uniform national approach to agri-environment which could not be accommodated under SAPARD regulations (IEEP, 2001).

Agri-environment implementation began in 2001 as part of the Programme of Agricultural Policy Reform, which also embraced measures concerned with food production labelling and marketing, focusing on quality, geographical origin, traditional reputation, organic and integrated production, etc. The SAEP had 22 measures, of which ten were implemented in 2001 on a pilot basis, and the remaining twelve were implemented in 2002.

In the first year (2001), 11,400 farms accounting for 90,000 hectares received payments. The budget allocated to agri-environmental measures in 2002 was €10.4 million. The SAEP measures are summarised below.

Group I: Reducing negative impacts of agriculture on the environment: reductions in livestock density, preventing soil erosion in orchards and vineyards, crop rotation measures, green cover on arable land, organic farming and integrated production of fruit, vegetables and vines.

Group II: Preservation of nature, biodiversity, soil fertility and traditional cultural landscapes: grazing mountain pastures, mowing steep slopes and hill meadows, protecting orchards and rare animal breeds and plant varieties, and maintenance of extensive grassland.

Group III: Maintenance of protected areas: maintenance of cultural landscapes, measures regarding large carnivores and the habitats of protected birds and the establishment of green cover, e.g., in groundwater protection zones.

Group IV: Education and promotion: training programmes and promotion of the scheme.

After this national programme, agri-environment measures were recognized as the first priority of rural development in Slovenia for the period 2004–2006 and were included in the draft rural development plan discussed with the European Commission prior to accession.

(Source: Cierna, 2002, quoted in EEA, 2004)

be too harsh and if possible should be accompanied by advice on how to improve compliance.

7.3 Monitoring and Evaluation

As soon as, or even before, an agri-environment programme exists on paper, some basic decisions must be taken about evaluation and monitoring, so that they become part of the normal cycle of the agri-environment policy-making process (Figure 7.2).

At the national or regional level, the main aim of monitoring and evaluation activities is to provide feedback to scheme managers and policy-makers on how well an agri-environment scheme is functioning and whether it is achieving its objectives. This is effectively part of an “active learning process” that enables the Managing Authority to:

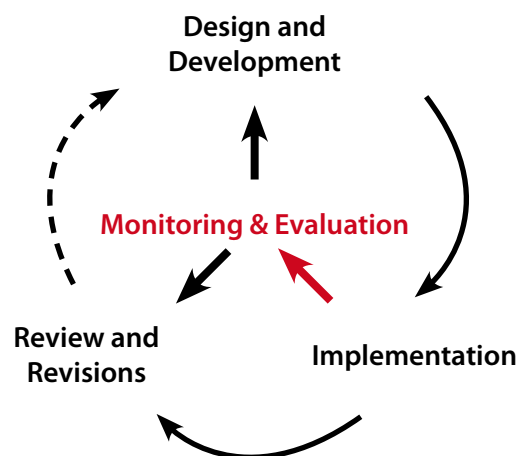


Figure 7.2 The cycle of agri-environment policy making

- review and revise existing schemes and measures, and/or
- improve the design of future schemes and measures.

This requires early and careful planning from the moment that an agri-environment scheme is first elaborated, in particular to ensure that there are systems in place to collect the necessary information (especially baseline data, which can easily be overlooked). The main purpose of monitoring and evaluation is to obtain information on the success or failure of a given policy in achieving its principal objectives. Indicators are often a useful tool for this purpose, but only work if they relate directly to the objectives of the programme in question. This means that objectives must be clearly defined at several levels of detail.

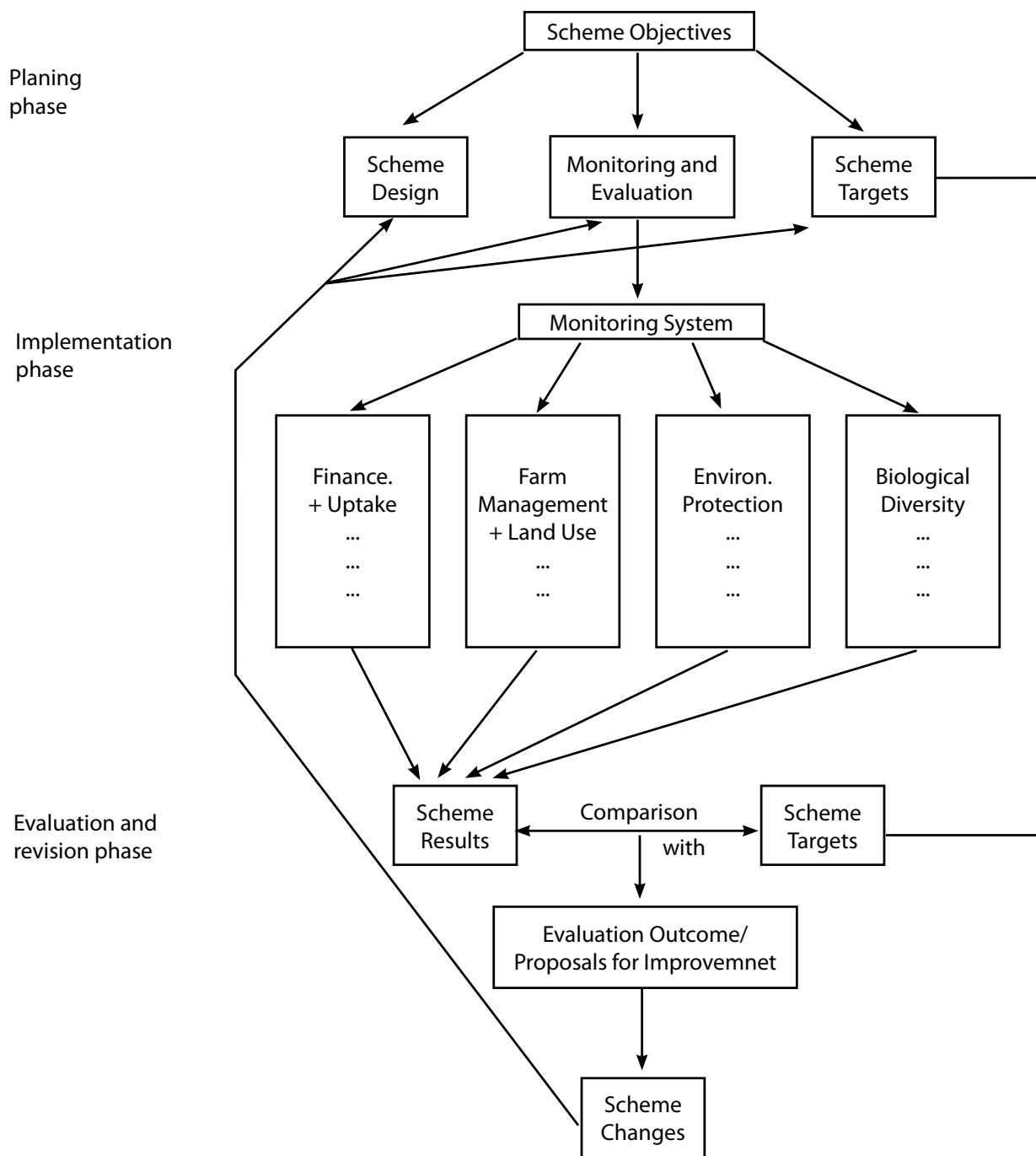
Where EU co-financing is used for scheme implementation, the monitoring and evaluation procedures designed for use at the national level must also be capable of satisfying these “external” monitoring and evaluation requirements. The European Commission has introduced a comprehensive suite of indicators—the Common Monitoring and Evaluation Framework (CMEF)—to evaluate the extent to which EU co-financed measures in rural development programmes are meeting the strategic priorities of the European Union.

There are five main types of indicator included in the CMEF:

- input indicators are commonly used to monitor progress in terms of the payment of funds to farmers;
- output indicators monitor the uptake of specific measures (e.g., number of new agri-environment contracts with farmers, number of hectares supported, etc.);
- result indicators relate to the direct and immediate effects of the measure on the management of the farm (e.g., area of land receiving pesticides, area of land with a particular crop, number of newly planted trees, length of soil erosion barrier, etc.);
- impact indicators look beyond the immediate results at the long-term effects on the environment (e.g., improvements in water quality);
- baseline indicators are an important reference point for the evaluation of impacts of single measures and programmes as a whole. base-line indicators are an important reference point for the evaluation of impacts of single measures and programmes as a whole.

A well-designed monitoring and evaluation programme is especially important for a pilot agri-environment scheme. It serves not only to introduce this aspect of the new agricultural policy instrument, but also helps to collect evidence to inform the design and implementation of a full scale agri-environment programme. Figure 7.3 illustrates the process.

Figure 7.3 Position of monitoring and evaluation in development of agri-environment schemes







CHAPTER 8:

SOCIAL AND ECONOMIC IMPORTANCE OF HNV FARMING SYSTEMS

As explained in the preceding chapters, the HNV farming concept is highly relevant to the future of nature conservation in the Republic of Serbia. Serbia has a great diversity of wildlife species and habitats and much of this biodiversity is associated with traditional/low intensity farming systems in areas suffering from limited productivity due to the natural handicaps of altitude, slope or low soil productivity.

However, whilst HNV farming is a very attractive concept for communicating the biodiversity benefits provided by low intensity farming systems, there remains little awareness of the additional “hidden values” of HNV farming that make it relevant in the wider context of sustainable rural development in Serbia. To understand these “hidden values”, it is important to appreciate the close relationship between HNV farming and small-scale agriculture.

Due mainly to the historical rule (that was recently eliminated) limiting private farms to a maximum size of 10 hectares, Serbia has a much smaller average farm size than most European countries (an average of only 3.6 hectares of agricultural land per private farmer). Owing to their small size, most of these are subsistence farms with production *mainly* used for their own consumption, but also with varying degrees of orientation towards some form of commercial sales.

Subsistence agriculture is one of the least understood and the most neglected types of agriculture. In a globalized, market-driven world, it is commonly dismissed as a marginal activity with no functional value. Indeed, subsistence farming is often perceived very negatively and usually seen as synonymous with backwardness and inefficiency and holding back economic growth and economic performance.

However, in recent years, a contrasting view of subsistence has emerged. It argues that subsistence farming actually has many positive socio-economic effects and is often the only way for rural people to survive under extremely difficult and risky conditions. Subsistence farming is therefore increasingly seen as an effective strategy to cope with the risks and uncertainties that threaten the welfare of poor rural families (and their urban relatives).

The positive benefits of subsistence agriculture are also part of the “hidden” value of HNV farming systems in Serbia—systems that not only maintain biodiversity, but also sustain rural communities by feeding them, buffering them against change and risk, and shaping their culture and traditions.

Unfortunately, there is also a clear link between rural poverty in Serbia and the large number of subsistence farmers who are unable to modernize or reach a level of competitive productivity and thus remain trapped in a vicious circle of poverty and low productivity. Ironically, these farmers are producing a very important commodity—a high nature value landscape.

There is no scientific evidence to prove that the size of a farm determines its nature value. However, it is logical to assume (and widely accepted) that farmland managed by semi-subsistence farmers tends to have much higher biodiversity values than more commercial, market-orientated farms. There is therefore a significant overlap between the future of HNV farming and the future of semi-subsistence farming in Serbia, and this should be viewed as an opportunity for rural development.

In recent years, particular attention has been given to the potential of “sustainable rural tourism”—including the generation of a specific niche markets for quality tourism products—as one of the key sectors for diversifying Serbia’s rural economy and contributing to the creation of employment and generating additional income. Tourism offers many opportunities for rural entrepreneurs by creating economic linkages to landscapes, wildlife, cultural heritage and traditional food products, as well as directly to small-scale farming and local services such as entertainment and recreation facilities.

For example, HNV farming is closely linked with the creation and maintenance of beautiful landscapes and HNV farmers commonly manage landscapes that people enjoy and derive pleasure from. This pleasure is gained in different ways. For some people, the connection with landscape is very functional, as a place for recreation or sport. For others, the connection may be more ephemeral—it can come from seeing the natural beauty of a species-rich hay meadow in flower, or be linked with culture through a favourite song or poem, or with particular types of food that are characteristic of the area. Many people are willing to pay for these pleasures through some form of rural tourism (including eco-tourism and agri-tourism), often combined with the consumption and enjoyment of local food and beverage products.

This unique combination of both creating and maintaining a beautiful landscape, and producing good food from this landscape is a common characteristic of HNV farming systems throughout Europe and can be

exploited for considerable economic benefit. However, encouraging farmers to make sustainable use of the natural resources available to them will continue to require, amongst other things, the introduction of new skills and competences through education, vocational training and well-targeted advice.

Herein lies the challenge. It is not easy to reach large numbers of small-scale farmers, often in relatively isolated rural locations with poor infrastructure, in order to provide them with training or advisory support. Furthermore, many farmers are reluctant to participate unless they

can see clear and immediate benefits. This requires well-formulated training courses and advisory services, which in turn also requires skilled and experienced trainers and advisers. Further investments are therefore essential to build such capacities in Serbia.

With properly targeted support, HNV farming could yield a viable economic future and modern quality of life for rural communities. Indeed, low intensity farming methods, quality food products, traditional crafts and rural tourism could be at the heart of sustainable rural development in much of the Republic of Serbia.

A Vision for HNV Farming in the Republic of Serbia

HNV farming systems are not systems that can be preserved like relics in a museum. Traditional ways of life will inevitably change in the coming years, but this change must be for the good of both the local people and the local environment, including the diversity and abundance of wildlife. A vision for the future of HNV farming in Serbia needs to fully and enthusiastically embrace this change!

Such a vision includes:

1. A diverse local agricultural economy comprising both small- to medium-scale businesses managing economically viable HNV farming systems and including small-scale processing facilities for dairy, meat and other products.
2. A variety of complementary and alternative economic enterprises diversifying and adding further value to the products of HNV farming, including rural tourism and recreation, such as farm-based accommodation, local restaurants, etc.
3. An abundant range of distinctive food products from HNV farming that are widely recognized as high quality, healthy products adapted to suit the tastes of the modern consumer, including many traditional artisan food products that have a taste and character that only handcrafting and the very best raw materials can produce.
4. Co-ordinated and strategic use of branding and food quality certification schemes as tools for further "added value" of HNV farming products.
5. An emphasis on local and regional marketing of HNV farming products to encourage maximum returns to local farmers and rural communities.
6. A well-developed network of supporting actions for HNV farming, including research, training and advice promoting the application of good practice, innovation and appropriate technology to small-scale agriculture and food processing, and the on-going development and marketing of food and beverage products from HNV farming.
7. Farmers, their families and other members of the rural community in HNV farming areas enjoying a growing standard of living and prosperity with good access to education, healthcare and modern communication.
8. The celebration of HNV farming as a valuable part of national culture and heritage, and closely associated with the conservation of biodiversity and traditional landscapes.

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