Agri-Environmental Policy in South-East Europe

2018

Regional Rural Development Standing Working Group in SEE (SWG)
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The analysis, conclusions and recommendations in this paper represent the opinion of the authors and are not necessarily representative of the position of the Regional Rural Development Standing Working Group in SEE (SWG) and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.

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FOREWORD AND ACKNOWLEDGEMENTS

One of the main objectives of the EU accession process is to create preconditions for sustainable, inclusive and cross-sectoral policies providing an enabling environment for sustainable development, prosperity and peace in South-East Europe (SEE).

Agriculture is a key to the economic transition of the countries in the region. EU approximation has brought significant challenges to the sector in regard to future prospects, competitiveness, environmental and rural development. Even after a decade of political, economic and structural changes, there is still an urgent need for comprehensive, evidence-based agricultural and rural development strategies, related policy instruments and effective institutional arrangements to unblock the potential of rural areas for sustainable development and economic prospects in competitive agricultural, and diversified rural service sectors.

Agri-environmental policies are a central instrument of the EU to integrate environmental objectives into the Common Agricultural Policy and to effectively engage farmers in the conservation and sustainable use of natural resources in order to enhance livelihoods, agricultural and eco-system services.

The agri-environmental policies of the SEE countries/territories are to be designed as an integral part of the national rural development strategies and IPARD programming to meet the economic needs of farmers, while facilitating the transformation towards sustainable and environmentally friendly agricultural practices. The multi-level governance principle provides the needed flexibility to design and implement agri-environmental policies and measures well-adjusted to the particular eco- and farming systems as well as to the cultural practices and local traditions. Implementing agri-environmental policies will significantly contribute towards a structural change of ruralities towards multi-functional, sustainable regions and farming systems.

Ultimately, the agri-environmental policies and measures will improve the competitiveness of rural regions by meeting society's demand for environmentally safe, locally produced products, while paying farmers who voluntary subscribe to environmental commitments in their production and maintenance of the countryside.

The objective of the assignment was to develop a regional framework for analysis of the potentials, practices and framework regarding agri-environmental policies, as well as to develop an effective policy framework for design and implementation of sustainable agricultural practices in the countries of SEE. This assessment report should serve as a long-term policy orientation for the integration of sustainable agricultural and rural development policies and measures in SEE, as well as to support inclusive and cross-sectoral policy consultation and design processes.

On this occasion, we would like to express our compliments to the Ministries of Agriculture and Rural Development as well as to all participating experts from SEE, and the Environment Agency of Austria for their utmost dedication and relentless efforts for the fulfilment of this assignment and for the distribution of its messages to regional and national policy makers and stakeholders.

On behalf of the SWG Secretariat

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** This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence*

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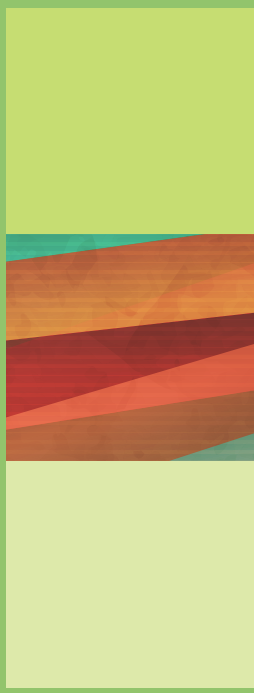
LIST OF ABBREVIATIONS

AASWA	Agency for the Adriatic Sea Water Area
AEI	Agri environmental indicators
AEM	Agri environmental measure
AEP	Agri-Environmental Policy
AEZ	Agroecological Zone
AFSARD	Agency for Financial Support of Agriculture and Rural Development
AIRS	Agricultural institute of Republic of Srpska
AMIS	Agricultural Market Information System
ANC	Areas with Natural Constrains
ANCE	Agency for Nature Conservation and Environment
AnGR	Animal Genetic Resources
ARDP	Agriculture And Rural Development Plan
ASBH	Agency for Statistics BIH
AWU	Annual Work Units
BD	Brčko District
BIH MAC	Bosnia and Herzegovina Mine Action Centre
BIH	Bosnia and Herzegovina
CAP	Common Agricultural Policy
CC	Cross-compliance
CGAP	Code of Good Agricultural Policy
CIHEAM Bari	Mediterranean Agronomic Institute of Bari
DAP	Directorate for Agrarian Payments
DAPM	Department for Agricultural Policies and Markets
DP	Department for Payments
DREPR	Danube River Enterprise Pollution Reduction Project
DSIP	Directive Specific Implementation Plan for the Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources
EEA	European Environmental Agency
EIA	Environmental Impact Assessment
ENVAP 2	Environment Accession Project - Proposals for Nitrate Vulnerable Zones and Code of Good Agricultural Practice in Serbia according to the EU Nitrates Directive
EPA	Environmental Protection Agency
EU	European Union
FABL	Faculty of Agriculture Banja Luka
FADN	Farm Accountancy Data Network
FAFS	Food and Agriculture Faculty, Sarajevo
FAO	Food and Agriculture organisation
FBIH	Federation of Bosnia and Herzegovina
FIA	Federal Institute of Agropedology
FMAWF	Federal Ministry of Agriculture, Water Management and Forestry
FVA	Food and Veterinary Agency
GAEC	Good Agricultural and Environmental Conditions
GDP	Gross Domestic Product
GLOBAL G.A.P.	GLOBAL Good Agricultural Practice
GVA	Gross Value Added
HNV	High Natural Value
HNVF	High Nature Value Farmaland
IACS	Integrated Administration and Control System
IFAD	International Fund for Agricultural Development
INC	The Institute for Nature Conservation
INDC	Intended Nationally Determined Contribution
IPA	Instrument for Pre-accession Assistance
IPARD	Instrument for Pre-Accession Assistance for Rural Development
IPM	Integrated Pest Management
IPPC	International Plan Protection Convention
ISP	Indicative Strategy Paper
KEAP	Kosovo* Environmental Action Plan
KEPA	Kosovo* Environmental Protection Agency

KEPAR	Kosovo's* European Partnership Action Plan
KM	Convertible Mark
LFS	Labor Force Survey
LPIS	Land Parcel Identification System
LSGU	Local Self-government Units
LU	Livestock Units
M&E	Monitoring and Evaluation
MAFRD	Ministry of Agriculture, Forestry and Rural Development
MAFWE	Ministry of Agriculture, Forestry and Water Economy
MAFWM	Ministry of Agriculture, Forestry and Water Management
MAKSTAT	Database of the Statistical office of Republic of Macedonia
MARD	The Ministry of Agriculture and Rural Development
MEP	Ministry of Environmental Protection
MESP	Minister of Environment and Spatial Planning
MME	Ministry of Mining and Energy
MNE	Montenegro
MoEPP	Ministry of Environment and Physical Planning
MOFTER	Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina
MONSTAT	Statistical Office of Montenegro
MPSV RS	Ministry of Agriculture, Forestry and Water Management of Republic of Srpska
MPUGERS	Ministry of Spatial Planning, Civil Engineering and Ecology of RS
MSDT	Ministry of Sustainable Development and Tourism
NAEP	National Agri-Environmental Program
NARDS	National Agricultural and Rural Development Strategy
ND	Nitrate Directive
NDS	National Development Strategy
NEAP	National Environmental Action Plan
NEAR	National Environmental Action Plan
NGO	Nongovernmental Organisations
NPARD	National Programme for Agriculture and Rural Development
NPRD	National Programme for Rural Development
NRC	National Reference Centre
NSSD	National Strategy for Sustainable Development
NVZ	Nutrient Vulnerable Zones
OECD	Organization for Economic Co-operation and Development
OG of MNE	Official Gazette of Montenegro
PAK	Privatization Agency of Kosovo*
PAVS	Public Administration "Vode Srpske"
PDO/PGI	Protected Designation of Origin/Protected Geographical Indication
PENP	Public Enterprise "National Parks of Montenegro"
PGR	Plant Genetic Resources
PS BIH	Parliamentary Assembly of Bosnia and Herzegovina
RCDP	Regulative on the criteria for direct payments
RD	Rural Development
RGA	Republic Geodetic Authority
RHS	Republic Hydrometeorological Service of Serbia
RM	Republic of Macedonia
RS	Republic of Srpska
RWD	Republic Water Directorate
SAA	Stabilization and Association Agreement
SEA	Strategic Environmental Assessment
SEP	Strategy of Environmental Protection
SEPA	Serbian Environmental Protection Agency
SORS	Statistical Office of the Republic of Serbia
SPRR BIH	Strategic Plan of Rural Development of Bosnia and Herzegovina
SSO	State Statistical Office
UAA	Utilized Agricultural Area
UNCCD	United Nations Convention to Combat Desertification
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNFCCC	United Nation Framework Convention on Climate Change
WFD	Water Framework Directive
WMASR	Water Management Agency of the Sava River BIH



Part A:

Regional Synthesis Part

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Chapter A1.

Rationale and Background: Coupling of Agri-environmental Policy and Rural Development in the EU

Agri-environmental policy provides the framework for the design and implementation of agri-environmental measures within Rural Development Programmes. These focus on a single or on several aspects of environmental protection, such as climate change mitigation and adaptation, soil, water, biodiversity, landscape or air quality. In terms of EU-CAP, agri-environmental measures are only those instruments within rural development programmes which are explicitly targeted towards environmental protection or improvements; other RD-measures which also may have environmental impact are not referred to as agri-environmental.

Farmers implement agri-environmental measures through the environmental management practices on farms. Some of the agri-environment instruments are compulsory, as a precondition for payments, while some others are designed as voluntary measures for optional choice. They include a wide range of activities, such as fertilizer and pesticide reduction, improved manure management, crop rotation, buffer strips, grazing or grassland management, soil erosion prevention, conservation and sustainable use of genetic resources, habitat conservation for wild species, integrated production or organic farming, among others[1].

The agri-environmental measures have been a cornerstone of the EU's Common Agricultural Policy (CAP) since 1992, when agri-environmental programmes became compulsory for all the Member States in the framework of their rural development plans, whereas they remain optional for farmers. The payments under Rural Development destined to reach these goals underwent the first reform with the Agenda 2000. It foresaw the preservation of farming practices with a beneficial effect on the environment and climate through agri-environment-climate measures under the CAP's second pillar (rural development) with a co-financing element by the Member States. Environmental commitments had to go beyond the mandatory standards[2]. At the same time, the Agenda 2000 introduced environmental cross-compliance as a condition for granting direct payments to farmers under the 1st pillar of the CAP[3].

Direct payments underwent a reform in 2013. The sustainable use of genetic resources and the high nature value of certain farming systems were reinforced, while from that programming period on, a certain amount of direct payments were to cover only commitments going beyond relevant mandatory environmental standards and requirements[4]. This is in line with the Polluter-Pays-Principle (farmers have to bear the costs of avoiding or remedying environmental damage and therefore comply with mandatory national and European environmental standards forming part of cross-compliance) and the Provider-Gets-Principle (remuneration for farmers entering voluntary environmental commitments going beyond legal requirements for costs incurred and income forgone). Payments included seven components, including a so-called greening payment for environmental public goods (ecological component).

Regarding payments for farmers observing agricultural practices beneficial for the climate and the environment under the first pillar, the following policy choices relevant for agri-environmental measures are available for Member States within the CAP 2014 – 2020:

[1] Science for Environment Policy (2017). Agri-environmental schemes: how to enhance the agriculture-environment relationship. Thematic Issue 57. Issue produced for the European Commission DG Environment by the Science Communication Unit, UWE, Bristol.

[2] François Nègre / Josephine Moller 04/2018. Fact Sheets on the European Union: SECOND PILLAR OF THE CAP: RURAL DEVELOPMENT POLICY.

[3] Albert Massot 04/2018. Fact Sheets on the European Union: The Common Agricultural Policy – instruments and reforms.

[4] Regulation (EU) No 1305/2013 of the European Parliament and of the Council of 17 December 2013 on support for rural development by the European Agricultural Fund for Rural Development (EAFRD) and repealing Council Regulation (EC) No 1698/2005.
According to the Polluter-Pays-Principle, farmers have to bear the costs of avoiding or remedying environmental damage and therefore comply with mandatory national and European environmental standards forming part of cross-compliance.

- Restoring, preserving and enhancing ecosystems dependent on agriculture and forestry, with a focus on (a) restoring and preserving biodiversity, including the biodiversity in Natura 2000 areas and high nature value farming, and the state of European landscapes; (b) improving water management; or (c) improving soil management;
- Promoting resource efficiency and supporting the shift towards a low carbon and climate resilient economy in the agriculture, food and forestry sectors, with a focus on the following areas: (a) increasing efficiency in water use by agriculture; (b) increasing efficiency in energy use in agriculture and food processing; (c) facilitating the supply and use of renewable sources of energy, of by-products, wastes, residues and other non-food raw material for purposes of the bio-economy; (d) reducing nitrous oxide and methane emissions from agriculture; or (e) fostering carbon sequestration in agriculture and forestry.

Additionally, under the first pillar, Member States could decide to apply 'equivalent practices', either via the agri-environment-climate measure under rural development policy or via a national or regional 'certification scheme'. This meant that Member States could also link the two pillars by complying with greening (pillar I) through equivalent measures under Pillar 2. In these cases, Member States had to implement rules to avoid double funding[5].

Under the second pillar in the programming period 2014-2020, six rural development priorities were defined, four of which had to be addressed within the rural development programme of each Member State: Priority 1: Knowledge Transfer and Innovation; Priority 2: Farm Viability and Competitiveness; Priority 3: Food Chain Organisation and Risk Management; Priority 4: Restoring, Preserving and Enhancing Ecosystems; Priority 5: Resource-efficient, Climate-resilient Economy.

Each priority consisted of specific Focus Areas (FAs), including quantitative targets, which were the basis for the measures selected to reach the targets. The relevant focus areas for agri-environmental measures, including the measures selected for their implementation by Member States in the programming period 2014-2020 are shown in Table A1.1.

[5] European commission, DG for Agriculture and Rural development, 2016. Mapping and analysis of the implementation of the CAP.

Table A1.1. Environmental focus areas and measures for rural development 2014-2020

Priority 4: Restoring, Preserving and Enhancing Ecosystems	FA 4A: Restoring, preserving and enhancing biodiversity;	M01 – Knowledge transfer & information actions M02 – Advisory services M04 – Investments in physical assets M07 – Basic services & village renewal M08 – Investments in forest areas M10 – Agri-environment-climate M11 – Organic farming M12 – Natura 2000 & WFD M13 – Areas with constraints M15 – Forest-environment-climate M16 – Cooperation
	FA 4B: Improving water management;	
	FA 4C: Preventing soil erosion and improving soil management.	
Priority 5: Resource-efficient, Climate-resilient Economy	FA 5A: Increasing efficiency in water use by agriculture;	M01 – Knowledge transfer & information actions M02 – Advisory services M04 – Investments in physical assets M10 – Agri-environment-climate M16 – Cooperation
	FA 5B: Increasing efficiency in energy use in agriculture and food processing;	M01 – Knowledge transfer & information actions M02 – Advisory services M04 – Investments in physical assets M16 – Cooperation
	FA 5C: Facilitating the supply and use of renewable sources of energy;	M01 – Knowledge transfer & information actions M02 – Advisory services M04 – Investments in physical assets M06 – Farm & business development M07 – Basic services & village renewal M08 – Investments in forest areas M16 – Cooperation
	FA 5D: Reducing greenhouse gas and ammonia emissions from agriculture;	M01 – Knowledge transfer & information actions M02 – Advisory services M04 – Investments in physical assets M06 – Farm & business development M10 – Agri-environment-climate M11 – Organic farming M16 – Cooperation
	FA 5E: Fostering carbon conservation and sequestration in agriculture and forestry.	M01 – Knowledge transfer & information actions M02 – Advisory services M04 – Investments in physical assets M08 – Investments in forest areas M10 – Agri-environment-climate M13 – Areas with constraints M16 – Cooperation

Source: European Network for Rural Development, 2018. RDPs 2014-2020: Key facts & figures:

Rural Development Priority 4: Restoring, preserving and enhancing ecosystems related to agriculture and forestry.

Rural Development Priority 5: Promote resource efficiency and support the shift towards a low carbon and climate resilient economy in agriculture, food and forestry sectors.

In February 2017, a process started to modernize and simplify the CAP. The most important new features discussed for the post 2020 CAP include a stronger subsidiarity of Member States. This should give them more flexibility to cover environmental actions under the first and second pillar within a single CAP Strategy and ensure coherence and a better monitoring and evaluation of results. At the same time, environmental actions may be results driven rather than measure driven, thus focusing more on measurable results, including resource efficiency, environmental care and climate action.

Income support under pillar I or II will be conditioned to environmental and climate practices and designed to foster more ambitious voluntary environmental and climate commitments. These should be designed by the Member States taking into account their specific climate risks and needs, but be aligned with agreed objectives at the EU level.

30% of the Member States rural development budget will have to be dedicated to environmental and climate measures. The new, so-called "eco-schemes" will offer farmers additional income for environmental and climate activities going beyond the basic requirements, e.g. zero fertilizers as a means to improve water quality[6].

[6] European Commission, 2017. Communication from the Commission to the European Parliament, The Council, The European Economic and Social Committee and the Committee of the Regions – The Future of Food and Farming (COM(2017) 713 final).

Chapter A2.
Method and activities

The activities on the assessment of the agri-environmental policies in SEE were conducted within the frame of the project titled "Rural development through integrated forest and water resource management in Southeast-Europe: Rural perspectives: qualification, reintegration and (self) employment", jointly implemented by SWG and GIZ and supported by the German Federal Ministry for Economic Cooperation and Development. The project focus is placed on institutional and individual capacities development for regional and inter- sectorial coordination processes and finding EU compliant solutions (policy, development and implementation). It operates at three levels: transnational straddling the countries/territories Albania, Bosnia and Herzegovina, Kosovo*, Macedonia, Montenegro and Serbia in the Western Balkans; national and local, in cross-border pilot regions.

One of the main objectives is to create preconditions for evidence-based and EU-compliant policy design regarding environmental objectives in rural development and agriculture. Thereby, one of the tasks is to assess the agri-environment policies in the countries/territories of SEE, and to propose policy framework for implementation of sustainable agricultural practices in line with EU policies. The Regional Expert Advisory Working Group (REAWG) on Agri-Environment Policy (AEP) was engaged to conduct that task.

The activities undertaken to complete the assignment and to formulate this document were composed of two major stages. The first stage was the preparation of the National reports for assessment of the Agri-environmental policy (AEP) and measures (AEM) in the respective countries/territories. Each of these reports was prepared according to the common methodology defined and accepted during the kick-off meeting. However, each of the national reports was prepared by the national expert members of the REAWG on AEP. The reports address: the agriculture in the respective country, the environment and the environmental policy, the state of the agri-environment in each country with particular emphasis on the agri-environment in the national strategic and programme documents, the institutional and legal settings for implementation of agri-environmental policy and measures, the agri-environmental policy and agri-environmental measures in place, as well as the state of the agri-environmental indicators. Also, each of the national reports includes conclusions and recommendations for improving the state of the agri-environment and proposes further direction and activities.

The methodology used to prepare the national reports was a combination of desk research and interviews. Desk research was used for assessment of the national agri-environmental policies trough analysis of the: national programming and strategic documents, existing institutional and legal setup, and existing monitoring and evaluation system in the agri-environment with particular emphasis on agri-environmental indicators. However, apart from the national strategic, programming and legal documents it was also required to analyse many other sources, such as national reports and contributions to the various international conventions (UNFCCC, UNLDD, UNBD, CBD, FAO), research papers, reports, studies etc. from public authorities, from the academia and from the international donors and organisations.

Representatives of the Ministries of Agriculture and Ministries of Environment, as well as other relevant governmental bodies were targeted with the interviews, and the aim was to collect information about the state of the agri-environment and the agri-environmental policy from the relevant persons dealing with these issues on daily basis.

The second stage was the preparation of the Regional Report. The Regional Report was prepared by analysing and summarizing the national reports delivered by the national expert teams. The Regional Report addresses the most important issues from the national reports and includes the regional synthesis and view of the national expert teams related to issues of importance to the agri-environmental issues. Particular emphasis was put on the data availability and main environmental challenges, the institutional capacities for implementation of the agri-environmental policy and measures, the EU harmonisation status and challenges and constraints for full implementation of the EU policy in the agri-environment with emphasis on policy instruments with linkage to the environment, strategic documents and programmes, monitoring and evaluation framework (MEF), agri-environmental indicators and awareness raising.

** This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence*

Moreover, the Regional Report includes conclusions and recommendations targeted to different important topics, and levels, particularly at policy level; awareness and capacity building at all levels, and implementation of the agri - environmental policy and measures. Furthermore, particular attention was paid to the issues for further actions as a direction for further development of the agri-environmental issues in the region.

However, the regional report summarizes the regional issues and does not always address the specific conditions for each country. This information is available in the national reports presented in Part B of this report.

The preparation of the reports required intensive communication and coordination. Therefore, 3 expert meetings were organized.

The expert meetings were organized as follow:

- Kick-off Meeting of the Regional Expert Advisory Working Group (REAWG) on Agri-Environmental Policies (AEP) 13-14 March, 2018, Tirana, Albania
- Interim Meeting of the Regional Expert Advisory Working Group (REAWG) on Agri-Environment Policy (AEP), 14 - 16 May 2018, Podgorica, Montenegro
- Final Meeting of the Regional Expert Advisory Working Group (REAWG) on Agri-Environment Policy (AEP), 2 - 4 July 2018. Mavrovo, Macedonia

The kick-off meeting of the REAWG on AEP gathered the national and regional experts, as well as representatives of the rural development authorities. The main objective of the meeting was to define the methodology that would be used to conduct the assessment, divide the roles and responsibilities, and determine the activity plan until the completion of the assignment. Therefore, the main topics discussed during the kick-off meeting were related to the state of the agri-environmental policy in the EU, the methodology for preparation of the country reports and the activity plan for the completion of the assignment. Moreover, the country representatives provided presentations on the overview of the agri-environmental policies in SEE. In addition, the common outline for the preparation of the national reports was discussed and defined.

The Interim Meeting of the REAWG on AEP provided the input of the international experts engaged in the project based on the 3 already delivered National Reports. However, the focus was given to the presentations of the findings of the National Reports. The national experts from each of the countries presented their reports and findings. Moreover, the representatives from the Ministries of Agriculture from the participating countries provided their feedback and opinions on the entire activity and particularly on the national reports. During the meeting, the outline of the regional synthesis report was discussed and defined. Finally, the activity plan for finalisation of the assignment, roles and responsibilities was agreed.

The Final Meeting provided the presentations of the early draft of the Regional Synthesis Report provided by the regional and international experts. The national experts presented the final National Reports and contributed to the improvement of the Regional Synthesis Report. Invaluable contribution to the Regional Synthesis Report was provided by the representatives of the Ministries of Agriculture from the region and their feedback was appreciated as essential for the finalizing of the Regional Synthesis report. Moreover, the meeting provided the invaluable contribution of the national experts and representatives of the Ministries of Agriculture in defining the directions for future activities required for harmonization of the AEP with the EU standards. The 3 common priority issues were defined: i) Absence of an integrated system for monitoring of agri-environmental data, ii) Lack of capacity on policy, institutional and farmers' level and iii) Lack of conditions for establishment of adequate agri-environment measures. During the group work and plenary discussions, the participants defined the activities necessary to overcome these issues in the near future in the form of ideas for upcoming regional project activities.

Chapter A3.

Data Availability and Main Environmental Challenges

Data availability is very diverse in the SEE countries: In some countries and entities the set of agri-environmental indicators (AEI) given from EUROSTAT can be covered to a large degree, although with a different frequency and sometimes diverging national methodology. Through a combination of agricultural, statistical and environmental data sources, fed through an institutional reporting structure, a lot of information is available or at least possible to collect. Sometimes (SRB, MKD, MNE) national environmental indicator lists are defined, which go far beyond the EUROSTAT list (because this is focused to AEI), but they are not fully implemented yet.

However, even in these countries the integrated analysis for AEP development and monitoring is not easily facilitated and the data still needs to be harmonized and made accessible for analysis.

In other countries and entities there is nearly no structured monitoring or regular reporting on agriculture and environment. All available data has been put together in a targeted effort for reporting to international conventions or other obligations. Some of that sporadically published information is deemed to not even be based on measurements but rather on estimates.

The agri-environmental indicators, their baseline and regular monitoring, are an essential tool to assess the effects of the implemented activities and measures in the agri-environment sector, to evaluate the efficiency of the instruments implemented, but also to evaluate the agri-environmental policy in the country. Table A3.2 provides an overview on the availability of data on agri-environmental indicators in SEE countries, derived from the national reports. However, the real situation in some countries may be different from that presented in this table, in cases when data do exist, but, probably due to the insufficient visibility and transparency of data and indicators, the involved experts were not aware of their existence.

Nevertheless, even in these cases experts were able to assess the situation in their countries and identify the main challenges for the environment related to agricultural activities. However, for a fact-based design of AEMs and monitoring of implemented AEMs, it is necessary to set a baseline of the environmental status and then properly assess the impact of measures during their implementation.

The following table presents the condensed summary of the main environmental challenges in the region as provided by national experts in the National Reports.

Table A3.1. Main environmental challenges related to agricultural activities as seen by the national experts (source: national reports)

	ALB	BiH	KOS*	MKD	MNE	SRB
Degradation of arable land and soil erosion, salinization	X!	x	X	x		x
Abandonment / Decrease/Loss of arable land	X	X!		x	X!	
Abandonment of extensive pastures		x		x	x	
Protection of AnGR and PGR	X	X!		x	x	x
Biodiversity, High Nature Value Farming	X			x	x	x
Inadequate storage or management of organic fertilizers		x	X		x	x
Insufficient awareness of environmental issues, knowledge and resources for environmental adaptation	X	x		x	x	
Water quality, Pollution of water/ air/soil, untreated wastewater	X		x	x		x
Water consumption	X		x	x		x
Climate Change impacts	X	x		x		
(Animal) Waste management		x	x			x
Monoculture cropping		X!				
Unsustainable use of agrochemicals and fertilizers				x		
Hygienic and animal welfare standards			x			
Unregulated use of natural resources			x			
Protection of traditional agroecosystems and cultural landscapes						x

Description of the symbols used:

x – environmental challenge related to agriculture, as referenced in the resp. national report

X! – main or most important environmental issue on national level according to national report

A total of 16 main environmental challenges were derived from the National Reports. However, not all of the environmental challenges presented in the table are of high importance for all of the countries in the regions. The data in table A3.1. show that the highest number of countries (5 out of 6) reported the degradation of arable land, soil erosion and salinization as an issue; together with Abandonment /Decrease/ Loss of arable land, as well as that of extensive pastures, it is relevant for all countries. Also, is the issue on Protection of AnGR and PGR also ranks high, even higher than Biodiversity in general; we can consider those as most pronounced environmental challenges related to agriculture in the region.

Table A3.2. Overview of data availability on Agri-environmental indicators in SEE countries (source: national reports)

	SRB	MKD	BiH	ALB	KOS*	MNE
Response and impact indicators for AEM (IPARD and National Program)	MAFWM sector for RD, Group for monitoring and evaluation collects all indicators on all levels (IPARD, national, provincial, municipal)	No impact monitoring, data on responses possibly available at paying agency		IPARD 2 program Includes developed monitoring system; however, AEMs are not (yet) implemented		
AnimalGR: Register of breeders, numbers, populations, strains	MAFWM	Annual Reports available at MAFWE				Only on expert guess
National list of Environmental indicators	Coordinated and presented by SEPA, report from 2016 (partly EEA methodology, DPSIR scheme); not all of them are implemented	Environmental Indicators of the Republic of Macedonia prepared by the Macedonian Environmental Information Centre of MoEEP; 40 Indicators in DPSIR scheme; partly overlapping with Eurostat-AEI.	Certain data collected at entity level RANSMO-Project in 2005 proposed a scheme for environmental monitoring and reporting structure respecting the territorial organization; no implementation so far.			Annual Monitoring of Environment based on a National list of indicators by EPA/ANCE since 2013, not all Indicators are implemented, several more in preparation
Indicators for agricultural practice (fertilizer consumption, irrigation, organic farming area, …)	Partial, no data on fertilizer consumption or pesticide use	Input use and water abstraction at least partly available in MoEEP; some need improvement or calculation; No data from MAFWE on agricultural practice	Agricultural data partly based on sporadic estimates		Some data on land use and agricultural practice is available	Lot of information on farm management available, some annually, other every 4yrs
State and Impact indicators	Several are reported in the SEPA report	Very limited availability			Very limited	Limited
Baseline report	SEPA 2016	So far only MoEEP reports on indicators, nothing from Agriculture (MAFWE), out of 28 AEI, only 7 are available	Some information based on reports to international conventions, no regular monitoring scheme	According to IPARD 2		

Chapter A4.

Institutional Capacity: Challenges and Constraints

The countries/territories of SEE, elaborated in this document, are approaching the EU. The different countries are at different stages of this process. However, the specific conditions for approximation of the agriculture and rural development sector for EU membership apply to all of them. These specific conditions are presented as two sets of criteria of key importance:

- **Economic aspects** - the situation in the countries on the basis of the economic criteria for membership
- **Community standards** - the country's capacity to implement the Community legal and administrative provisions in the areas of agriculture and rural development

Economic aspects

- The existence of a functioning market economy, based on clear property rights, functioning markets, price liberalisation and macroeconomic stability.
- The capacity to cope with competitive pressure and market forces within the Union and from imported agricultural and food products.

Community standards

- Adequate administrative capacity of the agricultural administrations, in particular in the area of agricultural policy formulation, analysis, implementation, support payment and control.
- Adequate administrative capacity for the formulation and implementation, in the first instance, of pre-accession rural development measures (IPARD) and later Community Rural Development programmes.
- Legislative alignment and setting-up of administrative capacities in the areas of organic farming, quality policy and other horizontal aspects.
- At agricultural market level, setting up of market mechanisms (including marketing standards, price reporting, quota management, producer organisations, public intervention etc.).

The adequate administrative capacities required under the Community standards are associated with institutional capacities and it is essential to build a legal and institutional setup that will be able to perform tasks during the pre-accession period and after. This is also valid for the Agri-environmental policy and measures. However, one of the most challenging task during the accession process is building the necessary institutional capacities for implementing the Common Agricultural Policy (CAP) instruments. Building of these capacities is costly because it includes capacity building of the state ministries, establishment of the paying agencies, establishment of registers and data base systems such as Farm Register, LPIS, livestock database etc. Moreover, these registers and databases should be integrated in the Integrated Administration and Control System (IACS) in order to ensure that payments are made correctly, irregularities are prevented, revealed by controls, followed up and any amounts unduly paid are recovered. Therefore, the institutions that will be able to perform this process are faced with complex obstacles, such as: weak state administration, financial constraints and often insufficient political understanding of the process and its requirements in implementing the CAP-like policy instruments. The modernisation and strengthening of state ministries and the establishment of paying agencies and all the necessary databases, administration and control systems are serious expenses to any country acceding to the EU; this is even more pronounced for countries analysed because of their weak state administration, financial constraints and often insufficient political understanding of the process and its requirements. Institution building is administratively, financially and professionally challenging, and demands extraordinary effort and political will from the countries.

Furthermore, as necessary as it is to build up the institutions for the agri-environmental policy t it is of almost equal importance to establish institutional interaction, cooperation, data exchange and other types of cooperation among institutions that are not sufficient at present. The agri-environmental policy includes interaction of the environmental and agricultural policies. The higher environmental standards are set, the more efforts should the agricultural policy involve to enable producers to follow these standards as compulsory measures (cross compliance) and provide awareness rising, training and education to the stakeholders for fulfilling these requirements. Frequently, meeting these standards requires investments in infrastructure, ad-

visory services, laboratory capacities and other things, in order to enable producers to minimize the negative impact on the environment. Moreover, setting the proper system for monitoring and evaluation of the impact of the agricultural sector over environment is essential for providing evidence of the effects of the activities and measures undertaken in order to prevent/reduce environment pollution from agriculture.

The institutions should have sufficient capacities to cope with all the issues arising from the increased concern for clean environment and food quality in all countries analysed, starting from defining policies, running the entire process, to informing the public on the results and effect of these policies.

However, agri-environmental measures that go beyond the compulsory cross-compliance, are part of the rural development. In the field of rural development, the IPARD plays an important role in facilitating the transfer of institutional patterns and experience from EU Member States. Most of the countries analysed are adopting their institutional setup by fulfilling the IPARD requirements. However, institutions should have required the capacities and another challenge of the pre-accession institution-building in WB countries are the human resources constraints and the lack of organisational skills in the public administration. Most of the countries reported sufficient level of institutional setup according to the EU standard for introducing agri-environmental measures. However, the institutions may be there, but most of the countries also reported insufficient levels of capacities for running these measures due to lack of staff engaged, insufficient level of personal capacities in the area of agri-environmental issues of the existing staff, insufficient monitoring and evaluation capacities etc. Most of the countries reported the need of further capacity building on a personal and institutional level to properly address the agri-environmental measures, thus enabling the capacity building project on a regional level to be of benefit for all countries.

The main pre-accession requirement in the field of adjusting and reforming national agricultural policies is the establishment of an institutional framework able to implement the CAP in its entirety after the EU accession. Agri-environmental policies are an important part of CAP and enabling the institutional environment to implement agri-environmental policies and measures is of importance for the process of EU integration. However, providing the financial, human resources and political support within the given economy constraints is probably the main factor for establishing functional and operational institutional setup for agri-environmental issues. Moreover, the political will should address the proper implementation of the cross-compliance as a compulsory part of the environmental concerns in agriculture. Agri-environmental measures, as a step beyond the cross-compliance, can be implemented after the cross-compliance requirements are fulfilled. The countries reported the problems in applying the cross-compliance. In some cases, the code of good agricultural practices that address cross-compliance is not implemented, in some cases it is valid only for big farms etc. The insufficient institutional capacities for monitoring of the implementation of the cross-compliance are among the most important obstacles, thus increasing the institutional capacities enabling implementation of the cross-compliance would be a major challenge.

Overall, our analysis suggests that the countries have already established a good institutional setup for implementation of the agri-environmental policies and measures, particularly within the frame of IPARD. Table 4.1 presents the existing institutional setup for agri-environment in the analysed countries. In all of the countries the ministries responsible for development and implementation of agri- environmental policies and measures are the ministries of agriculture.

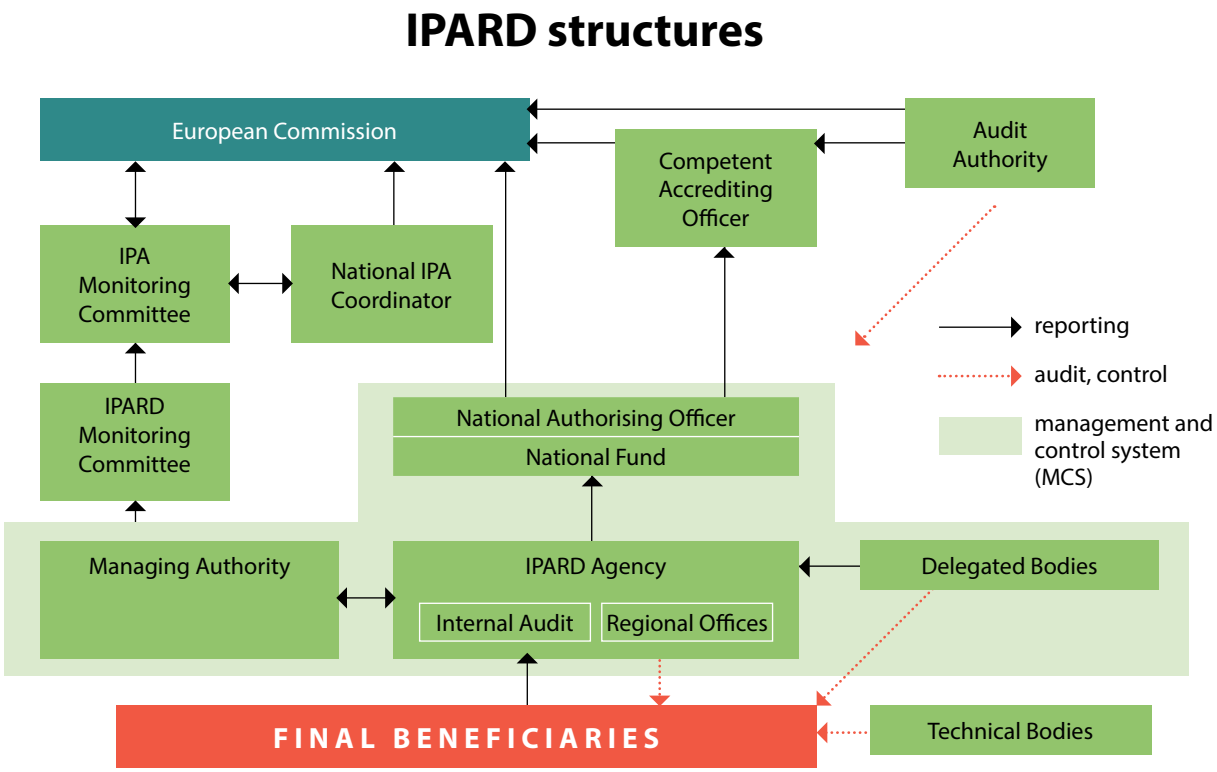
However, the responsibility for the environmental policy and protection of the environment is located within the ministries responsible for the environment. The countries reported that the ministries responsible for environment take part in the agri-environmental policy as well. Also, the ministries responsible for the environment are usually the focal points for the international conventions related to the environment (Biodiversity, Climate Change, Land Degradation and Desertification). These ministries are also responsible for approximation to the EU environmental standards, such as those in the Habitat Directive, NATURA 2000, the Water Framework Directive, the Nitrate Directive, etc. Many of the provisions in the cross-compliance come from regulation related to the environment.

Moreover, the role of some other ministries and institutions is also important in the Agri-environmental policy and national reports presented a number of other institutions having a role in agri-environment. Table 4.2 presents only some of them. The institutions reported as having a role in the agri-environmental policies and measures for each country are described in the National Reports (Part B of the document).

The agri-environmental measures that go beyond the compulsory cross-compliance are supported by IPARD. Most of the countries have already prepared their IPARD II programmes and the institutional infrastructure required for conducting the IPARD program, according to the recommendation of the DG-AGRI presented in picture A4.1.

The Structures and Authorities foreseen by the European Commission for implementing the IPARD II are composed of Structures and authorities: National Authorising Officer (NAO), National Fund (NF) (NF, together with the NAO support office are the Management Structure of IPA), National IPA Co-ordinator (NIPAC), Audit Authority (AA) and Operating Structure (OS) composed of Managing Authority and IPARD Agency.

The IPARD structure suggested by the European Union is presented in the picture below:



Picture A4.1. IPARD structures according DG Agriculture and Rural Development, European Commission

Source: Presentation: "Key steps of planning and programming for Component V, Rural Development", Prepared by: Unit "Pre-accession assistance to agriculture and rural development", DG Agriculture and Rural Development, European Commission http://seerural.org/1documents/EU_Corner/Key%20steps%20of%20planning%20and%20programming%20for%20component%20V,%20Rural%20Development.pdf)

The most important part for the implementation of the IPARD agri-environmental measures is the Operating Structure. The **Operating Structure** is responsible for the management and implementation of the IPARD II programme in accordance with the principle of sound financial management. The Operating Structure designated for IPARD II programme consists of the following separate authorities operating in close cooperation:

- **The Managing Authority** is responsible for the management of the IPARD II programme and is in charge of the programming, including the selection of measures under each call for applications and their timing, publicity, coordination, monitoring, evaluation and reporting;
- **The IPA Rural Development Agency (IPARD Agency)** is in charge of publicity, selection of projects, authorisation, control and accounting of commitments and payments and execution of payments, debt management and internal audit.

The functions of the Management Authority and IPARD Agency are specified in the Sectoral Agreement that each of the IPARD countries has signed with the European Commission. These functions are presented in Table. A4.1. Therefore, these functions are valid for the agri-environmental measures that are foreseen under the Axis 2 of IPARD II.

Table A4.1. Functions of the Managing Authority and IPARD Agency specified in the Sectorial Agreement

General Functions	Specific Functions	NAO/NF	IPARD Agency	Managing Authority
Managing functions	Programme monitoring			✔
	Evaluation			✔
	Reporting			✔
	Coordination			✔
Paying functions	Authorisation & control of commitments		✔	
	Authorisation & control of payments	(✔)	✔	
	Execution of payments		✔	
	Accounting for commitment and payment	✔	✔	
	Treasury	✔		
Implementing functions	Selection		✔	
	Publicity		✔	✔
	Assurance	✔		

Source: Agreement between the Government of the [candidate country] and the Commission of the European Communities on the rules for co-operation concerning EC-financial assistance to the candidate country and the implementation of the assistance under Component V (IPARD) of the Instrument for pre-accession assistance (IPA), Prepared by DG Agriculture and Rural Development, European Commission, November 2009

The Operating structure is set up in all of the countries analysed, except BiH. The process of establishing of the Operating structure in BiH at a country level has already started.

The institutions and their departments playing the role of the Managing Authority and IPARD Agency in each country are presented in table 4.2.

Data presented in table 4.2. show that the biggest challenge is set in BiH. The country structure is complicated and there are serious challenges to the establishing of the institutional set-up according to the EU requirements. In accordance with the Constitution of Bosnia and Herzegovina, the creation of an agro-ecological policy should be done at the level of its entities -- the Federation of Bosnia and Herzegovina (FBIH), the Republic of Srpska (RS) and the Brcko District (BD). Next, in FBIH this task should be distributed on to the cantonal level (10 cantons). However, the process has already started and BiH is moving toward achievement of this task. The Agrarian Payment Agency has been operating since 2010 in RS. In FBIH there is no Agrarian Payment Agency. The payment of subsidies is made through the Ministry of Agriculture. The second country faced with a serious challenge is Kosovo*. The problem is that the Paying Agency cannot operate according to the legal instruments in force in Kosovo*. The problem persists and a lot of efforts will be needed to fulfil the EU requirements in terms of establishing an operational Paying Agency.

Table A4.2. Institutions important for development and implementation of the Agri-environmental Policy (Institutional set-up) in the SEE countries

	Albania	BiH	Kosovo*	Macedonia	Montenegro	Serbia
Responsible institution	Ministry of Agriculture and Rural Development (MARD)	**BiH level**: Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina (MOFTRBIH) with a Sector for Rural Development and Agricultural Extension Services, Sector for Agricultural Payments, **FBiH** level: The Federal Ministry of Agriculture, Water Management and Forestry (FMAWF) **RS Level**: Ministry of Agriculture, Forestry and Water Management (MAFWM) **BD Level:** Department for Agriculture, Forestry and Water Management of the BD (DAFWM)	Ministry of Agriculture, Forestry and Rural Development (MAFRD)	Ministry of Agriculture, Forestry and Water Economy (MAFWE)	The Ministry of Agriculture and Rural Development (MARD)	Ministry of Agriculture, Forestry and Water Management (MAFWM)
Other ministries	Ministry of Tourism and Environment	The Ministry of Environment and Tourism FBIH Ministry of Spatial Planning, Construction and Ecology of RS	Ministry of Environment and Spatial Planning	Ministry of Environment and Physical Planning (MoEPP)	Ministry of Sustainable Development and Tourism (MSDT)	Ministry of Environmental Protection
Other institutions with a role in AEP	National Food Authority, Seed and Seedling Authority	FBIH Environmental Protection Fund Food Safety Agency of BIH Agrarian Payment Agency (RS), Hydrometeorological Institute of RS Environmental Protection and Energy Efficiency Fund of RS	Kosovo* Environmental Protection Agency (KEPA)	Agency for Food and Veterinary Affairs; State Inspectorate for Agriculture	Environmental Protection Agency	Serbian Environmental Protection Agency (SEPA)
IPARD Managing Authority	Directory of Programming and Evaluation of Rural Policies (MARD)	N/A	Department of Rural Development Policies (MAFRD)	Department for management of IPARD funds (MAFWE)	MARD Directorate for Rural Development	Department for rural development (MAFWM)
IPARD Agency	Agriculture and Rural Development Agency (ARDA)	N/A	Agriculture Development Agency (MAFRD)	Agency for Financial Support in Agriculture and Rural Development	MARD Directorate for IPARD Payments	Directorate for Agrarian Payments (MAFWM)

Nevertheless, according to the Constitution of BiH, the environmental policy and the use of natural resources are part of the responsibilities of the Entity Governments and the BD Government, which regulate the environmental issues with their laws, regulations and standards. In line with the country's political organization, there are a number of fragmented responsibilities regarding the environment which are located at four administrative levels: state, entity, cantonal (FBIH) and municipal (RS). Although a major problem in such a complex administrative structure is the lack of enough vertical (entity/cantonal/municipal) and horizontal (inter-entity/ inter-ministerial/ inter-municipal) co-operation, there is still a visible shift in the implementation of the environmental sector reforms.

The second country facing a serious challenge is Kosovo*. The problem is that the Paying Agency cannot operate according to the legal instruments in force in Kosovo*. The problem persists and a lot of efforts will be needed to fulfil the EU requirements in terms of establishing an operational Paying Agency.

The other four countries are fully compatible with the EU requirements in their institutional setups and at a first glance there are no challenges for these countries in terms of institutional setup. However, the problems and challenges exist and put constraints on the normal operation and implementation of the Agri-Environmental Policy and measures.

The biggest challenge in the whole region is the capacity building of the existing institutions. Although the institutions are established, the performance level could be higher. The institutions in the region are facing some problems related to understaffing, insufficient level of personal and institutional capacities in the agri-environmental aspects etc. Most of the countries have addressed the capacity building at all levels as one of the biggest challenges. Particular attention should be given to capacity building for enforcing and implementation of cross-compliance, as a prerequisite for implementation of the Agri-environmental measures as a step beyond the compulsory cross compliance. The institution should have sufficient capacities for implementation of cross-compliance as well as for implementation of the agri-environmental measures. This would enable the implementation of the polluter-pays and provider-gets principles in the agricultural sector. While the implementation of the agri-environmental measures, as part of IPARD II, is planned to start very soon, the cross-compliance implementation is lagging far behind, completely not established or in cases when it is established, it is not enacted or it is compulsory only for the bigger farms, and not for all the users of the agricultural payments. The institutions should build their capacities for full implementation of the cross-compliance in a short period of time in order to enable proper implementation of the AEM.

The improvement of the institutional cooperation is also one of the challenges related to agri-environment. The agri-environment is a complex issue and the responsibility is usually located in several institutions, thus an insufficient level of cooperation and communication among the institutions in charge is even more challenging. Better institutional cooperation (vertical and horizontal) is one of the most important issues that need to be addressed in all countries in the region.

The institutional capacities for agri-environmental indicators (defining, data collection, processing, establishing the baseline cases, reporting, visibility, use in sound base decision-making etc.) are not sufficient. However, some of the agri-environmental indicators proposed by EUROSTAT are in place, used and reported on for various purposes, by various institutions (environmental agencies, statistical offices etc.). Moreover, the datasets required for calculating and processing of some of the agri-environmental indicators are regularly reported for other purposes by some institutions. However, most of the countries reported the low level of institutional capacities for establishing the set of the national agri-environmental indicators, regular monitoring, processing and use for the purposes required. Although some countries already use and reported their sets of the agri-environmental indicators, the whole region is faced with the challenge of improving the institutional capacities and improvement of the inter-institutional cooperation for proper addressing of the agri-environmental indicators.

Furthermore, there are several other challenges that need to be resolved in order to establish a functional institutional set-up and/or to improve the capacities of the existing institutions; these are reported in the national reports.

The constraints associated to the agri-environmental policy and measures are associated with several important issues such as:

- The political will for building the capacities of the institutions responsible for agri-environmental policy and agro-environmental measures is weak and needs to be strengthened in order to quickly establish a system capable to cope with all the agri-environmental issues, including cooperation among the institutions in charge.
- The limited resources devoted to the institutions responsible for agri-environmental goals (financial, technical and personal, including the number of staff and their capacities) are constraining the development of the institutions in charge of agri-environmental issues.
- The legal frame has not been put in place completely and the institutions are constrained in conducting the tasks required for proper addressing of the agri-environmental issues.
- The institutional frame is still weak and needs to be further developed, where it is necessary to set up a full institutional framework with sufficient capacities to implement the tasks they are responsible for.
- The environmentally vulnerable zones are not established, delineated and visible (nitrate vulnerable zones, NATURA 2000 sites, High Nature Value Farmlands, etc.) However this depends on the countries and some countries are ahead of the others in this respect.
- a large number of small farmers with insufficient capacities for agri-environment are making the situation even more complex because the present institutions with their capacities cannot provide sufficient support for such a big number of users.
- Insufficient awareness, information and data sharing, public participation, visibility etc. The end users are not aware of the problems and benefits associated to agri-environment. There is poor sharing of information and data for evaluation of the effects of the measures and the financial resources used. The public is very interested in environmental issues and food quality, but hardly ever included in agri-environmental topics.

However, these constraints can be overcome with proper addressing of each of them and support by the institutions to develop their capacities in order to provide full implementation of their agri-environment related tasks.

Chapter A5.

EU Harmonisation Status, Challenges and Constraints

The SEE countries participating in this activity are at different levels of approaching the EU. Montenegro and Serbia have already started the negotiation process, Albania and Macedonia are candidate countries waiting to start the negotiations (foreseen to start in a year from now), Bosnia and Herzegovina and Kosovo* are potential candidate countries. Generally, their status in the EU enlargement process represents the level of approximation and harmonization of the legal framework with the EU.

A general principle is that the integration of environmental concerns into the Common Agricultural Policy is based on a distinction between: i) ensuring a sustainable way of farming by avoiding environmentally harmful agricultural activities and ii) providing incentives for environmentally beneficial public goods and services.

In order to ensure sustainable agricultural activities, farmers are obliged to respect the common rules and standards for preserving the environment and the landscape. The common rules and standards are mandatory and form the very basis for ensuring that agricultural activity is undertaken in a sustainable way. These rules and standards form the "reference level" up to which the costs for complying with these obligations have to be borne by the farmer, according to the "**Polluter-Pays-Principle**". However, environmental objectives often go beyond what we can expect farmers to deliver by respecting the compulsory legislation. If we want farmers to voluntarily engage in action to enhance the environment beyond the mandatory requirements, we have to provide appropriate incentives. After all, we have to take into account that, beyond their obligations, farmers employ their own private resources and means of production to deliver environmental public goods and services which are of interest to the wider public and society. Wherever farmers are remunerated for voluntarily engaging in activities beneficial for the environment, we speak about the "**Provider-Gets-Principle**".

The Common Agricultural Policy reflects the two principles, the "polluter-pays-principle" and the "provider-gets-principle", in integrating environmental concerns into the policy via two mechanisms:

- Linking the fulfilment of the selected statutory requirements (cross-compliance) to most CAP payments and sanctioning non-compliance by payment reductions.
- Paying for the provision of environmental public goods and services going beyond the mandatory requirements (agri-environment measures).

Since 1992, the CAP has progressively been adapted to better serve the aims of sustainability, including environmental protection. This development became manifest in a reform process designed to move from price and production support to a policy of direct income aid and rural development measures. Today, making the CAP compatible with market requirements goes hand in hand with environmental integration, with the latter being reflected via four types of measures:

- Measures targeted towards objectives such as market stability or income support having positive secondary effects on the environment or contributing to maintaining environmentally beneficial structures or types of farming (e.g. ANC payments).
- Measures targeted towards objectives such as income support, designed to contribute to the enforcement of mandatory environmental requirements and the polluter-pays-principle (e.g., decoupled payments in combination with cross-compliance).
- Measures targeted towards encouraging the provision of environmental services on a voluntary basis (agri-environment measures).
- Measures targeted towards facilitating compliance with compulsory environmental requirements (e.g., "meeting standards" measure) or compensating the relative economic disadvantage resulting from a region-specific pattern of environmental requirements (e.g. Natura 2000 and Water Framework Directive)

The Sixth Community Environment Action Programme (July, 2002) provides the environmental component of the EU Sustainable Development Strategy. The Programme constitutes the framework for the EU environmental policy for the period 2002-2012 and gives priority to 4 key environmental priorities: i) climate change; ii) nature and biodiversity; iii) environment and health and quality of life and iv) natural resources and waste. Later, the 7th Community Environmental Strategy identifies:

Three key objectives:

- to protect, conserve and enhance the Union's natural capital
- to turn the Union into a resource-efficient, green, and competitive low-carbon economy
- to safeguard the Union's citizens from environment-related pressures and risks to health and wellbeing

Four so called "enablers" will help Europe deliver on these goals:

- better implementation of legislation
- better information by improving the knowledge base
- increased and wiser investments in environment and climate policy
- full integration of environmental requirements and considerations into other policies

Two additional horizontal priority objectives complete the programme:

- to make the Union's cities more sustainable
- to help the Union address international environmental and climate challenges more effectively.

The agri-environmental policy in Europe becomes one of the most important parts of the CAP. Moreover, the 7th Community Environmental Strategy requires the full integration of environmental requirements and considerations into other policies and the Agricultural Policy will be more targeted toward agri-environment. Furthermore, agriculture uses and manages huge portions of the European land and it has become one of the major factors for fulfilling one of the three key objectives set by the 7th Community Environmental Strategy: to protect, conserve and enhance the Union's natural capital. The natural capital of the EU ranges from the fertile soil and productive land and seas to freshwater and clean air – as well as the biodiversity that supports it. The natural capital includes vital services such as pollination of plants, natural protection against flooding, and the regulation of our climate. The Union has made commitments to halt biodiversity loss and achieve a good status of Europe's waters and marine environment. Moreover, it has put in place the means to achieve this, with legally-binding commitments including the Water Framework Directive, the Air Quality Directive, and the Habitats and Birds Directives, together with financial and technical support. Nevertheless, the environment is under

considerable pressure. Biodiversity in the EU is still being lost, and many ecosystems are seriously degraded, so greater efforts are needed.

However, agriculture uses and manages huge portions of the European land and it has become one of the major factors for fulfilling one of the three key objectives set in the 7th Community Environmental Strategy to protect, conserve and enhance the Union's natural capital. The agricultural land provides habitats for many species. Over the centuries, agricultural activities have changed the landscape and created new valuable landscapes that should be protected. Moreover, agricultural activities are spread on high nature value land, in areas with natural constraints, in nitrate vulnerable zones etc. Therefore, agriculture has an important role of protecting the nature. The agriculture in Europe is a very important water user, particularly in Southern Europe where it accounts for more than 50% of the fresh water use. Therefore, the obligation to save water and to protect waters from pollution from agricultural sources has been imposed on agriculture

The legal framework related to the agri-environmental policy and measures should address all issues listed above. This obligation applies to the SEE countries as well. The approximation with the EU legislation in the region addressed is well advanced. The environmental issues related to the biodiversity, waters, land, habitats etc. are incorporated in the environmental legislation and thus delegated to the ministries responsible for the environment. Furthermore, the countries have incorporated provisions from the EU legal framework in their legislation, such as the Water Framework Directive, the Nitrate Directive, Biodiversity Protection, Agrobiodiversity, the Habitats and Bird Directive etc. These provisions are part of the environmental policy, but the enablers set into the 7th Community Environmental Strategy require full integration of the environmental requirements and considerations into the agricultural policy.

Cross-Compliance

The environmental requirements are set in the cross-compliance, as a set of compulsory measures for all the users of the direct payments. Our analysis shows that the analysed countries address the environmental requirements with the cross-compliance that is set as a Code of Good Agricultural Practices (CGAP). Most of the countries foresee cross-compliance in their legal documents, but it has either not been prepared yet, or it has not been properly implemented. Cross-compliance is essential for going further in the environmentally friendly agriculture, particularly in the agri-environmental measures. Moreover, it is an essential tool for applying the "polluter-pays" principle in the agri-environmental policy. Therefore, the legal framework enables implementation of the cross-compliance, but due to the weak institutional capacities and other reasons, it cannot be fully implemented. This is the situation across the region, and therefore it is essential to implement the enabler "better implementation of legislation" of the 7th Community Environmental Strategy.

Legal setup for AEM

Even though cross-compliance results from the legislation in the agricultural sector, it also regulates matters from, inter alia, the environmental standards. It is compulsory for all agricultural producers. Moreover, the Laws on Agriculture and Rural Development define the legal basis for agri-environmental measures as a step beyond the obligatory cross-compliance. The agri-environmental measures and their implementation are voluntary and agricultural producers can make the choice to provide some additional environmental benefits for the society. The agri-environmental measures can reduce the income on the farms or cause additional cost for their implementation. Following the "Provider-Gets" principle, the farmers applying for the agri-environmental measures should be compensated for this. However, the compensation should be only in the amount of the income foregone or the additional costs incurred.

At first glance, it looks as if there are no constraints and challenges in the legal setup for implementing the agri-environmental policy and measures, particularly for the candidate countries. The legal setup related to the agri-environmental policy and measures is very well developed in the analysed region. The legal documents, regulations and procedures are well approximated and most of the countries will start the implementation of the agri-environmental measures well-prepared and will implement legal environment similar

to EU standards. The potential candidate countries still face the challenge of better approximation of their legal setup to the EU. However, the experience and know-how is established, the processes for improving the present state have started and will be completed in due time.

Shortcomings in implementation

The main result of our analyses is that the legal setup is not properly implemented. The laws, regulations and procedures are developed but are still not in force or are only partially implemented. Therefore, the biggest challenge will be the full implementation of the legal framework related to the agri-environment.

The biggest constraint is the poor implementation of the legal documents defining cross-compliance. Without evidence that a farm meets all the obligatory environmental standards, it is not feasible to pay for the additional environmental services it will provide. The problem needs rapid enforcement of the regulations for cross-compliance.

The countries and entities reported extensive sets of legal documents and regulations that are related to agri-environmental issues. Apart from the main legal document, the law regulating agriculture and rural development, there are the laws coming from the agricultural sector, related to animal husbandry, veterinary matters, seeds and seedlings, agricultural inspection and many others. However, the largest number of legal documents come from the environmental sector. Due to the large number of legal documents explained and noted in the country reports, we prepared a table for each country with data presented in their national reports. However, due to the size of these tables they are located in annex AI.

Chapter A6.

Policy Instruments with Linkages to the Environment

We already presented that the institutional and legal setup are not strong enough, but well approximated to the EU. The basis for this, however, is a policy that is well established and founded on the strategic document that each country has already developed and put in force to address the agri-environmental issues.

Strategic documents and programs

All the analysed countries have prepared strategic documents for agriculture and rural development. These documents, among other things, put focus on the agri-environment and present a good basis for the development of the policy and measures for integrating the environmental issues in agricultural policies. The following table (table 6.1) gives an overview of the strategic documents and programmes that the national reports presented, as basis for integration of the agri-environment in the national environmental policies. However, this table only lists the documents, while the description of the documents is presented in the country by country tables, available in Annex A.II.

Table A6.1. The strategic and programming documents of importance to the agri-environment (based on national reports)

Country	Programming and planning documents
Albania	• Inter–sectoral strategy for agriculture and rural development 2014-2020 (ISARD) • Inter–sectoral environmental strategy 2015 -2020 • Biodiversity Strategy 2015-2020 • National Strategy for Development and Integration 2014–2020 • Integrated Waste Management Strategy (draft), 2018–2033 • IPARD II Programme 2014-2020 • National Strategy and Action Plan for Conservation and Use of Farm Animal Genetic Resources
Bosnia and Herzegovina	• Strategic Plan for Rural Development of Bosnia and Herzegovina (SPRR BIH) - Framework Document 2018-2021 • Medium-Term Development Strategy of the Agricultural Sector in FBIH for the period 2015-2019 • FBIH Rural Development programme for the period 2018-2020 • Strategy for Development of Agriculture, Food and Rural Development in Brchko District BiH (BD BIH) • The Strategic Plan for the Development of Agriculture and Rural Areas of RS 2016-2020 • The Basis of Agricultural Land Protection, Use and Reclamation of the Republic of Srpska as the Component of Land Use Planning Process (2008). • Waste Management Strategy 2016-2025 (RS) • Spatial Plan RS 2015-2025 • Regulation on Natura 2000 (OG FBIH, No. 43/11).
Kosovo*	• Kosovo* Environmental Strategy (2013-2022) • Agriculture Rural Development Plan (ARDP) 2014-2020 • Kosovo* Environmental Action Plan (KEAP) 2013-2017 • Kosovo*'s European Partnership Action Plan 2012 (KEPAP) • Strategy of Environmental Protection (SEP) • Forestry Development Strategy 2010-2020 • Land Consolidation Strategy 2010 – 2020 • Strategy on Advisory Services for Agriculture and Rural Development 2012-2016 • Spatial Plan of Kosovo*/Spatial Development Strategy of Kosovo* 2010-2020+ • Strategy on Air Quality 2013-2022 • Action Plan for Implementation of the Air Quality Strategy 2013-2017 • Waste Management Strategy of Kosovo* 2013-2022 • Action Plan on Implementation of the Waste Management Strategy 2013-2017 • Kosovo*'s Energy Strategy 2009–18. • The Industrial Strategy for Kosovo* 2010–2013 • The Agriculture and Rural Development Strategy 2009–2013 • Kosovo*'s Policy and Strategy Paper on Forestry Sector Development 2010–20
Macedonia	• Program for Work of the Government (2017-2020) • National Agricultural and Rural Development Strategy - NARDS (2014-2020) • National Strategy for Sustainable Development (NSSD) 2009-2030 • National Strategy for Environment and Climate Change 2014-2020 • National Agri-Environmental programme (NAEP) for the period 2011-2013 (2010) • IPA programme for Rural Development – IPA-RD (2014-2020) • National programme for Agriculture and Rural Development - NPARD (2018-2022) • Annual programme for Financial Support of Rural Development (2018) • Program for Animal Genetic Resources (AnGR) Protection (2011-2017) • National Plan for Organic Production (2013-2020) • National Strategy for Biodiversity with an Action Plan (2004) • Draft Strategy for Biodiversity with an Action Plan (2014)
Montenegro	• Strategy of the Development of Agriculture and Rural Areas adopted for the period 2015-2020 • National Forest Strategy (2013) • Strategy of Water Management of Montenegro (2017) • National Biodiversity Strategy for the period 2016-2020
Serbia	• Strategy for Agriculture and Rural Development of the Republic of Serbia for the period 2014-2024. ("Official Gazette of the RS", No. 85/2014)21 • National programme for Agriculture for the period 2018-2020 ("Official Gazette of the RS", No. 120/2017) • Draft of the National programme for Rural Development for the period 2018-2020 • IPARD II Programme 2014-2020 • National Environmental Protection programme ("Official Gazette of the RS" No. 12/2010) • Biodiversity Strategy of the Republic of Serbia for the period 2011-2018 ("Official Gazette of the RS" No. 13/2011) • The National Strategy for Sustainable Use of Natural Resources and Goods ("Official Gazette of the RS", No. 33/2012) • Waste Management Strategy for the period 2010-2019 ("Official Gazette of the RS", No. 29/2010)

The documents listed in this table serve as the basis for the national reports, but do not present the entire list of strategic and programming documents related to the agri-environment. However, some countries reported only the documents of high importance while others reported documents just marginally dealing with the agri-environment. Due to this, the number of documents listed is very different from country to country

Our analysis shows that the strategic and programming documents reported in the national reports are in line with the EU policies; the major environmental issues related to agriculture are well addressed and are approximated to EU standards. The candidate countries presented well-elaborated strategies for agriculture and rural development and agri-environmental issues. On the other hand, the potential candidate countries presented plans for agriculture and rural development. The situation in Bosnia and Herzegovina is particularly complex due to its complex structure. Moreover, the Constitution of BiH sets the environmental issues as an obligation of the entities and cantons. A recent attempt to set up the framework for agriculture and rural development at the country level was done with the Strategic Plan for Rural Development of Bosnia and Herzegovina (SPRR BIH), a Framework Document, which serves as the basis for development of the national policies in these issues. The agri-environmental issues were also included in this document. The existence of similar documents at the entity level poses a challenge to the coordination of all these documents and to the creation of a national policy for rural development and agri-environment.

Regardless of the differences among the countries analysed, we can conclude that in their strategic documents related to agri-environment all of the countries include very similar strategic priorities, objectives and measures. Most of these are a result of the approximation to EU and the development of the environment for application of the CAP in future. Consequently, there are a lot of similarities in the strategic documents prepared by the different countries. These also ensure that their agricultural policies, developed on the basis of the strategic documents and programs, will be very similar and that the region will have a European agriculture and European approach in the mainstreaming of the environmental issues in agriculture.

With regards to agriculture and rural development, the strategies in all countries set priorities and actions related to:

- Restoring, preserving and enhancing ecosystems trough sustainable management of natural resources and climate action,
- Better management of natural resources and resource efficiency that will ensure environmental sustainability and will benefit from emerging market opportunities,
- Introduction of agricultural production methods protecting the environment and mitigating the impact on the climate (environmentally friendly practices),
- Introducing the EU policies and approaches for management of natural resources and climate action with a specific focus on sustainable use and management of land, forest and water resources and waste management, and better application of laws and regulations for pollution prevention,
- Reverse the trend of degradation of the natural environment (soil erosion, water pollution and biodiversity loss) due to unsustainable land management and farming practices,
- Organic production, system of control, certification and control of organic production,
- revitalization and preservation of pasture areas,
- Improvement of biodiversity and preservation of indigenous genetic resources (Animal and plant genetic resources),
- Control of non-selective conversion of agricultural land for other purposes,
- Preservation of landscapes and agroecosystems, agricultural areas of high natural value and their resources,
- Increasing the awareness about climate change, its consequences and methods for mitigating or protecting the sector from such changes and about the importance of using renewable energy sources, production of energy crops and using waste from agriculture

- Implementation of cross-compliance as a mechanism that links the direct payments to compliance on the part of farmers with the basic standards concerning the environment, food safety, animal and plant health and animal welfare, as well as the requirement of maintaining land in a good agricultural and environmental condition.
- Implementation of the agri-environment measures to provide payments for the farmers who subscribe, on a voluntary basis, to environmental commitments related to the preservation of the environment and maintenance of the countryside.

Moreover, the strategies related to environment and environmental protection, including nature protection, biodiversity, waters etc. include provisions that enable development of policies for protection of natural resources based on European standards.

However, this is only a list of some common priorities and actions. The full explanation and additional objectives and actions foreseen, are presented in the national reports presented in part B of this document.

Moreover, the countries have developed their rural development plans and the candidate countries have developed the IPARD II programmes for the period up to 2020 (Serbia to 2024). These programmes involve the agri-environmental measures and it is foreseen for them to start with implementation of the AEM before the end of IPARD II programme, probably starting with the year of 2019.

Finally, we can conclude that the strategic and programming documents are in line with EU CAP and that the countries included in our analyses are well prepared to implement the European policies in agri-environmental sector.

However, the strategic and programming documents are just the basis for development of the policies, and implementation of these policies depends on many other factors. The countries in the region have prepared very good strategic and programming documents that enable development of the policies according to the EU standards, but these policies are sometimes not effective, the legal framework is not fully enacted and the institutions are not strong enough to implement these policies and to provide evidence of the effects of these activities.

Monitoring and Evaluation Framework MEF

In order to be accountable, policy outcomes need to be assessed against declared objectives. Also, the process of integrating environmental concerns into the Common Agricultural Policy needs regular assessments. In the EU, an elaborated approach towards regular policy evaluation has been established at European, national, or regional level.

Monitoring and evaluation are complementary but different exercises. Monitoring is a continuous task of reviewing information and systematic stocktaking of budgetary inputs and financed activities. It generates quantitative data and gives feedback on the implementation of instruments and measures, facilitating corrections of deviations from operational and specific objectives. Monitoring thus contributes to making public spending accountable and provides valuable information on programme management. Evaluation, on the other hand, involves a judgement of interventions according to the results, impacts and needs they aim to satisfy. It is a systematic tool which provides evidence for decision-making and shall improve effectiveness, usefulness and efficiency. Evaluation contributes to transparency, learning and accountability. Therefore, it allows lessons to be drawn for the future about what works, in which circumstances and why (or why not).

Monitoring and Evaluation of the CAP in EU

For the first time in 2014, the cap reform introduced the monitoring and evaluation framework that would cover the whole CAP (both pillars, the first pillar included the direct payments and market measures and second included the rural development policy). The framework has undergone some changes in terms of promoting simplification and coherence while still maintaining an in-depth coverage of policy interventions.

The monitoring and evaluation framework for the CAP 2014–2020 is set out by EU regulations at different levels:

- The horizontal regulation (Regulation (EU) No. 1306/2013, Article 110) establishes a common monitoring and evaluation framework with a view to measuring the performance of the CAP. It covers all instruments related to the monitoring and evaluation of CAP measures and in particular direct payments, market measures and rural development measures.

More specifically, for Pillar II (rural development), the monitoring and evaluation system is set out by:

- the common provisions regulation (Regulation (EU) No. 1303/2013), which defines the common monitoring and evaluation elements for the European Structural and Investment Funds (ESI); and
- the rural development regulation (Regulation (EU) No. 1305/2013), which addresses the specificities for the rural development programs.

Generally, these regulations should be considered together since the respective provisions complement each other. The performance of the CAP measures shall be assessed in relation to the three general objectives of the CAP (viable food production, sustainable management of natural resources and climate action, and balanced territorial development) and, in the case of Pillar II, in relation to the thematic objectives for the Europe 2020 Strategy for Smart, Sustainable and Inclusive Growth.

However, monitoring and evaluation are set as some of the most important functions to assess the use of the public money and for sound based decision-making. In order to allow proper monitoring and evaluation, the objectives of the policy need to be linked to the measures envisaged. In this context, the general objectives of the CAP are broken down into specific objectives, some of which are common to Pillar I (income support and market support) and some to Pillar II (rural development), whereas others are linked to either Pillar I or to Pillar II.

The Pillar I instruments contribute to the achievement of specific objectives and finally of the CAP's general objectives. The direct payments support stabilise farmers' incomes, improve competitiveness and contribute to the provision of environmental public goods, climate change mitigation and adaptation. Market measures allow for a safety net in times of market disturbances or crises, hence maintaining market stability, and help meet consumer expectations.

For Pillar II there are six priorities under which the measures are programmed in order to contribute to the objectives of the policy. There is an overall priority, i.e. fostering knowledge transfer and innovation, and three crosscutting objectives (innovation, environment, climate change mitigation and adaptation) relevant to all the other five priorities.

To enable proper monitoring and evaluation, a reasonable, well elaborated and consistent set of indicators is required. Indicators can be developed at three different levels: output indicators give the direct "product" of the measure (e.g. number of installations supported); result indicators give the direct, immediate effect of the measure/programme (e.g. number of jobs created by investment in the installations). Impact indicators go beyond the direct, immediate effect but look at the longer term (e.g. rural unemployment rate). Overall, impact indicators are linked to the general objectives of the CAP, result indicators to the specific objectives and output indicators to individual policy interventions. Finally, there is a set of context indicators, which provide information on general trends of economy, state of the environment, general climate indicators, agricultural and rural statistics, etc. Together the indicators can be considered as the "dashboard" of the CAP policy, giving a set of essential information. The CAP indicator values need to be judged against their context. In other words, the indicators are the starting point from which the evaluators judge the CAP policy. Using this system, together with the Member States, the Commission will be able to measure the size of the CAP and assess if it is well designed.

The monitoring and evaluation framework includes different actors, e.g. Member States, managing authorities and paying agencies (acting by/on behalf of the Member States) and Commission services with various responsibilities.

Evaluations of Pillar I measures are carried out by independent external contractors under the responsibility of the Commission services on the basis of a multiannual evaluation plan. The independent external contractor carries out the evaluation according to the terms of references, under supervision of a steering group, within a given, contractually fixed time period. For Pillar II, evaluations are carried out by/on behalf of the Member States while the synthesis of these evaluations at the EU level is done under the responsibility of the Commission services.

This organizational setup largely corresponds to the practice of the period 2007–13, with the exception of the novelty of measuring the impact of the CAP as a whole (i.e. both pillars combined to provide a clear picture). In order to organise future evaluations in the most efficient way, they have been structured thematically according to the general objectives of the CAP. The CAP is implemented in shared management. This means that the information used is largely obtained from the Member States. When designing the

monitoring and evaluation framework, particular attention was paid to the issues of proportionality, simplification and a reduction of the administrative burden. As a result, the total number of indicators has been limited, and emphasis has been put on the use of indicators based, to the extent possible, on existing, wellestablished data sources, as well as reuse of information already provided by Member States. The use of these wellestablished data sources also contributes to the reliability of the indicators.

As part of the monitoring and evaluation framework for the CAP 2014–2020, a set of indicators has been defined to support the assessment of the performance of the CAP. There is a wide range of data sources used for the overall CAP monitoring and evaluation framework, e.g. communications and notifications from Member States, official Eurostat statistics, data collected by the European Environmental Agency, World Bank data, etc. For each of the indicators used, a detailed information sheet has been produced explaining the exact data definition, data source, level of geographical detail, reporting frequency and delay, etc. to make sure that all data providers work on the same basis and that data users understand what the data represent.

In order to monitor the policy's effectiveness against its objectives and to obtain accountability and transparency throughout the process, the Commission will report to the European Parliament and to the Council in accordance with Article 318 of the Treaty on the Functioning of the European Union.

The first report to the European Parliament and to the Council on monitoring and evaluation of the CAP 2014–2020 in 2018 will focus on policy implementation and first results. A more complete assessment of the impact of the CAP is expected by 2021. Specifically, for Pillar II, Member States will submit each year, starting from 2016 and until 2024, an annual implementation report (AIR) on the RDP implementation of the previous calendar year. In 2017 and 2019, an enhanced AIR will be submitted covering additional information on the RDP in relation to the implementation of the partnership agreement, the document set at Member State level covering all ESI Funds in order to ensure alignment with the Europe 2020 strategy as well as the fundspecific objectives (6).

Evaluation results are communicated in such a way that they ensure the maximum use of the results and meet the needs of stakeholders, e.g. the European Parliament, the Council and the European Court of Auditors. Evaluation results are communicated effectively to all relevant decisionmakers and other interested stakeholders. Moreover, the evaluation results are also made publicly available and targeted summary information facilitating communication with the general public is published on the websites of the DirectorateGeneral for Agriculture and Rural Development.

Evaluations serve as an important information source with which to judge the performance of the policy. The conclusions and recommendations from conducted evaluations may feed into an impact assessment as well as contribute to and improve future decision-and policymaking.

Monitoring and Evaluation in SEE Countries IPARD II

The Monitoring and evaluation of the agri-environmental measures is part of the monitoring of the IPARD II program. The candidate countries signed the Sectoral Agreement with the European Commission for implementation of the IPARD II. These agreements clearly define the monitoring and evaluation process. Moreover, the IPARD II programme prepared by each of the candidate countries includes monitoring and evaluation. The core indicators for monitoring of the implementation of the IPARD II programme are defined and quantified in the IPARD II Programme. Each technical Measure Fiche has already developed a set of indicators which have been approved by EC with the approval of the IPARD II Program.

The Managing Authority acts as a Secretariat of the IPARD II Monitoring Committee, and has the obligation to present the results of the functioning of the monitoring system to the IPARD II Monitoring Committee. The Managing Authority shall make available the results of the monitoring process to the stakeholders. The Annual Monitoring Report shall be published regularly (on annual basis) after its approval by the IPARD II Monitoring Committee.

The Annual Monitoring Report shall become an integrated part of the Annual Implementation Report of the IPARD II Program, which shall be delivered to the Commission. The Monitoring Report contains description and analysis of the data on the core monitoring indicators.

Assessing the environmental integration is a difficult exercise that must identify the state of the environment, the interaction between agriculture and environmental outcomes, as well as other intervening factors such as general market trends, technology development, and weather events.

Therefore, the Sectoral Agreement defines the Monitoring and Evaluation framework. All countries from the region should adopt to the monitoring and evaluation process presented below which is part of the sectoral agreement.

Role of the Managing Authority in Monitoring and Evaluation

The Managing Authority and the Monitoring Committee for the rural development component ("IPARD Monitoring Committee") shall monitor the effectiveness and the quality of the implementation of the IPARD Program. They shall report to the IPA Monitoring Committee and to the Commission on Progress of the Measures.

Programme Monitoring shall be carried out by reference to relevant physical, environmental and financial indicators. These indicators, concerning the inputs, the outputs and the results of the IPARD Program, shall relate to the specific character of the assistance concerned, its objectives and the socio-economic, structural and environmental situation of the Candidate Country.

IPARD Monitoring Committee

The IPARD Monitoring Committee shall oversee the effectiveness and quality of the implementation of the IPARD Programme in order to attain the Programme's objectives. The IPARD Monitoring Committee shall draw up and approve its rules of procedure in consultation with the Managing Authority, the IPARD Agency and the Commission. These rules of procedure shall be adopted by the IPARD Monitoring Committee at its first meeting. These may be changed by the Monitoring Committee as the need arises. Such changes shall be communicated in advance to the Commission.

The IPARD Monitoring Committee shall report to the IPA Monitoring Committee. It shall provide the IPA Monitoring Committee in particular with information relating to the progress made in implementing the IPARD Programme, by priority axis and, where relevant, by measures or operations; this shall include the results achieved, financial implementation indicators, and other factors and shall be established with a view to improving the implementation of the IPARD Programme and any aspects of the functioning of the management and control system raised by the Audit Authority, the National Authorising Officer (NAO) or the Competent Accreditation Officer CAO.

The IPARD Monitoring Committee shall examine the results of the IPARD Programme in particular the achievement of the targets set for the different measures and the progress on utilisation of the financial allocations to those measures and allocations to sub-measures within measures where the IPARD Programme includes such allocations. In this regard, the Managing Authority shall ensure that all relevant information on the progress of measures and, as appropriate, submeasures, is made available to the Monitoring Committee.

The IPARD Monitoring Committee shall periodically review progress made towards achieving the objectives set out in the IPARD Programme. For this purpose, it shall, in particular, be given the following:

- information on any sectors where difficulties are experienced;
- information on the results of checks carried out; and
- the list and characteristics of approved projects and those not approved.

The IPARD Monitoring Committee shall consider and approve the annual and final implementation reports before they are sent to the Commission, the CAO, the NIPAC and the NAO, with a copy to the Audit Authority. The IPARD Monitoring Committee shall examine the on-going and interim evaluation of the IPARD Programme. When required by the IPARD Programme to give an opinion on any matter, the IPARD Monitoring Committee shall act accordingly.

Indicators

1. The progress, efficiency and effectiveness of the IPARD Programme in relation to its objectives shall be measured by means of indicators relating to the baseline situation as well as to the financial execution, outputs, results and impact of the programme.

2. The IPARD Programme shall specify a limited number of additional indicators specific to that Programme.

Principles for the evaluation of the IPARD Programme

Evaluations shall aim to improve the quality, effectiveness and consistency of the assistance from Community funds and the strategy and implementation of the IPARD Programme. The IPARD Programme shall be subject to ex-ante and to an on-going evaluation system which shall take the form of ex-post and, where appropriate, interim evaluations carried out by independent evaluators under the responsibility of the Candidate Country. The evaluations shall

assess the implementation of the IPARD Programme towards the achievement of the objectives set out in Article 12 of the IPA Framework Regulation. In particular, the effectiveness of the measures of the IPARD Programme shall be assessed on the basis of their overall impact on:

- contributing to the preparation of the Candidate Country for the implementation of the acquis communautaire concerning the Common Agricultural Policy and related polices;
- contributing to the sustainable adaptation of the agricultural sector and rural areas in the Candidate Country;
- the objectives in the IPARD Programme.

Also, the evaluations shall examine the degree of utilisation of resources, the effectiveness and efficiency of the programming, its socioeconomic impact and its impact on the defined priorities. They shall cover the goals of the IPARD Programme and aim to draw lessons concerning rural development policy. They shall identify the factors which contributed to the success or failure of the implementation of the IPARD Programme, including the sustainability of actions and identification of best practices.

Evaluations shall respond to a common monitoring and evaluation framework defined by the Commission in consultation with the Candidate Country and shall, as a general rule, be accompanied by achievement-related criteria and indicators. In addition, evaluations may be required to answer specific questions related to the objectives of the IPARD Programme.

The Candidate Country shall assemble the appropriate resources and collect the data required to ensure that evaluations can be carried out in the most effective manner. In this regard, the evaluation shall make use of the various particulars that the Programme monitoring arrangements may yield, supplemented where necessary, by the gathering of information to improve its relevance.

Evaluation reports shall explain the methodologies applied, and include an assessment of the quality of the data and the findings. The quality and implications of evaluations shall be assessed by the Managing Authority, the IPARD Monitoring Committee and the Commission.

There are 4 types of evaluation predicted in the Sectoral agreement: i) Ex-ante evaluation; ii) Ongoing evaluation; iii) Interim evaluation and iv) Ex-post evaluation.

Ex-ante evaluation shall form part of the drawing up of the IPARD Programme and aim to optimise the allocation of budgetary resources and improve programming quality. The Candidate Country shall establish a system of **ongoing evaluation** for the IPARD Programme. This system shall be organised at the initiative of the Managing Authority in cooperation with the Commission on a multi-annual basis and shall cover the entire programming period. If the Commission considers it appropriate, in the third year following the year of adoption of the first Decision of the conferral of management of aid of the IPARD Programme, the on-going evaluation shall take the form of a separate **interim evaluation**. The interim evaluation shall propose measures to improve the quality of the IPARD Programme and its implementation. During the last year of validity of the commitment established in the most recent MFA concluded with the Candidate Country, the on-going evaluation shall take the form of a separate **ex-post evaluation**. It shall be completed and submitted to the Commission not later than the end of that year. On the basis of the evaluation results already available, as well as the evaluation questions relevant to the IPARD Programme, the ex-post evaluation shall cover the utilization of resources and the effectiveness and efficiency of the IPARD Programme, its impact and its consistency with the ex-ante evaluation.

However, the reporting is one of the most important parts of the IPARD II programme. The Managing Authority, following consultation with the IPARD Agency, shall draw up annual reports and a final report on the implementation of the IPARD Programme. The annual reports on the implementation of the IPARD Programme shall cover the calendar year and shall include the cumulative financial and monitoring data for the whole period of implementation of the IPARD Programme. The final reports on implementation of the IPARD Programme shall cover the whole period of implementation and may include the last annual report. The content of the report is defined by the sectoral Agreement. Monitoring and evaluation are part of the reports.

Moreover, some agri-environment indicators are also part of the Common Monitoring and Evaluation Framework for Rural Development. The evaluations of the Rural Development programmes look in detail into the impacts of the policy on the environment. Specific agri-environmental indicators are a helpful tool for the policy assessment as they capture well trends and developments over time. Agri-environmen-

tal indicators need to be filled with concrete quantitative data. Furthermore, policy-relevant context information is needed in view of arriving at meaningful policy conclusions.

Agri-environmental indicators

Agri-environmental indicators are a useful tool for analysing the relationship between agriculture and the environment and identifying trends in this evolving interaction. The European Commission established a set of agri-environmental indicators with the policy document "Indicators for the Integration of Environmental Concerns into the Common Agricultural Policy" to serve the following purposes:

- provide information on the state of the environment in agriculture
- understand and monitor the linkages between agricultural practices and their effects on the environment
- provide contextual information, particularly concerning the diversity of the EU's agri-ecosystems
- assess the extent to which agricultural and rural development policies promote environment friendly farming activities and sustainable agriculture
- inform the global assessment process of agricultural sustainability
- Agri-environmental indicators have to cover the positive and negative effects of agriculture and should be sufficiently differentiated to be able to capture the regional differences in environmental conditions.

The potential application of agri-environmental indicators for assessing progress in the integration of environmental concerns into the Common Agricultural Policy is more limited. This limitation is due to the complex links between policy measures, changes in farming practices and environmental improvements, and numerous other intervening factors. Agri-environmental indicators can make a valuable contribution to policy evaluation, but they have to be supplemented, on a case-by-case basis, by additional policy-relevant information. With the help of agri-environmental indicators it is possible to show developments over time and to provide quantitative information.

Agri-environmental indicators and their state in the countries that participated in this activity is presented in a separate Chapter in this report, and it is documented in detail in the respective national reports.

Our analysis confirmed that the candidate countries are very well approximated to EU in terms of monitoring and evaluation. Moreover, the existing system is developed for the purpose of implementation of the IPARD and it reflects the monitoring and evaluation framework of European Commission. However, the countries are facing serious problems in the monitoring and evaluation due to institutional weaknesses (not enough staff, needs for capacity building etc.). Political will is required to support full implementation of this process, to provide all conditions required to become operational and effective. Moreover, visibility is one of the very weak points, particularly the development of the repositories with all the monitoring and evaluation data accessible for the citizens that pay for the environmental services that farmers provide.

Particularly problematic are the agri-environmental indicators. Our analysis shows that systematic addressing of these indicators is available only in Serbia. Moreover, none of the countries can provide full set of the 28 EU agri-environmental indicators, even if some have defined national lists of environmental indicators, which go far beyond this EU-set.

This area needs particular attention, because without indicators it will be very difficult to provide systematically organized pieces of evidence on the effects of the agri-environmental activities. A sound-based policy development and decision-making needs evidence of results and impacts of its activities.

Awareness raising, consultation and participation of stakeholders

The low level of awareness is one of the issues that all national reports emphasized as one of the biggest obstacles for proper implementation of the agri-environmental measures. However, most of the reports pointed to the farmers (end users) as the most important stakeholder group for raising the awareness. The level of education of the farmers is low, the average age is increasing and they are very tied to their traditional technology of production. The existing

agricultural practices in some countries are driven by the poverty in the rural areas. Even though the average use of fertilizers and pesticides is below the one used in intensive agriculture, the agricultural practices cannot be considered to be environmentally friendly. This is a result of the cost associated with agricultural production, and farmers are trying to minimize their expenses. Moreover, the practice of over-irrigation is common in the southern part of the region. The abundant irrigation is one of the important drivers of soil degradation and water pollution from agricultural sources. The farmers need to go through the process of awareness rising on agri-environmental issues and resource management. Furthermore, they need a process of education, because they do not understand the mechanisms that degrade the soil, cause the erosion, transport the agrochemicals into the environment etc. Also, they need functional and an operative advisory service that will guide them during the process of production In order to fulfil the obligatory criteria for environment preservation, protection and restoration. Therefore, the process of awareness raising as an isolated process would probably not be effective. The farmers will become aware of the necessity to protect the environment, of the codes of good agricultural measures, of the "polluter-pays-principle" and of the opportunities offered through the agri-environmental measures. However, the majority of them might still have problems with the implementation (proper fertilization by time of application, methods and principles of application as well as amount of fertilizes required for application) without proper support, laboratory analyses etc. The situation with irrigation is similar, and the situation with crop protection is even worse. These practices are required to fulfil the cross-compliance statutory requirements for environment protection. In such a situation it is clearer why cross-compliance is not in place in the region.

The national reports also mentioned the agri-environmental issues awareness-raising at all levels (policy, systemic and individual. This process should be addressed carefully, because raising the awareness among the politicians and high-level decision-makers and officers in the institutions might be a big challenge, as usually they cannot dedicate a lot of their time to studying the environmental processes and raising the awareness and knowledge on agri-environmental issues. Therefore, the approach to them should be carefully planned, accompanied by very short, quick reading materials and timely delivered.

The awareness raising campaign on enforcing cross-compliance and agri-environmental indicators are essential for this target group, because the present approach to the agri-environment is not evidence based.

Moreover, the consultancy process is one of the principles for development of the agri-environmental measures. However, nobody reported this process as important in the national reports prepared. Also, no NGOs were reported as stakeholders in agri-environment.

Capacity building (policy makers, farmers, extension services)

Capacity building is the issue with highest consensus in the national reports. Moreover, during the activities, all the national experts and decision-makers agreed that this is a very important issue. The building of capacities is required in the sense of building the personal capacities, but also building the technical capacities. There was agreement that capacity building should be conducted for all stakeholders from policy makers to the farmers' level, because the agri-environmental issues are quite a new approach in the region, there is no previous experience because previously agriculture was targeted in the direction of maximizing productivity, regardless of the financial and environmental costs.

The common understanding during the activities and the group work was that one regional project on building the capacities for agri-environment would be of crucial importance for the development of agri-environment in the region. However, due to the different situations in the countries participating, the project should be based on the advanced analysis conducted in each country. The project should address the common issues at the regional level that would help in the exchange of experience and know-how among the stakeholders from the different countries. However, the country-specific issues should be addressed separately.

Chapter A7.
Conclusions and Recommendations

Agri-environmental policy (AEP) covers more than just on-farm measures for improvement of the environmental impact of agricultural activities. However, not all measures offered in rural development programmes can be seen as agri-environmental.

The EU Commission defines Agri-environmental measures (AEM) as a key element for integration of environmental concerns into the EU Common Agricultural Policy. They are designed to encourage farmers to protect and enhance the environment on their farmland. Farmers commit themselves to adopt environmentally-friendly farming techniques that go beyond legal obligations. In return, farmers receive payments that provide compensation for additional costs and income foregone resulting from applying those environmentally friendly farming practices in line with the stipulations of agri-environment contracts.[8]

Agri-environmental policy (AEP) often has to serve two goals: one is to ensure to enable agricultural activities and decrease abandonment of agricultural land; this is often the case in marginal regions, where extensive forms of farming are frequently in place. These systems provide highly valued services to the public, for example maintained cultural landscapes and biodiversity, as well as cultural identity. Sustainable provision of these services is one goal of the agri-environmental policy.

On the other hand, the pressure for economic improvement of agriculture, increase of production, and growth of farms generates challenges to keep the development on an agro-ecological pathway.

This is where AEP should ensure, aside of regulatory prescriptions and laws, the design of a framework for effective support of environmental friendly farming practices and approaches. Thus, AEP strives to influence laws, programs, political instruments, and measures in agricultural policy to ensure that the positive impact from agriculture on the environment is strengthened, and the negative impact is minimized.

The Agri-environmental Policy has been developed to a different extent in the different countries and entities but, in general, it is not in the top priorities of the governmental strategies and the already existing development plans in the last decades. However, the EU acquis has triggered several improvements like the harmonization and adoption of EU regulations and the adoption of instruments like rural development plans. Thus the topic has received increased awareness, and the agri-environmental measures (AEM) are widely seen as a tool to support rural and agricultural development. Some countries have already developed IPARD-financed programmes or are in the process of their accreditation. Despite the specific constraints and conditions in the countries, which are described in the national reports, the regional perspective allows some general conclusions and recommendations. As said, they are not necessarily valid for all of the countries and entities, some may be further advanced in development and ready for the next steps. However, there are also common issues, and few of them may even be addressed in a cooperative "regional" approach.

From a regional perspective, the following issues are of highest priority and need to be addressed for successful further development of AEP. They are outlined along activities on

- Policy level,
- Awareness raising,
- Capacity Building, and
- Implementation.

In conclusion, priorities for further activities are pinpointed.

Policy level

- In order to improve the cooperation between sectors, involved institutions esp. agricultural and environmental institutions, it is recommended:
  - To clarify the legal framework and responsibilities between levels and institutions.
  - To install of a platform or focal point for AEP at the national level.
  - To establish operational vertical and horizontal cooperation (inter-institutional, inter-entity); where feasible watershed management or commune level management approaches may succeed over individual farm approaches.

[8] EC: https://ec.europa.eu/agriculture/envir/measures_en [accessed 14.7.2018]

- To ensure mutual transparency of information, including development of an integrated database for monitoring.
- To use a regional platform e.g. for development of common training modules and knowledge transfer.

- A strategic development of AEP will be supported through:
  - Adoption of the intervention logic in programme development: analysing the status – deriving targets – designing measures – evaluation of effects,
  - Definition of a basic level of mandatory requirements for environmental protection in agricultural production, including good agricultural practices and conditions,
  - Development of a long term policy for Agri-environment; annual allocations are not sufficient to generate commitments of stakeholders and recipients,
  - Involvement of all relevant stakeholders in the development of programmes and measures,
  - Full integration of AEP at various policy levels.

Awareness

- Increasing the awareness on all levels for the need and the potential benefits of AEM is essential for successful implementation of AEP. It is advised that all stakeholder groups understand the object ive and needs of AEP and are involved in its development. This refers to farmers, consumers, public, decision makers, advisory services, researchers. Government bodies and NGOs should be linked for joint activity projects.
- Data transparency and improved availability is absolutely necessary for inclusion of stakeholders in the process of programming and AEM development, but also in the activities for awareness raising. Publicly available data can be used to argue the need for AEM and prove the effectiveness of AEM, thus generating acceptance for spending public money.

Capacity Building

- For successful further development and with growing importance of the AEP, it is necessary to improve the staff in numbers, knowledge and also technical capacity:
  - for programme development
  - for monitoring and evaluation
  - for control and administration of AEM
  - for training, advisory services, and education.

- Education and vocational training of farmers and also of the administration/institutions as well as of the inspection bodies (capacity building) are needed to spread up-to-date knowledge and exchange experiences.
  - Establish demonstration farms or pilot regions with agri-environmental activities and agro-ecological farming systems, eventually in sensitive areas; support knowledge transfer and exchange of experiences.
  - Offer regular training of staff in institutions and advisory services and ensure participation e.g. through a certificate.

Implementation and Measures

- Agri-environmental indicators and monitoring of farming practices, impact on the environment, responses of society, and effectiveness of AEM need to be further developed. Following key issues need to be addressed in this respect:
  - Data from paying agencies, agriculture, and environment need to be harmonized, integrated, and evaluated for agri-environmental questions. Spatial reference is highly advantageous.
  - An integrated database for all the issues related to AEP facilitates the evaluation and reporting. Further development of AEM should be based on such data and their integrated interpretation.

- Spatial data, including delineation of ANC[9], HNVF[10], and nitrate vulnerable zones of surface and groundwater can help to define target zones for certain measures. This database may be advantageously linked to the LPIS[11] database.
- Consider the use of remotely sensed data and products offered from the European Space Agency ESA, the European Environment Agency (EEA) and others.

- Development and implementation of certain AEMs within rural development will be the tool for integration of environment issues into agriculture.
  - The Agri-environmental Measures in place in SEE countries and entities, mostly financed through national programs, refer to organic farming, protection of animal and plant genetic resources incl. bees, grazing or revitalization of extensive pastures.
  - In some countries further measures are planned for water protection (pollution, abstraction), soil protection (erosion, degradation, carbon content), air (emissions of GHG and ammonium, dust, odour), and waste management.
  - AEMs need to be designed on the base of sound information and scientific understanding. Only if the goals of AEMs are defined and agreed, and the impact is monitored, the success of its implementation can be evaluated. It is important to carefully implement a monitoring and evaluation system also calling upon independent evaluators. To support this, DG Agri has published guidelines on common indicators for monitoring and evaluation of IPARD II Programmes 2014-2020.
  - Field books as obligation for farmers (bound to reception of payments) are an option to improve the availability of data on agricultural practices and facilitate the control of inputs as well as balancing of nutrients.
  - Binding AEMs to a contractual commitment for several years will improve the sustainable impact of the measures. Development of result-based payment schemes (RBS) is an option for impact based support.
  - Also investment support or support for training and research may be used to improve the environmental performance of agriculture, like e.g. support for manure storage/management or machinery. But improving agricultural production does not necessarily provide benefit for the environment. Thus it is essential to assess the potential contradictory effects of the intensification trends through investments and close environmental monitoring.

Issues for further actions

Since from regional perspective, the highest priority is set on the issues of capacity building, awareness raising, and improvement of data availability and transparency, we recommend the development of projects in these fields:

- Strengthening the capacities on policy, institutional and farmers' level through training, increasing the staff, and technical improvement.
- Development and support of a campaign for awareness-raising about the need of agri-environmental measures in all stakeholder groups, through support from the national programmes for rural development (starting from the definition of the stakeholders, to how to approach the different groups in a campaign, engagement of media, leaflets and brochures, engagement of extension services, consultants etc.).
- Development of an integrated system for monitoring of the agri-environmental status and trends, connected to the reporting obligations and LPIS.
- Thorough analysis of the Agri-environmental Policy in the countries and entities.

[9] ANC=Areas with natural constraints
[10] HNVF= high nature value farmland
[11] LPIS= Land Parcel Information System, as the spatial part of IACS

Annex A I.

Overview of the legal documents and regulations that are related to agri-environmental issues as reported by national reports

Table A I.1. Overview of the legal documents and regulations that are related to agri-environmental issues – Albania

Act	Provision
Constitution of the Republic of Albania	Chapter V, Article 59 defines: d) a healthy environment and ecologically sustainable environment for the today and future generations, h) a rational use of the forests, waters, pastures, and of the other natural resources on the basis of sustainable development"
Law on Environmental Protection (2011)	The main EU Environmental Directives were fully transposed by the new "Law on Environmental Protection" in 2011
Law on EIA (2011)	The Law from 2011 partially transposing the EU Directives in this field
Law on Protected Areas (2003)	Regulates the process of protection of the already existing Protected Areas, and of defining new ones
Law on Biodiversity Conservation (2006)	Established the legal basis for the conservation and sustainable use of biodiversity and for achieving targets, of the Convention on Biological Diversity
Law no. 9199, on 26.02.2004 "For the production, processing, certification and marketing of "Bio" products	Regulates production, processing, certification and marketing of Bio –products
Law on Environmental Permitting (2011)	Prevention and control of pollution arising from certain categories of activities in order to achieve a high level of protection for the environment as a whole, and for human health and for improving the quality of life
Law no. 10463/ 2011 "For integrated waste management"	Transposes the EU Waste Framework Directive. The purpose is to protect human health and the environment by preventing or reducing the negative impacts from waste generation and from the management of waste, both by reducing the overall impacts of the use of resources and by improving the efficiency of such use, as well as to ensure environmentally sound management of waste.
Law no. 106/2016 "For biological production, labelling of biological products and their control"	n/a
Law no. 10465, on 29.12.2012 "For veterinarian service in Republic of Albania"	n/a
Regulation no. 2, dated 1.11.2002 "On the protection of animals during slaughter and the requirements applicable to slaughterhouses"	n/a
Regulation no. 1 dated 28.07.2003 "On the maximum level of some residues in dairy products"	n/a
Order no. 313, dated 26.06.2006 "On the adoption of the Regulation on maximum levels of pesticide residues in foodstuffs and food of plant origin"	n/a
Order no. 10, dated 13.01.2010 "On the evaluation and categorization of establishments of food products of animal origin".	n/a
Instruction no. 5 dated 25.03.2011 "On specific hygiene requirements for the production, collection and processing plants of milk and milk-based products"	n/a

Table A I.2. Overview of the legal documents and regulations that are related to agri-environmental issues – Bosnia and Herzegovina

Federation of Bosnia and Herzegovina – FBIH
• Law of Agriculture in FBiH (Official Gazette of FBiH, No. 88/07, 7/13)
• The Law on Agricultural Land in FBiH (Official Gazette of FBiH, No. 52/09),
• Water Law in FBiH (Official Gazette of FBiH, No.70/06, /17
• Law on Agricultural Organic Production in FBIH (Official Gazette of FBiH, No.72/16)
• Law on Seeds and Seedlings Material of Agricultural Plants in FBIH (Official Gazette of FBiH, No. 55/01, 31/14)
• Law on the Recognition and Protection of Varieties of Agricultural and Forestry Herbs in FBIH (Official Gazette of FBiH, No. 31/00
• Animal Husbandry Law in FBiH (Official Gazette of FBiH, No. 66/13)
• Law on Freshwater Fishing in FBiH (Official Gazette of FBiH, No. 64/04)
• Law on Medicines used in Veterinary Practice in FBiH (Official Gazette of FBiH, No.15/98)
• Veterinary Law in FBiH (Official Gazette of FBiH, No. 46/00)
• Law on Agricultural Advisory Services (Official Gazette of FBiH, No. 66/13)
• Law on Financial Assistance in Agriculture and Rural Development in FBIH (Official Gazette of FBiH, No.42/10)
• The Law on Environmental Protection Fund in FbiH (Official Gazette FBiH, No. 33/03).
• The Law on Spatial Planning and Land Use in FBiH (Official Gazette FBiH, No. 2/06),
• The Law on Environmental Protection in FBiH (Official Gazette FBiH, No. 33/03),
Republic of Srpska – RS
• Law of Agriculture in RS (Official Gazette RS, No. 70/06, 71/09)
• Law on Agricultural Land in RS (Official Gazette RS, No. 93/06,86/07,14/10,5/12),
• Water Law in RS (Official Gazette RS, No. 50/06, 92/09, 121/12, 74/17)
• Law on Organic Production in RS (Official Gazette of RS, No. 12/13)
• Law on Mineral Fertilizers in RS (Official Gazette of RS, No. 24/12)
• Law on Seeds of Agricultural Plants in RS ((Official Gazette RS, No. 37/09)
• Law on Seedlings in RS (Official Gazette RS, No. 37/09)
• Law on Plant Health Protection in RS (Official Gazette RS, No. 25/09)
• Law on Plant Protection Products in RS (Official Gazette RS, No. 52/10)
• Law on Chemicals in RS (Official Gazette RS, No. 21/18)
• Law on Genetically Modified Organisms in RS (GMO) (Official Gazette RS, No. 103/08)
• Animal Husbandry Law in RS (Official Gazette RS, No. 34/06, 44/15)
• Law on Beekeeping in RS (Official Gazette RS, No. 52/10)
• Law on Fisheries in RS (Official Gazette RS, No. 72/12)
• Food Law in RS (Official Gazette RS, No. 19/17)
• Veterinary Law in RS (Official Gazette RS, No. 42/08, 06/12, 75/17)
• Law on the Protection and Welfare of Animals (Official Gazette RS, No. 111/08)
• Law on Medical Veterinary Products (Official Gazette RS, No. 71/12)
• Law on the provision and direction of funds for the promotion of agriculture and rural development (Official Gazette RS, No. 43/02, 106/09)
• Law on Forests in RS (Official Gazette RS, No. 75/08)
• Law on Waste Management in RS (Official Gazette RS, No. 111/13, 106/15, 16/18)
• Law on Environmental Protection in RS (Official Gazette RS, No. 71/12),
• Law on Nature Protection in RS (Official Gazette RS, No. 50/02,59/08,113/08)
• Law on Spatial Planning and Construction in RS (Official Gazette RS, No. 55/10),
• Law on Environmental Protection Fund in RS (Official Gazette RS, No. 51/02,53/07),
Brchko District – BD
• Law on Agricultural Land in BD (Official Gazette BD, No. 32/04),
• Law on Spatial Planning and Construction in BD (Official Gazette BD, No. 29/08),
• Law on Environmental Protection in BD (Official Gazette BD; No. 24/04),

Table A I.3. Overview of the legal documents and regulations that are related to agri-environmental issues – Kosovo*

Act	Provision
Constitution of Kosovo*	Chapter II – Fundamental Rights and Freedoms, in Article 52, which states: • Nature and bio-diversity, the environment and national inheritance are everyone's responsibility. • Everybody should be provided an opportunity to be heard by public institutions and have their opinions considered on issues that impact the environment in which they live. • Environmental impacts will be taken into consideration by public institutions during their decision-making process.
Law on Agriculture and Rural Development,	The Law is under MAFRD. It was adopted by the parliament in order to establish the Payment Agency (Agriculture Development Agency) as foreseen under COUNCIL REGULATION (EC) No1290/2005 of 21 June 2005 on the financing of the common agricultural policy. Such an Agency would finance projects that deal with agriculture and rural development. However, at present, the establishment of the Payment Agency is in contradiction with Kosovo*'s Law on Management of Finance. In this regard, the benefits from grants under (a) COUNCIL REGULATION No. 1782/2003 of 29 September 2003 that sets the common rules for direct support schemes within the common agriculture policy, and (b) COUNCIL REGULATION No. 1698/2005 of 20 September 2005 that supports rural development through the European Agricultural Fund for Rural Development need to be reconciled with legislation in Kosovo*.
Law on Organic farming 04/L-085, and Instructions in order to implement the Law effectively.	Based on the EU regulations 834/2007 and 889/2008. The objective of this Law is to provide the basis for sustainable development of organic agriculture, while ensuring effective functioning of the market, guaranteeing fair competition, ensuring consumer confidence and protecting the customer's interest. MAFRD prepared eight Administrative Instructions in order to efficiently implement the Law.
Law on Natural Conservation,	Some comprehensive assessments on the existence and location of sites hosting natural habitats took place, but these assessments were primarily conducted by scientific researchers. There are no ongoing projects regarding the identification of protected area natural habitats.
Law for Environmental Protection in Kosovo* (2003).	Later on, based on this law, the Strategy of Kosovo* on Environment and Sustainable Development 2005-15 was prepared. This led to the approval of the Action Plan of Environment 2006-10 by the Government of Kosovo*, which contained over 52 projects, more than 70% of which have been implemented so far.
Law on Waters	n/a
Law on Irrigation of Agriculture Land	n/a
	n/a
Until now, MAFRD has 25 laws, (approved or amended) and 5 more laws are in procedure (four of them shall be amended and one is a new law).	n/a

** This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence*

Table A I.4. Overview of the legal documents and regulations that are related to agri-environmental issues - Macedonia

Act	Provision
Constitution of the Republic of Macedonia	Article 8 of the Constitution of the Republic of Macedonia establishes the fundamental values of the constitutional order of the Republic of Macedonia. This article sets out the proper urban and rural planning to promote a congenial human environment, as well as ecological protection and development among fundamental constitutional values. Article 43 sets the provision that everyone has the right to a healthy environment to live in. Furthermore, everyone is obliged to promote and protect the environment and the State provides conditions for the exercise of the right of citizens to a healthy environment. Moreover, Amendment XVII of the Constitution ensures that the citizens, directly and through their representatives, participate in the decision-making on issues of local relevance particularly in the field of environmental protection. This right is stipulated through the units of local self-government.
Law on Agriculture and Rural Development ("Official Gazette of RM" no. 49/2010)	Defines and gives the legal grounds for the implementation of the 5 main goals of the national agricultural policy, some of which are: sustainable development of rural areas and optimal use of natural resources while respecting the principles for protection of the nature and environment. The Law contains detailed provisions and criteria for realization and implementation of the main priorities of rural development, such as: a) increasing the competition in the agricultural sector, b) protection and improvement of the environment and rural areas, c) improving the quality of life in rural areas and encouraging diversification of economic activities to increase employment opportunities in rural areas and d) encouraging local development of rural areas. Financial support for achieving the rural development priorities is defined in article 92 of the Law and is distributed as: a) non-refundable financial support for investments b) financial aid and c) direct payments to rural development. The non-refundable financial support can be used for non-material investments in line with the National programme for Agriculture and Rural Development, Direct Payments are used to support the income generated from agriculture as compensation for losses incurred due to utilization of production potential for the application of agricultural production practices to protect the environment or due to increased costs for the application of higher standards of protection environment. Sets the basic definitions, rights and responsibilities of agricultural producers, enforcing a duty for protection of the environment, animal health, animal welfare and soil. Also, the law provides the general setup for agri-biodiversity protection. Moreover, the Law prescribes that manure and compost should be used for fertilizing agricultural crops and for maintaining the soil fertility.
Law on Environment ("Official Gazette of RM" no. 53/05, 81/05, 24/07, 159/08, 83/09, 48/10,124/10, 51/11, 123/12, 93/2013, 42/2014, 44/2015, 129/2015, 192/2015, 39/2016).	Regulating the planning, protection, organisation and use of agricultural land. Agricultural land is an asset of general interest for the Republic of Macedonia, which is used for agricultural production and cannot be used for other purposes, except in cases and under conditions determined by this Law. Sets out the basic definitions, rights and responsibilities of agricultural producers, enforcing a duty for protection of the environment, animal health, animal welfare and soil. The law prescribes prohibition of discharge and disposal of hazardous and harmful substances on agricultural land, drainage canals and irrigation systems. It is obligatory to control the fertility of arable land and keep record of the amount of used mineral fertilizers and pesticides. It also introduces erosion measures which require from farmers to apply temporary or permanent prohibition on ploughing meadows and pastures, crop rotation, growing perennial plants, growing or raising agri-protection belts etc.

Act	Provision
Law on Nature Protection ("Official Gazette of RM" no. 67/2004, 14/2006, 84/2007, 35/2010, 47/2011, 148/2011, 59/2012, 13/2013, 163/2013, 41/2014, 146/2015, 39/2016 and 63/2016)	This is the basic law in the area of nature protection and on all issues which regulate the nature protection in the Republic of Macedonia. Most of the environmental impact assessment procedures and restrictions can be found in this law. The law regulates nature protection by protecting the biological and landscape diversity and protection of natural heritage in and outside of protected areas, along with protection of natural rarities and the use of natural resources for economic purposes where apart from the provisions of this Law, the provisions of special laws shall also apply. Protecting nature is an activity of public interest. Scope of protection: The **protection of biodiversity** is achieved by establishing and implementing a system of measures and activities for protection of wild species, including their genetic material, habitats and ecosystems, in order to ensure sustainable use of the components of biodiversity and maintenance of natural balance. The **protection of landscape diversity** is accomplished by establishing and implementing a system of measures and activities for the conservation and maintenance of characteristic values of the landscape resulting from its natural configuration and/or the type of human activity. **Natural heritage protection** is accomplished by establishing a system that lays down the measures, procedures and methods for acquiring the status of natural heritage and the implementation of its protection. **Protection of natural rarities** is accomplished by establishing a system that lays down the measures, procedures and methods for declaring a natural rarity and implementing its protection. Moreover, this Law also regulates **land protection**, systematic monitoring of the state and quality of the soil, remediation measures, re-cultivation, inspection supervision and other issues of importance for the protection and conservation of the land as a natural resource of national interest.
Law on Waters ("Official Gazette of RM" no. 87/08, 6/09, 161/09, 83/10, 51/11, 44/12, 23/13, 163/13, 52/16)	Regulating the legal status of waters, integral water management, water land management, sources and methods of financing water activities, supervision over the implementation of this law, as well as other issues of importance to water management. The Law is in line with the recommendations of the Water Framework Directive of the European Union (Directive 2000/60/EC of the European Parliament and Council, WFD). This law regulates issues relating to surface water, including permanent streams or rivers in which water flows occasionally, lakes, reservoirs and springs, groundwater, coastal land and wetlands and their management, including distribution of water protection and conservation of water and protection from the damaging effects of water; water facilities and services; organizational structure and financing of water management, and terms, conditions and procedures under which they can be used or discharged. The Law promotes water management based on the river basin district and international river basin districts in compliance with the EU Water Framework Directive (WFD). Furthermore, the Law stipulates provisions from the EU Nitrate directive through basic measures for protection of waters against pollution caused by nitrates of agricultural sources and by establishing protection zones that are sensitive to nitrates (Chapter 3.4.).
Law on Seeds and Seedlings ("Official Gazette of RM" no. 39/2006)	Defines the protection of the plant genetic resources. Defines the gene bank as an institution that maintains and stores seed and seedlings of divergent populations and autochthonous species in order to protect biodiversity and stores referent samples of seed and seedlings of agricultural plants.
Law on Livestock Production ("Official Gazette of RM" no. 7/2008)	Defines sustainable livestock production as activity of benefit for the environment. Chapter IV of this law is dedicated to AnGR protection. Based on this law, MAFWE has the duty to take care of the animal genetic resources protection through a 7-year programme (2011-2017) which acts towards: protecting all autochthonous breeds and strains of livestock that are kept in the Republic of Macedonia, with particular care for local breeds kept in their regions of origin; protecting breeds out (ex-situ) and in (in –situ) the regions of origin; establishing and operation of gene banks for livestock; fulfilling international obligations related to AnGR; conducting trainings for AnGR protection; rising public awareness for AnGR protection; linking AnGR protection with other related programmes in agriculture. In addition, few regulatory acts (by-laws) have also been adopted and the AnGR programme has been committed to recognizing, monitoring and recording local breeds.
Law on Veterinary Health ("Official Gazette of RM" no. 113/2007)	Sets out the protection of the environment as one of the responsibilities of the veterinary services. Defines the protection of the environment and human health in case of diseases. Sets the basis for environment protection from by-products of animal origin.
Law on By-products of Animal Origin ("Official Gazette of RM" no. 113/2007)	Defines environment protection from by-products of animal origin, including manure, compost and biogas production.
Law on Pastures ("Official Gazette of RM" no. 3/1998)	n/a
Law on Organic Agricultural Production ("Official Gazette of RM" no. 146/2009)	n/a

Act	Provision
Law on Quality of Agricultural Products ("Official Gazette of RM" no. 140/2010)	n/a
Law on Agricultural Land ("Official Gazette of RM" no. 135/2007)	n/a
Law on the State Agricultural Inspectorate ("Official Gazette of RM" no. 20/2009)	n/a
Law on Crop Protection ("Official Gazette of RM" no. 25/1998)	n/a
Law on Products in Plant Protection ("Official Gazette of RM" no. 110/2007)	n/a
Law on Fertilizers ("Official Gazette of RM" no. 110/2007)	n/a
Law on Water Economy ("Official Gazette of RM" no. 51/2015)	n/a
Law on Quality of Agricultural Products ("Official Gazette of RM" no. 140/2010),	n/a

Table A I.5. Overview of the legal documents and regulations that are related to agri-environmental issues - Montenegro

Act	Provision
Montenegrin Constitution	• defines Montenegro as a civil, democratic, ecological and state of social justice • everyone has the right to a healthy environment, to timely and full information about the state of the environment, • everyone, and in particular the State, is obliged to preserve and improve the environment
Law on Agriculture and Rural Development (OG of MNE 56/09, 18/2011, 34/14, 01/15 and 51/2017)	Regulates: • the development of agriculture and rural areas • the objectives and measures of agrarian policy, • the incentives in agriculture and the preconditions for their realization, • the rights and obligations of beneficiaries of subsidies • the measures for sustainable management of agricultural resources, which are defined through the promotion of agricultural programmes that are compatible with the principles of environmental protection – agri- ecological measures • the conservation and sustainable use of agricultural genetic resources
Law on Organic Farming (OG of MNE no. 56/13)	Establishment of a sustainable agricultural management system that: • Respects the natural systems and cycles and maintains and improves the quality of land and water, plant and animal health and their balance; • Contributes to a high level of biodiversity; • Rationally uses energy and natural resources (water, soil, organic matter and air); • Respects animal welfare standards and in particular meets the specific needs of animals in relation to their species; • Produces different types of food and agricultural products using non-harmful procedures for environment, human, plant and animal health
Law on Plant Protection Products (OG of MNE no. 51/08, 40/11 and 18/14)	Only products containing approved substances can be launched on the market. Currently, only plant protection products containing active substances approved in the EU are accepted.

Act	Provision
Law on Water (OG of MNE no. 27/07 and 48/15	Regulates the legal status and way of integral water management, water and coastal land and water facilities, conditions and manner of carrying out aquatic activities and other issues of importance for water management and water resources, such as: • territorial water management; • use of water (for water supply, irrigation, bottling, fish farming, production electricity, navigation, sports and recreation, etc.); • protection of waters against pollution, while defining areas of special protection of waters, vulnerable areas and plans for protection against pollution, monitoring; • watercourse regulation and protection against harmful effects of waters (defining areas in danger of floods, protection against erosion and floods, etc.)
The Law on National Parks	
Code of Good Agricultural Practice (GAP)	• Gives advice on how to produce food in a way that takes into account the preservation of the environment • Enables producers to protect agricultural land, keep rivers, lakes and shallow water clean and healthy, avoiding pollution by nitrates, • Gives advice on how to protect the health and well-being of animals, thus protecting Montenegro from serious diseases that could threaten the livelihoods of farmers, • Gives advice to farmers on safe use of pesticides, in order to protect themselves, the consumers, animals and the environment.

Table A I.6. Overview of the legal documents and regulations that are related to agri-environmental issues – Serbia

Act	Provision
Law on Agriculture and Rural Development ("Official Gazette of the RS" No. 41/09, 10/13, 101/16)	Sets the basic definitions, rights and responsibilities of agricultural producers, enforcing a duty for protection of the environment, animal health, animal welfare and soil.
Law on Agricultural Land ("Official Gazette of the RS", No. 62/06, 65/08 – second law, 41/09, 112/15 and 80/17)	Regulates the planning, protection, organisation and use of agricultural land. Agricultural land is an asset of general interest for the Republic of Serbia, which is used for agricultural production and cannot be used for other purposes, except in cases and under conditions determined by this Law. Sets the basic definitions, rights and responsibilities of agricultural producers, enforcing a duty for protection of the environment, animal health, animal welfare and soil. The law prescribes prohibition of discharge and disposal of hazardous and harmful substances on agricultural land, in drainage canals and irrigation systems. It is obligatory to control the fertility of arable land and keep record of the amount of used mineral fertilizers and pesticides. it also introduces erosion measures which require from farmers to apply temporary or permanent prohibition on ploughing meadows and pastures, crop rotation, growing perennial plants, growing or raising agri-protection belts etc.
Law on Land Protection ("Official Gazette of the RS", No. 112/2015)	Regulates land protection, the systematic monitoring of the state and quality of the soil, remediation measures, re-cultivation, inspection supervision and other issues of importance for the protection and conservation of the land as a natural resource of national interest
Water Law ("Official Gazette of the RS", No. 30/10, 93/12, and 101/16)	Regulates the legal status of waters, integral water management, water land management, sources and methods of financing water activities, supervision over the implementation of this law, as well as other issues of importance to water management. The Law is in line with the recommendations of the Water Framework Directive of the European Union (Directive 2000/60/EC of the European Parliament and Council, WFD)
Law on Forests ("Official Gazette of the RS", No. 30/10, 93/12, and 89/15)	Regulates the preservation, protection, planning, growing and use of forests, disposal of forests and forestland, transposition of this law, as well as other issues important for the forests and forestland.
Animal Welfare Law ("Official Gazette of the RS" No. 41/2009	Regulates the prevention and treatment of disease and injury of animals; prevention and mitigation of pain, distress and other negative states; and provision of diets and living conditions that are suited to the needs and nature of animals. The key on-farm environmental aspect of livestock production is related to the natural living processes, i.e. after the metabolic processes of animals, the nutrients - organic manure should be absorbed as feed for crop.
Animal Husbandry Law ("Official Gazette of the RS" No. 41/09, 93/12, 14/16)	Among other things, this Law regulates the treatment of animal waste (feces and urine) and its use as an organic fertilizer. Animal waste must be treated in a way which does not influence the human health and the health of animals, the environment and the quality of food.

Act	Provision
Law on Veterinary Matters ("Official Gazette of the RS" No. 91/05, 30/10, 93/12)	
Law on Environmental Protection ("Official Gazette of the RS" No. 135/04, 36/09, 36/09 – other low, 72/09 – other low, 43/11 – decision of the Constitutional Court and 14/16)	Regulates the integral system of environmental protection to ensure a healthy environment. Among the issues relevant for agricultural policy, the Law specifically refers to the protection of natural value (landscapes), biological diversity, species and ecosystems diversity, public natural goods such as water-fronts and forests. Agricultural production is also addressed in this provision of the Law on Planning and Utilization of Natural Values. Prescribes protection of the land and soil, sustainable use of land, including measures of systematic monitoring of land quality, as well as monitoring of indicators for the assessment of the risk of land degradation. Moreover, it prescribes water protection, the use of water without a threat to natural processes and renewal of the quality and quantity of water. The principles that underpin the environmental legislation are the integration principles, prevention, natural value preservation and sustainable development, polluter's liability, principles of 'polluter-pays' and 'users-pay', subsidiary liability of the state authorities when the polluters are unknown or the damage is caused by pollution originating from outside the Republic of Serbia, the principles of incentives, public information and participation and protection of the rights to a healthy environment and access to justice. The Polluter-Pays-Principle states that the polluter should bear the costs of avoiding or remedying environmental damage. Farmers have to ensure compliance with the mandatory national environmental standards.
Law on Nature Protection ("Official Gazette of the RS", No. 36/09, 88/10, and 91/10 – corr. and 14/16	Regulates the protection and preservation of nature, biological, geological and landscape diversity as part of the environment. Includes the NATURA 2000 Strategy and the protection of special areas for conservation of habitats and species and areas of special protection for conservation of habitats and certain species of birds based on the Directive on Birds (2009/14/EEC) and the Directive on Habitats (92/42/EEC) which are almost fully transposed to this Law. The Law on Nature Protection governs the protection and conservation of nature and the biological, geological and landscape diversity. Many of these provisions are relevant to agriculture. The law establishes the main principles of protection of forest and water ecosystems and habitats within the agro ecosystems.
Law on Organic Production ("Official Gazette of the RS", No. 30/2010)	Regulates agricultural and other products using the methods of organic production, its objectives, principles, methods, controls, certification, as well as the processing, marking, storage, transport, trade, import and export of organic products, as along with other issues of importance for organic production. The Law is mostly in line with the Council Regulation (EC) on organic production and labelling of organic products and the Commission's implementing Regulation No. 834/2007 on organic production and labelling of organic products.
Rulebook on the Control and Certification of Organic Production and Organic Production Methods ("Official Gazette of the RS" No. 48/2011)	The regulation has been prepared in accordance with the Council Regulation No. 834/07 as well as the Commission Regulation No. 889/08 and Commission Regulation (EC) No. 710/2009
Law on Subsidies for Agriculture and Rural Development ("Official Gazette of the RS" No. 10/13, 142/14, 103/15, 101/16)	Article 37. defines the subsidy measures relating to the preservation and improvement of the environment and natural resources including the subsidies for: 1) sustainable use of agricultural land; 2) sustainable use of forest resources; 3) organic production; 4) conservation of plant and animal genetic resources; 5) preservation of agricultural and other areas of high natural value; 6) support for agri-environmental measures, good agricultural practices and other policies for environmental protection;

ANNEX A II.

The Strategic and programming documents of importance for agri-environment (based on national reports)

Table AII.1. The Strategic and programming documents of importance for agri-environment - Albania

Document	Provisions
Biodiversity Strategy 2015-2020	Defines the main priorities for preserving biodiversity and habitats, through their identification and designation as protected areas, and through the protection of species in and outside the protected areas.
Inter–sectoral Environmental Strategy 2015 -2020	Sets the objectives for protection of the environment and natural resources until 2020 and the different ways and measures to achieve them. In the field of protection of nature and biodiversity, the sub-sectoral objectives are: • Addressing the root causes of biodiversity loss by integrating biodiversity issues in cross–sectoral and social context; • Reduction of the direct pressure on biodiversity and promotion of its sustainable use; • Improving the status of biodiversity through the conservation of ecosystems, habitats and species and genetic diversity; • Extending biodiversity ecosystems services; • Implementation of participatory planning; and • comprehensive capacity building and management.
Inter–sectoral Strategy for Agriculture and Rural Development 2014-2020 (ISARD) (Cross-cutting Strategy for Agriculture and Rural Development, 2014 – 2020)	• Provides the framework for the operational interventions needed to develop a viable and competitive agricultural and food processing sector • Fosters a balanced economic development in rural areas, • Paves the way for integration of the agricultural and agro-processing sector in the EU as a basis for increasing the standard of living in rural areas and thus reducing poverty. • Further develops the initiatives taken by MAFCP under the strategies for agriculture and rural development 2007–2013 with cross-linkages to other sectors touching on agriculture and rural development. • The specific objective for restoring, preserving and enhancing ecosystems dependent on agriculture and forestry is to achieve sustainable management of natural resources and climate action by forest and water resource management. • Introduction of agricultural production methods protecting the environment and mitigating the impact on the climate. • The intention is to gradually introduce EU policies and approaches for management of natural resources and climate action with a specific focus on sustainable use of land, forest and water resources and waste management in the short term. • Attention should be paid to adapting environmentally friendly practices, given that Albania should support intensive subsectors that often have adverse environmental impacts, such as animal production. • There is a significant need for the implementation of legislation regarding the collection and management of animal waste
IPARD II programme 2014 -2020	• Improvement of the management of natural resources and resource efficiency that will ensure environmental sustainability and will benefit from emerging market opportunities. • Reverses the trend of degradation of the natural environment (soil erosion, water pollution and biodiversity loss) due to unsustainable land management and farming practices. • Foresees the Agri-environment-climate and organic farming (OF) measure. • A measure for pilot operations in order to build capacity for management and control of agri-environmental interventions implemented under the Rural Development is planned. This measure will target land and soil quality protection and biodiversity preservation, bringing also benefits to water and air quality. The indicative budget allocation to this measure is EUR 1.7 million. Taking into account the underdeveloped capacity to implement area-based interventions, the Agri-environment-climate and organic farming measure is programmed to begin with implementation in 2018.
National Strategy for Development and Integration 2014–2020	n/a
Integrated Waste Management Strategy (draft), 2018–2033	n/a
National Strategy and Action Plan for Conservation and Use of Farm Animal Genetic Resources	n/a

Table AII.2. The Strategic and programming documents of importance for agri-environment – Bosnia and Herzegovina

Document	Provisions

Strategic Plan for Rural Development of Bosnia and Herzegovina (SPRR BIH) - Framework Document 2018-2021	• The SPRR BIH gives a special interpretation of the state of land, climate and water. In the field of agroecology, the following problems were identified: land degradation, waste management, agroecological policy, and protection of biodiversity of animal and plant genetic resources as well as not giving adequate significance to the products with protected geographic origin, original and traditional products.
	• Sustainable Management of Natural Resources and Adaptation to Climate Changes is one of the six defined strategic goals in the SPRR BIH.
	• This goal should be achieved through:
	  • promotion and strengthening of good agricultural practices;
	  • equalization of business conditions in areas with natural constraints and preservation of valuable landscapes;
	  • strengthening the water management system in agriculture;
	  • strengthening awareness of climate change, its consequences and methods for mitigating or protecting the sector from such changes;
	  • promoting the use of renewable energy sources and using waste from agriculture;
	  • revitalization and preservation of pasture areas;
	  • improvement of biodiversity and preservation of indigenous genetic resources;
	  • protection and improvement of fertility;
	  • establishing and strengthening the mechanisms of sustainable land management.

Medium-Term Development Strategy of the Agricultural Sector in FBIH for the period 2015-2019	The Strategy emphasizes the need to raise the technical-technological level of the sector, to make more efficient use of available resources as well as to improve the overall standard and quality of living in rural environments. There are plans to implement 37 measures, deployed within three pillars of agricultural policy - 10 measures refer to the first pillar and direct support to the producers, 17 measures refer to the second pillar, i.e. the restructuring of the sector and the rural development policy, while the remaining 10 measures relate to the third pillar of the entity's agricultural policy and measures from the domain of general services in agriculture. The FBIH rural development programme is currently being drafted and will be fully aligned with the BIH Strategic Plan for Rural Development; therefore, all measures related to the agri-environmental policy will be the same as described in the previous chapter.
FBIH Rural Development programme for the period 2018-2020	In preparation
Strategic Plan for the Development of Agriculture and Rural Areas of RS 2016-2020	n/a
Basis of Agricultural Land Protection, Use and Reclamation of Republic of Srpska as a Component of the Land Use Planning Process (2008).	n/a
Waste Management Strategy 2016-2025 (RS)	n/a
Spatial Plan RS 2015-2025	n/a
Strategy for Development of Agriculture, Food and rural Development in the Brchko District BiH (BD BIH)	Prepared for the period 2008-2013 but never adopted by the Assembly of BD BiH. The process for creation of a new strategy for agriculture, nutrition and rural development is under way.
Regulation on Natura 2000 (OG FBIH, No. 43/11).	n/a

Table AII.3. The Strategic and programming documents of importance for agri-environment – Kosovo*

Document	Provisions
Kosovo* Environmental Strategy (2013-2022)	Aims to provide answers to the present and future needs of Kosovo*'s society and specifically addresses its environmental management obligations at the national and international level. The objectives and priorities set out in the document have to be implemented through the Kosovo* Environmental Action Plan (KEAP) 2013-2017. KES includes the general environmental developments in the agricultural sector.
Agriculture Rural Development Plan (ARDP) 2014-2020	n/a
Kosovo* Environmental Action Plan (KEAP) 2013-2017	n/a
Kosovo*'s European Partnership Action Plan 2012 (KEPAP)	n/a
Strategy of Environmental Protection (SEP)	Indicates not only the general societal development, but also the social welfare for citizens. The current Strategy for Environmental Protection will improve the current situation. It must be harmonized with the social and economic demands but also be well aware that, as more pressures are placed upon the natural resources and environment, measures to protect these resources – such as measures for the air, water, soil, cultural heritage and so forth. This is the responsibility of all citizens. Under such a premise, this strategy recommends an integration of environmental management and protection into all sectors in Kosovo*.
Forestry Development Strategy 2010-2020	n/a
Land Consolidation Strategy 2010 – 2020	n/a
Strategy on Advisory Services for Agriculture and Rural Development 2012-2016	n/a
Spatial Plan of Kosovo*/ Spatial Development Strategy of Kosovo* 2010-2020+	n/a
Strategy on Air Quality 2013-2022	n/a
Action Plan for Implementation of the Air Quality Strategy 2013-2017	n/a
Waste Management Strategy of Kosovo* 2013-2022	n/a
Action Plan on Implementation of the Waste Management Strategy 2013-2017	n/a
Kosovo*'s Energy Strategy 2009–18.	The Strategy aims to promote environmental awareness in energy activities, energy efficiency, and renewable energy use, and to develop gas infrastructure. (will be elaborated in detail!)
The Industrial Strategy for Kosovo* 2010–2013	Provides a basis for raising the quality of industrial policy. It envisages a greater role for the industry in contributing to GDP, including exports and investment. (will be elaborated in detail!)
The Agriculture and Rural Development Strategy 2009–2013	Aims to sustain the rural development and improve the quality of life (including infrastructure) through promoting farming and other economic activities that are in harmony with the environment. (will be elaborated in detail!)
Kosovo*'s Policy and Strategy Paper on Forestry Sector Development 2010–20	Aims to improve the capacity to deal with environmental issues related to forestry, enhance the capacity of Kosovo*'s institutions to implement and monitor biodiversity action plans, and establish and manage protected zones in compliance with the national goals and international agreements. (will be elaborated in detail!)

Table AII.4. The Strategic and programming documents of importance for agri-environment - Macedonia

Document	Provisions
Program for Work of the Government (2017-2020)	Foresees to support the implementation of a set of measures for achieving its main goal in the agricultural sector: increasing the areas under agricultural production, the yield and its quality. In particular, the Government intends to support measures related to agricultural land, like agri-environmental zoning, land consolidation and investment in hydro-ameliorative systems.
National Strategy for Sustainable Development (NSSD) 2009-2030	An overall umbrella document prepared by the Ministry of Environment and Physical Planning (MoEPP). The NSSD provides an integral planning approach, which offers the overall umbrella for all the other policies and strategies in various fields, while respecting the already set strategic directions in the different sectors.
National Strategy for Environment and Climate Change 2014-2020	Among other things, the Strategy deals with biodiversity including agri-biodiversity. The Strategy identifies seventeen main threats to biodiversity in the country. However, in the document, agriculture is addressed more in relation to biodiversity and less in relation to agri-biodiversity protection. However, in some parts, support for the farmers that use genetic resources in agriculture and support in the application of good agricultural practice and the introduction of agri-environmental measures is emphasized. It is also pointed out that the "in situ" and "ex situ" protection of the genetic resources of indigenous cultivars and local breeds should be improved.

National Agricultural and Rural Development Strategy - NARDS (2014-2020)	• Identifies the general and specific objectives for the national rural development policy which are in line with the IPA II priorities, such as:
	  • Improvement of farm sustainability and competitiveness of all types of agriculture and food processing,
	  • agro environmental objectives for restoring, preserving and enhancing ecosystems dependent on agriculture and forestry,
	  • improvement of socio-economic development and human potential in rural areas.
	• The strategy pays special attention to the reforms that need to be implemented with the aim of:
	  • encouraging sustainable agricultural practices,
	  • application of laws and regulations for pollution prevention, land and water conservation,
	  • control of non-selective conversion of agricultural land for other purposes, and
	  • protection of forests and areas with high natural resources.
	• The Strategy includes, in particular, sustainable resource management and climate change,
	• Outlines the 6 specific goals for agricultural and rural development arising from the **general strategic goal** for: increased competitiveness of the agricultural production and food processing industry, rural development and sustainable use of natural resources.
	  • Specific goal 3 defines the specific targets towards achieving improved living conditions and economic activities in rural areas, such as: establishment of rural communities, improvement of the urban infrastructure, investment in irrigation systems, improvement of the social security of the population in rural areas,
	  • Specific goal 6 addresses the sustainable management of natural resources and mitigation of the negative impact of climate change and defines several key goals, the most important among them in relation to agri-environmental issues being:
	  • wider implementation of the agri-environmental approach in the Macedonian agricultural production and
	  • biodiversity protection of the indigenous species and crops and adaptation of the agricultural sector to climate changes.
	  • The strategy outlines the obligation of fulfilment of the predefined requirements related to the implementation of standards and procedures which are part of the system of cross-compliance. Moreover, Result 9 of the Strategy foreseen until 2020, aims at the requirements for cross compliance to be applicable to 75% of the applicants for financial support.

National Agri-Environmental programme (NAEP) for the period 2011-2013 (2010)	• The overall objective of the NAEP was in a line with the IPA regulation (EC No 718/2007) where the aim of giving assistance to agri-environmental Projects is "to develop agricultural practices which are consistent with the preservation and protection of the environment and the countryside, at both the administrative and farm levels".
	• The programme defines five AE schemes:
	  • traditional agriculture,
	  • organic farming,
	  • traditional pasture management,
	  • landscape management and
	  • soil and water protection.

Document	Provisions

IPA programme for Rural Development – IPA-RD (2014-2020)	• Identifies 11 measures that will be implemented for achieving 4 priorities. The programme gives a detailed explanation of the measures, timeframe of their implementation and the criteria for selection, along with the administrative procedure for application for IPA-RD funds.
	• In terms of agri-environmental issues, the most relevant measures identified with IPA-RD are:
	  • agri-environmental measures, organic farming and
	  • forest protection (Goal 2),
	  • improvement of the training and advisory service (Goal 4) and
	  • improvement and development of the rural infrastructure (Goal 3).
	• Includes a set of various agri-environmental measures under the group of rural development measures intended for environmental protection and sustainable rural development (measures such as compensation for incomes for:
	  • organic production,
	  • conservation of plant and animal genetic resources,
	  • agri-environmental measures,
	  • sustainable management of arable land,
	  • forestry-environmental measures etc.)

National programme for Agriculture and Rural Development - NPARD (2018-2022)	• The general strategic objective of the NARDS is: "further improvement of the competitiveness of the agricultural sector of the open and volatile market and maintenance of the development of rural areas with optimal use of natural resources",
	• Specific goal 6: "sustainable management of the natural resources and mitigation of the negative effects of Climate Change"
	• Program support for 4 priority areas:
	  • increasing the competitiveness of the agricultural and forestry sector,
	  • protection and improvement of the environment and rural areas,
	  • improvement of the quality of life in rural areas,
	  • promotion of local development in rural areas.
	• 74% of the financial support by 2022 will be distributed through the mechanism of direct payments.
	• With regards to the agri-environmental measures, in addition to the measure for organic farming and the 15% additional payments for the agricultural production in the Areas with Natural Constraints, starting from 2018, the measure for biodiversity support will be included in the scheme of agri-environmental measures.
	• The programme foresees measures for support of investments for efficient waste management and use of renewable energy sources in agriculture.
	• In a line with the Third National CC action plan, active measures are planned to be implemented to mitigate the negative effects of climate change.
	• The producers can apply for financial support according this Program, if they fulfil the minimum requirements of cross-compliance.

Annual programme for financial support of the rural development (2018)	• The programme foresees support for 6 agri-environmental or agri-environment related measures within priority 2, such as:
	  • support for the protection of rural landscapes and their traditional characteristics,
	  • support for agricultural production in Areas with Natural Constraints (ANC),
	  • support of agriculture for protection and improvement of the environment and
	  • other 3 measures for protection of agri-biodiversity
	• total budget of approx. 105 mil den, or 1.7 mil Euro.

Program for Animal Genetic Resources (AnGR) Protection (2011-2017)	Has been realized for the protection of animal genetic resources with an amount of up to almost 100,000 Euros last year. A new 7-year programme is being prepared.
National Plan for Organic Production (2013-2020)	Foresees support of primary agricultural production, targeting a 4% increase of organic production in plant and livestock. It also aims at interventions in the processing industry, trade, control, certification, education, science, policy and legislation.

Document	Provisions
National Strategy for Biodiversity with Action Plan (2004)	• gives a brief overview with the current situation of the biodiversity of the country with a special chapter devoted to agrobiodiversity. • The Strategy analyses the sources for the main threats and constraints related to biodiversity, and sectors influencing the current situation. • Main objective identified in the Strategy is to: to protect biodiversity and ensure its sustainable use for the welfare of the people, taking into account the unique natural values and rich traditions of the Republic of Macedonia, • Outlines 12 basic goals and 12 strategic principles. • In terms of agri-environment, the Strategy within its Strategic principle for sustainable use, foresees a measure for Improvement of methods for sustainable use of agrobiodiversity. Within this measure, the strategy foresees action for support of agri-environmental programmes through: • stimulation and development of organic farming, • cultivation and production of autochthonic medical and aromatic plants, • establishment of demonstration farms for traditional farming.
Draft Strategy for Biodiversity with Action Plan (2014)	• The strategy foresees a set of actions which can be considered as support to agri-environment, like: • incentives, including payment for ecosystem services, poverty reduction through sustainable use of biodiversity, • promotion and support incentives for biodiversity conservation, • promoting measures and practices for maintaining and improving environmental values of rural areas, • support for farmers who maintain indigenous species and crops, • support to the implementation of GAP and introduction of agri-environmental measures, • support for agricultural activity in ANC.

Table AII.5. The Strategic and programming documents of importance for agri-environment - Montenegro

Document	Provisions
Strategy for the Development of Agriculture and Rural Areas adopted for period 2015-2020	Sets up a framework and defines the priorities and a sustainable path for the development of agriculture and rural areas within the context of the aim to implement the EU model and concept of agriculture development with support to measures that are in line with the EU agricultural policy. Objective: long-term management of agricultural resources in a sustainable way, along with the preservation of the environment.
National Forest Strategy (2013)	Forests are managed multi-functionally according to contemporary standards, which means they are natural, healthy, vital and resistant to negative impacts, and they perform their ecological and other functions.
Strategy of Water Management of Montenegro (2017)	Defines the model of strategic water management planning. Water management should be based on the principle of water immunity as a resource and the conditions for the existence of water as a natural public good can be used only in a way that does not endanger its substance and does not exclude its natural role. Water management should be organized in such a way that quantity, quality and reliability of water are based on the maintenance of ecological functions from which the population depends, and which should be preserved so that the use of water does not jeopardize the sustainability of aquatic and associated ecological systems.
National Biodiversity Strategy for the period 2016-2020	Identified agrobiodiversity (plant and animal genetic resources) is a very important segment of the total Montenegrin biodiversity. Its preservation is defined through the second strategic target - multidisciplinary and multi-sector approach to biodiversity protection; and the fifth strategic target - creating preconditions and implementation of targeted measures for the protection of the most endangered parts of biodiversity.

Table AII.6. The Strategic and programming documents of importance for agri-environment – Serbia

Document	Provisions

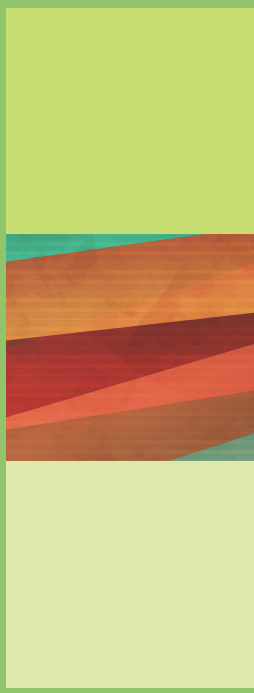
Strategy for Agriculture and Rural Development of the Republic of Serbia for the period 2014-2024. ("Official Gazette of the RS", No. 85/2014) 21	• The strategy pays special attention to the reforms that need to be implemented with the aim of encouraging sustainable agricultural practices, the application of laws and regulations for pollution prevention, land and water conservation, control of non-selective conversion of agricultural land for other purposes, and protection of forests and areas with high natural resources. Also, the Strategy includes, in particular, sustainable resource management and climate change.
	• Major problems determined:
	  • Fragmentation of acres, abandoned infrastructure, insufficient care of watercourses and forests, are just some of the manifestations of a decade-long investment neglect of agriculture
	  • Insufficient policy coordination, lack of legislation (ownership relations), lack of information and databases, and insufficiently defined competencies between individual bodies and organizations account for specific limitations in the area of protection and improvement of the state of natural resources.
	• The creation of conditions for the growth of agricultural holdings, i.e. better utilization of available agricultural land, is a delicate policy challenge in the coming period.
	• One of the established strategic development goals is sustainable resource management and environmental protection.
	• Operational goals related to the protection and improvement of the state of the environment include:
	  • protection of waters against the negative effects of agriculture; greater application of sustainable agricultural practices (application of agri-environmental measures and technology) that are environmentally friendly;
	  • establishing and promoting an integrated production system;
	  • improvement of integral pest management and
	  • organic production, system of control, certification and control of organic production;
	  • raising awareness about the importance of using renewable energy sources and production of energy crops;
	  • controlled waste and effluent management of primary agricultural production;
	  • development and improvement of the system for management of by-products of the food industry;
	  • conservation and sustainable management of plant and animal genetic resources;
	  • preservation of landscapes and agro-ecosystems, agricultural areas of high natural value and their resources.

National programme for Agriculture for the period 2018-2020 ("Official Gazette of the RS", No. 120/2017)	• An operational programme for implementation of agricultural policy, which contains measures classified as direct payments, measures for market regulation, as well as special subsidies and loan payment support in agriculture.
	• Measures aimed at general goals such as sustainable resource management and environmental protection include the following:
	  • payments for various types of organic agriculture:
	  • subsidies for suckler cows,
	  • subsidies for cows for breeding fattening calves,
	  • subsidies for breeding cattle, lambs, goats and pigs,
	  • subsidies for production of fish for consumption,
	  • subsidies for beehives,
	  • subsidies for implementation of breeding programmes for the achievement of breeding goals in livestock breeding.

Draft of the National programme for Rural development for the period 2018-2020	• includes a set of various agri-environmental measures under the group of rural development measures intended for environmental protection and sustainable rural development (measures such as compensation for incomes for: organic production, conservation for plant and animal genetic resources, agri-environmental measures, sustainable management of arable land, forestry-environmental measures etc.).

IPARD II programme 2014-2020	• includes a set of various agri-environmental measures under the group of rural development measures intended for environmental protection and sustainable rural development such as compensation for incomes for:
	  • organic production,
	  • conservation of plant and animal genetic resources,
	  • agri-environmental measures,
	  • sustainable management of arable land,
	  • forestry-environmental measures etc.

Document	Provisions
National Environmental Protection programme ("Official Gazette of the RS" No. 12/2010)	• Ensures and implements environmental planning and management. • Defines the objectives of environmental protection. • Among the priority goals of environmental protection in the economic sectors are the goals related to agriculture. Continuous goals 2010-2019: • assess the diffuse pollution of soil and water from agricultural land; • reduce the release of nutrients and other hazardous substances from point and diffuse sources and • identify areas vulnerable to water pollution by nitrates; • introduce a system of controlled use of fertilizers and plant protection products on agricultural land in order to reduce the impact on the environment; • improve the management of environmental protection in livestock farms and food factories; • develop organic agriculture; • suppress and prevent the spread of allergenic plants and weed plants; • improve the sustainable management system, especially in private forests; • develop modern monitoring of harmful and hazardous substances in soil, • silviculture and hunting, as well as allergenic plants (allergenic pollen) and weed plants; • implement measures for establishing a sustainable level of organic matter in the soil; • improve the management in the field of hunting and fishing and reduce their negative impact on biodiversity and protected natural goods; • explore the possibility of using natural geological raw materials to reduce the acidity of the soil; • protect high-quality agricultural ecosystems; • limit the conversion of high fertility agricultural land.
Biodiversity Strategy of the Republic of Serbia for the period 2011-2018 ("Official Gazette of the RS" No. 13/2011)	• Defines the objective to improve the integration of biodiversity concerns into all relevant sectors. • Activities to be undertaken in order to achieve the goals set in the agriculture and livestock sector are: • to develop a national strategy and programme for sustainable use, develop and conserve plant genetic resources and domestic animal genetic resources; • to develop a national programme for organic farming; • to establish an efficient national agri-environmental programme; • to develop and promote best practice guidelines for sustaining biodiversity for agriculture and support their implementation
The National Strategy for Sustainable Use of Natural Resources and Goods ("Official Gazette of the RS", No. 33/2012)	• Defines the main goals that include the goals related to agriculture. In Renewable Energy Sources - Framework for Sustainable Use, individual goals and measures refer to an increase of production and sustainable use of biomass. • The part Land Resources - Framework for Sustainable Use outlines the following goals for agriculture: • reduce the permanent loss of land to the lowest possible extent; • reduce the acidity of agricultural land; • maintain the humus content and prevent the loss of organic matter in agricultural land; • reduce the erosion of agricultural land; • prevent alkalization and / or secondary salinization of soil; recultivate the existing degraded land; • manage agricultural land; • support the development of organic agricultural production; • introduce and implement the Code of Good Agricultural Practice for sustainable land management.
Waste Management Strategy for the period 2010-2019 ("Official Gazette of the RS", No. 29/2010)	• The fundamental document that provides the conditions for rational and sustainable waste management in the Republic of Serbia. • The strategy defines the overall goal - developing a sustainable waste management system in order to reduce the environmental pollution and degradation of the area.



Part B:

National Reports

Chapter B1

AGRI-ENVIRONMENTAL POLICY IN ALBANIA

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B1.1 INTRODUCTION

Diplomatic relations between Albania and the European Economic Community were established in June 1991. In May 1992, the Agreement on Trade and Economic Cooperation was signed, which was followed by the signing of the Joint Political Declaration between Albania and the European Community. Albania became the first country in the region to sign such an agreement.

At the Zagreb Summit of November 2000, the Stabilization and Association Process for five countries of the South Eastern Europe, including Albania, was launched. The negotiations with Albania for the signing of the Stabilization and Association Agreement were officially opened in 2003.

On 28 April 2008, Albania submitted its membership application to the EU Council. On 10 November 2010, the European Commission published its Opinion on the application of Albania for membership, wherein 12 key priorities for opening the negotiations for EU membership were identified. In the Progress Report of 2012, the Commission recommended that the Council grant Albania the EU candidate status, subject to the fulfilment of the key measures in the areas of judiciary and reform of the public administration, and the completion of the review of the parliamentary Rules of Procedure. Albania was given EU candidate country status in 2014.

In November 2016, EC was recommended opening of the accession negotiations with Albania. During his visit to Albania, February 2018, the EC President Jean-Claude Juncker spoke positively about Albania's consistent progress and reforms towards EU accession and noted that if Albania maintained same pace of reforms, it would allow the Commission to recommend the start of negotiations.

Albania is a small European country covering an area of 28.748 square kilometres, and with a population of 3.4 million of inhabitants according to the national register (which includes emigrants). It is located in the Western part of the Balkan Peninsula, between 39°38' and 42°39' of North Latitude and 19°16' to 21°40' of East Latitude. Albania is bordered by Montenegro to the northwest, Kosovo* to the northeast, the Republic of Macedonia to the east, and Greece to the south and southeast. The country has a coastline on the northern shore of the Mediterranean Sea, the Adriatic Sea to the west and the Ionian Sea to the southwest where the Albanian Riviera begins. The Albanian borderline is 1094 km long in total, 316 km out of which -go along the sea, 73 km go along lakes, 48 km go along river banks, with the remainder being a 657 km-long terrestrial border.

According to the census of the Institute of Statistics, the population of Albania is 2,893,005[I]. During the period 1991 and 2004, roughly 900,000 people have migrated out of Albania, about 600,000 of them settling in Greece. The migration greatly affected Albania's internal population distribution. The population decreased mainly in the North and South of the country while it increased in the Tirana and Durrësi districts.

The process of transformation from a centralized economy to open market economy that is based on private property has developed intensively in Albania. The formal non-agricultural employment in the private sector more than doubled between 1999 and 2016 with much of this expansion powered by public and foreign investment and self-employment initiatives. With 14.7% (in 2016) Albania has the 4th lowest unemployment rate in the Balkans. Albania's largest trading partners are Italy, Greece, China, Spain, Kosovo* and the United States.

In 2015, Albania's GDP (current price) and GDP/capita, was respectively 10.218 Mln. EUR and 3547 Euro.

The report of import/export in 2016 was evaluated at 2.4:1. Foreign trade as % of GDP was 62.3%. Textile and footwear are goods that have been imported more, approximately 43.8 % of total export goods, while food, beverages and tobacco comprise up to 10.4% of the total exports of goods. The exports of vegetables and fruits have doubled over the first months of 2017. The exports of fish, seafood and marine products have also increased by 35%.

*This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

B1.2
AGRICULTURE IN ALBANIA

Although agriculture is no longer the dominant sector of the Albanian economy, it still contributes with approximately 20.1% to the GDP.[II] The government considers the agricultural sector to be of crucial importance for Albania's economic development and hopes to boost agricultural production by providing financial support to farmers and facilitating private investment in the agro processing sector. Over the last five years the government has allocated an average of 10 million USD annually to develop fruit and olive orchards, vineyards, greenhouses, and storage capacities as a direct support for rural development.

The budgetary support to agriculture in Albania is modest when compared to the agricultural sector's size, needs and contribution to the national economy as well as the support given in other Western Balkan countries and the EU for this sector.

After being granted the status of an EU candidate country in June 2014, Albania has made progress in the area of EU approximation of the agricultural sector and rural development, specifically through these following steps:

- Based on the Albanian National Strategy for Development and Integration, 2007–2013 (NSDI I). Later the NSDI II (2014–2020) was prepared. This Strategy strongly emphasises the sustainability element related to the management of natural resources, promoting diversified economic activity and also strengthening the capacities to improve living conditions. The Strategy also promotes the improvement of innovative techniques referring to agricultural products, by delivering different competencies to the responsible authorities. The strategic priority of the NSDI II (2014–2020) is to contribute to a fair development of all rural regions in Albania, to improve the quality of life in Albania's rural areas in a sustainable way and to reduce the poverty among the rural population.

- The crosscutting Inter–sector Strategy for Agriculture and Rural Development (ISARD) 2014-2020, was adopted. This document provides the legal basis for the national support schemes, which are set out in the **Strategic National Action Plan for Agriculture and Rural Development (SNAPARD)**.

The implementation of the Strategic Plan of Agriculture and Rural Development contributes to the achievement of the strategic national goals through: (i) support of economic growth in accordance with the principles of sustainable development, (ii) increasing the human resource potential, (iii) raising of incomes through by creating new jobs and (iv) improved social inclusion to ensure a higher quality of life.

The first phase of ISARD 2014-2020, which consists of starting the IPARD II Programme, is progressing. The IPARD II Programme was adopted by the Government of Albania (GoA) and approved by the European Commission (EC) in July 2015 and ratified by the Albanian Parliament in March 2016. The implementation of the IPARD II Programme, is planned to start during the first part of year, 2018.

Since 2007, EU, through the Instrument for Pre-accession Assistance (IPA) has supported Albania in order to fully prepare the country to take on the obligations of membership in the EU. The lack of access to finance is a key barrier to the growth of Agricultural SME enterprises. Research shows that the reasons for the low levels of agribusiness financing are closely interlinked to both the supply and demand side of stakeholders. Much progress has been made in narrowing this gap, but achieving the vision of total access by 2020 will require a holistic effort by the Government, the EU bodies, innovative business models and close collaboration between the private and public sectors, experts and agro-financing consulting organizations, transferring expertise for greater agro-development impact.

The agriculture policy is of multi-dimensional importance, from meeting the EU standards related to food security and agricultural practices to preparing the agricultural sector to withstand the competitive pressures of the upcoming membership in the single market. That implies that Albania's agricultural policy should comply with the EU CAP in order to achieve economically viable farming, improved food security and sustainable rural livelihood. As such, this emerging political set-up requires a new vision for policymaking as well as a new approach in designing the budgetary support measures for the agricultural sector.

The post-communist history of agriculture has witnessed a shift in production patterns towards a demand-driven model, with steep declines in industrial field crops (rice, cotton, wheat, tobacco) balanced by increases in livestock and associated forage crop production. Agro-processing (olive oil, flour milling) and horticulture

(olives, grapevine and fruit production) have also witnessed dynamic growth, more rapidly than the agriculture sector as a whole. Some of the causes of this resource reallocation between sub-sectors are the effects of trade liberalization, investments, changes at the institutional and infrastructure level, and rising domestic demand for food products. Such rises and falls in production of particular agricultural sub-sectors also reflect Albania's comparative advantages in climate, geography, and labour costs. However, both agriculture and agro-processing are facing significant challenges to achieve regional standards, particularly in the areas of institutional capacity, technology, skills and know-how, access to resources and quality of inputs and outputs.

Table B1.2.1 Key agricultural indicators

	2012	2015	2017
Share of Agricultural land in total land	41.8	40.9	40.8
Share of Arable Land in agricultural land	51.7	51.3	51.3
Share of Permanent Crops in agricultural land	6.9	8.7	8.8
Share of Agricultural GDP in total GDP	18.2	20.1	20.1
Share of Agricultural Labour in total Labour	46	41	40
Share of Agricultural Export in total Export	4.1	6.4	7.9
Share of Agricultural Import in total Import	12.6	13.4	12.7

Table B1.2.2 Land Use

	2016 (ha)	2016 in % of total land
Land Total	2875	100
Forest	1052	37.0
Agricultural land	1174	40.9
Arable land & gardens	603	20.9
Permanent crops (fruit, grapes, olives)	95	3.3
Pastures	478	16.6
Wooded pastures		
Agroforestry		
Fallow	647	225
Abandoned land		
Agricultural land/capita (ha)		**0.418**
Arable land & permanent crops/ capita (ha)		**0.242**

Table B1.2.3 Farm Structure, (source/year)

	MoARD (2012)	
	Number of holdings	Percentage of holdings
Total	321492	100
Up to 1 ha of UAA	215034	66.9%
Between 1 ha and 2 ha	76550	23.8%
Between 2 ha and 3 ha	20073	6.2%
Between 3 ha and 5 ha	6299	2.0%
Between 5 and 10 ha	1665	0.52%
10 ha of UAA and more	1871	0.58%

*UAA – Utilized Agricultural Area
*Source: www.instat.gov.al/en/themes/censuses/agriculture-census/#tab2 (2012)

Table B1.2.4 Agricultural production 2016

Crop Production (total)	Areas in ha	Production in t
Cereals	148000	698400
Oilseeds	1000	2700
Sugar beet	-	
Tobacco	1100	1800
Fruits	13935000 (number of trees)	261000
Olives	9608000 (number of trees)	99000
Vegetables	31200	1129000
Potatoes	9700	238300
Other crops	227400	6179400
Livestock (total)	**Heads Number**	**Number of farms**
Cattle	328097	159453
Sheep	1179540	39532
Goats	496102	21738
Pigs	73328	26092
Rabbits	36118	3871
Equidae	77245	71157
Poultry	10156943	210023
Beehives	123428	11769

*Source: www.instat.gov.al/en/themes/censuses/agriculture-census/#tab2 (2012)

B1.3 ENVIRONMENT AND ENVIRONMENTAL POLICY IN ALBANIA

Albania is part of the Mediterranean Alps and is characterised by a diversity of rock formations. The relief is mostly hilly and mountainous (more than 75% of the total area)[III]. It is rich with rivers, lakes, wetlands, groundwater, and seas. About 247 natural lakes, and a considerable number of artificial lakes, are located inside the country. Among the more important ones are the transboundary lakes of Shkodra, Ohrid, and Prespa, the largest ones in the Balkans. In the coastal area of Albania there are wetlands such as Karavasta, Narta, Patoku, Viluni, Kune-Vaini, Orikumi, and others, with a total area of 150 km^2.[IV]

Albania is divided into six river basins: the Drin Basin, the Mat Basin, the Ishmi and Erzen Basin, the Shkumbin Basin, the Seman Basin and the Vjosë Basin. A detailed description of the surface and groundwater situation and indicators was published by the Ministry of Environment in the Environment Status Report in 2014. The main factors affecting water pollution that are identified in the report are: the growth of urban centres and their increased industrialization, the discharge of urban, agricultural and industrial wastewaters without preliminary treatment; population density and human activities (including agricultural ones).

The soils of Albania are varied and create special zones according to the climate, flora, relief, etc. The coastal zone is mostly occupied by fertile alluvial soils, the sub mountainous zone in the centre is covered by hills with mainly flysch (sandstones and schists) and marls, while most of the eastern part of the country is covered by high mountain massifs mainly consisting of limestone.

There are four soil zones according to the altitude: 1) grey - brown soils, which occur at an altitude of up to 600 m and cover about 15 per cent of the country along the coastal area (of which 70 per cent are under crops); 2) brown mountainous soils, which occur in the interior of the country at altitudes from 600 to 1000 m, and cover 38 per cent of the total area (40 per cent of the arable land); 3) grey forest soils, which occur at altitudes from 1 000 to 1 800 m and cover 15 per cent of the total land area (of which 10 per cent is cultivated); and 4) mountain meadow soils, which occur at altitudes of 1 600 – 2 600 m and cover 10 per cent of the country area.[V]

Soil erosion is identified as a big problem in Albania. The Environmental Status Report data (2016) show that in nearly 167 646 ha (25%) of agricultural lands, the potential risk for erosion is medium, while in nearly 442 200 ha (75%) of lands, the potential risk is high. The main factors causing erosion are the natural conditions (climate, altitude, mountainous terrain, rainfall and bare slopes) and human activities such as deforestation, irrigation, overgrazing, topography modifications, field and forest fires and lack of proper measures against erosion.

Due to the widely applied practice of burning stubble fields, the soil organic matter in arable land is being depleted. Inadequate farming techniques, non-application of crop rotation, decreased soil cultivation, low and unbalanced use of organic and mineral fertilisers and the use of ineffective measures for plant protection also contribute to the continuous degradation of agricultural land.

Climate and climate change

Albania lies between two climatic areas: the Mediterranean coastal zone and the Continental internal zone. The geographical position determines the inclusion of the territory in the subtropical Mediterranean climate, with a soft and wet winter, hot and dry summer and with precipitations concentrated mainly in the second half of the year. Based on the climatic conditions and topography, three agro-ecological zones are distinguished in Albania which have similarities with the four climatic zones. The lowland zone is along the Adriatic Sea, where most of the crops can be cultivated, and irrigation is needed during the summer period. The hill zone is between the lowland and mountain zones, where field crops and fruit trees are grown as well as forests and shrubs. The mountain zone with warm summers and cold winters with considerable snow and frost, where grasslands and forests dominate, but cereals (wheat, barley and rye) and fruits (plums, apples, etc.) could be grown.

Albania is very vulnerable to climate change due to the high exposure to extreme weather (drought, hot spells, flooding), high sensitivity (great reliance on hydropower, irrigation and large share of population living in low elevation coastal zones). This, combined with the low adaptive capacity due to the low GDP per capita and limited institutional capacity, may exacerbate the effect on water resources, energy production, tourism, ecosystems, agriculture and coastal zones.[VI]

The future climate scenario for Albania predicts changes, such as: increased temperatures, prolonged droughts, increased risks of flood landslides and fires, decreased precipitation and reduction of water resources and increased pests and diseases on arable land with a negative impact on agriculture, forests and biodiversity. [VII] [VIII] The impacts of climate change on the agricultural sector are expected to be mixed – with an increase in the production of wheat and alfalfa and a reduction in grapes, olives and livestock. Albania has addressed mitigation and adaptation through the National Climate Change Strategy, which consists of a set of priorities for action in order to integrate the climate change concerns into the other economic development plans.[IX]

However, the integration of the climate change issues in the sectorial policies remains a challenge and the following obstacles should be overcome: i) lack of legal framework to adapt to these challenges, preventing the implementation of long-term sustainable measures; ii) lack of institutional capacities to evaluate the impacts of climate changes and subsequently to apply this information to find feasible solutions to sustainable development.[X]

In terms of legislation, Albania ratified the Vienna Convention and Montreal Protocol in October 1999, and has been a member of the Framework Convention of United Nations on Climate Changes (UNFCCC) since January 1995 and the Kyoto Protocol since 2005. Albania has prepared three National Communications of UNFCCC, in 2002, 2009 and 2016. Furthermore, in 2015 Albania approved the INDC documents with DCM no. 762, dated 16.09.2015 "On the approval of the national contribution aimed at UNFCCC", and has submitted it to the UNFCCC Secretariat on 24.09.2015. After the approval of Paris Agreement in New York on 22.04.2016, the Albanian Parliament ratified it with Law no. 75, dated 14.07.2016 "On the Ratification of the Paris Agreement".

Commitments to reduce GHG emissions are included in the INDC document and aim at a reduction by 11.5% of GHG until 2030. This national objective has also been included in the National Strategy for Development and Integration. To address the inter-sectorial issues related to climatic changes, the Inter-ministerial Working Group on Climatic Changes was established by the Prime Minister with Order no. 155, dated 25.04.2014.

In July 2016, a National Plan for Adaptation to Climatic Changes was approved which has integrated the climatic changes in respective sectorial policies and strategies. Currently, the strategy to fund the National Plan is being drafted. Adaptation to climatic changes is being integrated into strategic documents like (i) the National Strategy for Development and Integration, (ii) the National Strategy for Management of Water Sources, (iii) the Strategy for Agriculture and Rural Development, (iv) the National General Territory Plan, as well as (v) the Integrated Inter-sectorial Plan for the Coast. The Strategy for Climatic Changes, in line with the political framework for Climate and Energy EU 2030, has been drafted and is under approval.

The latest data on the share of agriculture in GHG emissions is that of 2005 with 15.83% out of 8863.3 Gg CO_2 equivalent. Methane represents 78 % of this share mainly due to the enteric fermentation of livestock. About 95 % of this methane from farms is emitted by cattle (73 %) and sheep (16 %) and the remainder comes from manure management.[XI]

Biodiversity

Albania has a high diversity of ecosystems and habitats such as marine and coastal ecosystems, wetlands, river deltas, sand dunes, lakes, rivers, Mediterranean shrubs, broadleaf, coniferous and mixed forests, alpine and subalpine pastures and meadows, and high mountain ecosystems with rich variety of plants and animal species. In Albania, there are around 3,200 species of vascular plants and 756 vertebrate species. Approximately 30% of all European flora species occur in Albania. There are 27 endemic and 160 subendemic species of vascular plants, which have a special protection importance for the country.[XII] The high mountain forests in Albania maintain the communities of large mammals such as wolf, bear, lynx, and wild goat, as well as the characteristic bird communities associated with virgin forests.

The primary reason for habitat loss and degradation is deforestation in high mountain areas and desertification of arable land. The conversion of agricultural arable land for housing construction as well as the destruction of pastures and meadows leads to habitat changes and degradation. Negative impacts on biodiversity have been identified in the coastal area too, with main contributing factors being the excessive flooding of large areas and erosion, discharge of untreated waste waters in rivers and illegal and uncontrolled hunting.

The Biodiversity Strategy for 2015-2020 in Albania focuses on the sustainable use of genetic diversity for food and agriculture in Albania. The proposed actions are: (1) primarily conservation of species of local varieties of animals and plants, and (2) improvement of the development of adequate gene banks useful for ex-situ conservation of genetic resources.

Environment protection and protected areas

The protected areas in Albania cover almost 16% of the country's territory (460,061 ha in 2015). The system consists primarily of 15 national parks, several managed natural reserves and protected landscapes that shelter the greatest natural and biodiversity values of the country. This large network is complemented with the Regional Protected Areas, which are established and managed by local authorities.

During the last 20 years, protected areas have not been integrated properly into the national and local development policies so that they could become part of the economic development of the regions and the country. Recently, efforts have been made to strengthen the nature protection legislation and to build the capacity for management of protected areas. With the support of the EU and other donor projects, the management plans of priority protected areas have been elaborated. In the beginning of 2015, the National Agency of Protected Areas (NAPA) was established, with a General Directorate in Tirana and 12 regional Directorates. However, law enforcement remains weak and the management practices of protected areas are not in line with the EU standards. The performance of the administration is constrained by insufficient human resources and funding, lack of basic equipment and infrastructure. The NAPA is implementing a strategy for improvement of the management of protected areas according to the requirements and international standards and the experience of European countries, providing for both nature conservation and sustainable use of natural resources.

Natura 2000-Emerald sites

The alignment of the national legislation with Natura 2000 Directives started in 2008. The future Natura 2000 network will be based on the network of Emerald sites, 25 of which have already been identified.

Other designated areas

Important Bird Areas (IBAs). Albania is a globally important country for bird preservation. Migrating birds follow the Adriatic Flyway across the East Adriatic Coast where Albania offers several valuable resting and feedings sites, the majority of which are designated as Important Bird Areas.

There are 10 IBAs in Albania ranging from 800 ha to 14000 ha. The largest IBAs are the inland transnational lakes – Shkodra, Ohrid and Prespa. All the rest are located on the Adriatic Coast.

Important Plant Areas (IPAs). Overall, there are 45 Important Plant Areas in Albania, 15 of which are transboundary sites.

The main challenges for the future include preparation for the designation of the Natura 2000 network in Albania, implementation of the approved management plans of protected areas, strengthening the law enforcement, capacity building of the administrative staff of the protected areas, appointing administrations and control bodies for the conservation of wild flora and fauna.[XIII]

B1.4 AGRI-ENVIRONMENTAL STATE IN ALBANIA

Agriculture, as an economic activity, is not neutral in relation to the natural environment because, through centuries, it has been developing and thus shaping the natural environment. Across Albania, the relative importance accorded to the beneficial and harmful environmental effects of agriculture is often related to the density of population and the pressure of population on agricultural land use and water supplies.[XIV]

Nowadays, Albanian agriculture continues to face problems that are characteristic for the period of its consolidation, based on an improving legislation and a new agricultural strategy. Apart from the gradual change of the crop structure, as well as the demand for agricultural products which is different from previously, agriculture is also faced with concerns and interventions related to the environment.[XV] The agricultural policy in Albania still lacks the necessary variety of policy measures which will address the environmental concerns and the development of indicators to track the state and trends of environmental conditions in agriculture.[XVI]

B1.4.1 Agri-environment in the national strategic and programme documents

Biodiversity Strategy 2015-2020

The Biodiversity Strategy 2015 – 2020 is the main policy document on biodiversity for the 2015 – 2020 period. The Strategy defines the main priorities for preserving biodiversity and habitats, through their identification and designation as protected areas, and through protection of species in and outside the protected areas. The strategic document has six main objectives for biodiversity conservation.

Intra–sectoral environmental strategy 2015–2020

The Intra–sectorial environmental strategy for the period 2015-2020 sets the objectives for protection of the environment and natural resources until 2020 and the different ways and measures to achieve them. In the field of protection of nature and biodiversity, the sub-sectorial objectives are:

- Addressing the root causes of biodiversity loss by integrating biodiversity issues in cross–sectorial and social contexts;
- Reduction of the direct pressure on biodiversity and promotion of its sustainable use;
- Improving the status of biodiversity through the conservation of ecosystems, habitats and species and genetic diversity;
- Extending biodiversity ecosystems services;
- Implementation of participatory planning and comprehensive capacity building and management.

Inter–sectoral strategy for agriculture and rural development 2014–2020 (ISARD)

ISARD provides the framework for the operational interventions needed to develop a viable and competitive agricultural and food processing sector and to foster a balanced economic development in rural areas, paving the way for integration of the agricultural and agro-processing sector in the EU as a basis for the increasing standards of living in rural areas and thus reducing poverty. The ISARD is thus a further development of the initiatives taken by MAFCP under the strategies for agriculture and rural development 2007–2013 with cross-linkages to other sectors touching on agriculture and rural development.

Table B1.4.1.1. Synthesis of the SWOT related IPA II agriculture and rural development objectives

Strengths	Weaknesses
• High diversity and attractiveness of landscape and nature, rich biodiversity; • Very good natural conditions/early season production / long cropping season for fruits and vegetables; • Emerging experience in modern production techniques; • Strong preference of consumers for domestic products; • Good potential for renewable energy production; • Some capacity for elaboration and implementation of local development strategies created;	• Small-scale, subsistence-oriented farming; • Unsustainable land management and farming practices resulting in land degradation and soil erosion, water and air pollution and biodiversity loss; • Outdated technologies, lack of on-farm mechanisation; • Underdeveloped food safety and waste management systems and infrastructure in the agri-food sector; • Low enforcement of environmental, food safety and animal welfare standards; • Weak horizontal and vertical links along the food value chain; • High informality and unfair competition from operations in the informal sector; • High dependence on agriculture as a source of income and employment in rural areas; • Low demand for labour/limited job opportunities in rural areas; • Exodus of the young generation from rural areas; • Lack of traditions for cooperation and community involvement at local level; • Underdeveloped rural infrastructure, roads, communication lines, business services; • Deteriorating quality of services to rural population (health, education, social services);
Opportunities	**Threats**
• Improving access to EU markets; • Opportunities to obtain external expertise through diverse donor support and contacts with the EU partners. • Growing awareness about benefits of healthy food and protection of the environment; • Increasing demand for alternative tourism - rural, adventurous tourism and "green" tourism;	• Climate change with negative impact on agriculture, forests and biodiversity; • Slowdown of economic growth in Albania and major markets, affecting demand; • Consolidation of food distribution, favouring large producers and imported products;

The specific objective for restoring, preserving and enhancing ecosystems dependent on agriculture and forestry is to achieve sustainable management of natural resources and climate action by forest and water resource management, and the introduction of agricultural production methods protecting the environment and mitigating the impact on the climate. The intention is to gradually introduce EU policies and approaches for management of natural resources and climate action with a specific focus on sustainable use of land, forest and water resources and waste management in the short term.

IPARD II programme 2014 – 2020

The improvement of management of natural resources and resource efficiency is identified as a need in the IPARD II Programme that will ensure environmental sustainability and will benefit from emerging market opportunities. The need to reverse the trend of degradation of the natural environment (soil erosion, water pollution and biodiversity loss) due to unsustainable land management and farming practices is planned to be addressed by the programme. One of the measures to achieve this is the Agri-environment-climate and organic farming (OF) measure. The strategy plans to apply the measure for pilot operations in order to build the capacity for management and control of agri-environmental interventions implemented under the Rural Development Programmes in the member states. In line with the IPARD strategy, the measure will target land and soil quality protection and biodiversity preservation, simultaneously bringing benefits to water and air quality. The indicative budget allocation to this measure is EUR 1.7 million. Taking into account the underdeveloped capacity to implement area-based interventions, the Agri-environment-climate and organic farming measure is programmed to start to be implemented in 2019. In the end-of-year 2018 review of the IPARD measures with DG-Agri, there is a political intention to allocate 3 – 4 million EUR to directly fund the agri-environment-climate and organic farming measure. For the time being, applicants under other measures that include organic products, receive more points compared to conventional products.

Table B1.4.1.2. Budget breakdown by measure 2014-2020

Measures	Total public aid (EUR)	Private contribution (EUR)	Total expenditures (EUR)
Investments in physical assets of agricultural holdings	41,866,667	23,550,000	65, 416,667
Investments in physical assets concerning processing and marketing of agricultural and fishery products	35,333,333	35,333,333	70,666,667
Agri-environment-climate and organic farming measure	-	-	-
Implementation of local development strategies – LEADER approach	-	-	-
Farm diversification and business development	14,666,667	7,897,436	22,564,103
Technical assistance	2,470,588		2,470,588
Advisory services	-	-	-
Total	**94,337,255**	**66,780,769**	**161,118,024**

Description of the operating structure (Managing Authority and IPARD Agency) and their main functions

The **Operating Structure** is responsible for the management and implementation of the IPARD II Programme in accordance with the principle of sound financial management. The Operating Structure designated for the IPARD II Programme consists of the following separate authorities operating in close cooperation:

- the *Managing Authority* is responsible for the management of the IPARD II Programme and is in charge of programming, including the selection of measures under each call for applications and their timing, publicity, coordination, monitoring, evaluation and reporting;
- the *IPA Rural Development Agency (IPARD Agency)* is in charge of publicity, selection of projects, authorisation, control and accounting of commitments and payments and execution of payments, debt management and internal audit.

The **Managing Authority(MA)** is the **Directorate for Programing and Evaluation of Rural Policy** (DPERP) within MARDWA, which is responsible for managing the IPARD II programme in an efficient, effective and correct manner within the scope of the responsibilities defined in the Sectoral Agreement.

The formal designation of the Managing Authority was done by Order No. 108/16.04.2013 of MARDWA. The Director of the DPERP was appointed Head of MA with Order No. 108/16.04.2013.

Functions of the Managing Authority and the IPARD Agency specified in the Sectorial Agreement

General Functions	Specific Functions	IPARD Agency	Managing Authority
Managing functions	Selection of measures		✔
	Programme monitoring		✔
	Evaluation		✔
	Reporting	✔	✔
	Coordination		✔
Paying functions	Authorisation & control of commitments	✔	
	Authorisation & control of payments	✔	
	Execution of payments	✔	
	Accounting for commitment and payment	✔	
	Debt management	✔	
Implementing functions	Selection of projects	✔	
	Publicity	✔	✔
Audit functions	Internal audit	✔	

The MA has the following specific functions and responsibilities:

Selection of measures

- Drafting the IPARD II Programme and any amendments to it, including those requested by the Commission;
- Defining in the IPARD II programme the controllability and verifiability of the measures in cooperation with the IPARD Agency; regular review of the controllability and verifiability;
- Selection of measures under each call for applications and their timing, the eligibility conditions and the financial allocation per measure, per call. These decisions shall be made in agreement with the IPARD Agency;
- Annually drafting an Action plan for the intended operations under the Technical assistance measure, which shall be submitted to the IPARD II MC for agreement.
- Drafting amendments to the IPARD II Programme to the Commission with a copy to NIPAC, after consultations with the IPARD Agency, and following the approval of the IPARD II Monitoring Committee (MC);
- Ensuring that the relevant authorities are informed of the need to make appropriate administrative changes when such changes are required following a decision by the Commission to amend the IPARD II Programme;
- Ensuring that the appropriate national legal basis for IPARD implementation is in place and updated as necessary;

Programme monitoring

Setting up a system to gather monitoring and context related data on the progress of the IPARD II programme and conducting analysis of the collected data; as further detailed in Section 11.2.

Evaluation

Organising the Programme evaluations to improve the quality, effectiveness and consistency of the assistance, as further detailed in Section 11.2, including preparation of an Evaluation Plan, reporting to the IPARD II MC and to the Commission on the progress made in implementing this plan.

Publicity

Drafting a coherent *Plan of Visibility and Communication* activities in consultation with the Commission and the IPARD II MC, and reporting on its implementation to IPARD II MC, IPA II MC and the Commission, as further detailed in Section 15.

Coordination

Assisting the work of the IPARD II MC by providing the documents necessary for monitoring the quality and effectiveness of the implementation of the IPARD II Programme, as further detailed in Section 11.2.

Reporting

Reporting on IPARD II implementation, by preparing Annual and Final implementation reports in consultation with the IPARD Agency, as further detailed in Section 11.2.

The **Agriculture and Rural Development Agency** (ARDA), designated as **IPARD Agency** by Order No. 108/16.04.2013 of MARDWA, was established under the provisions of the *Law on Agriculture and Rural Development* (No 9817/22.10.2007) with the Council of Ministers Decision (CoMD) No. 1443/31.10.2008 and is an independent public body, operating under the direct responsibility of the Minister of MARDWA.

The organisational structure and staffing of IPARD Agency have been aligned with the requirements of the Sectoral Agreement. The organogram of the IPARD Agency is attached in Annex 6 to the Programme.

The IPARD Agency is responsible for the implementation of the IPARD II programme in accordance with the principles of sound financial management. The IPARD Agency has the following specific functions and responsibilities:

Selection of projects

Selecting projects to be implemented in accordance with the criteria and procedures applicable to the IPARD II Programme and complying with the relevant Union and National rules;

Laying down contractual obligations with the recipients in writing, incl. information on possible sanctions in the event of non-compliance with those obligations;

Publicity

Making calls for applications and publicising terms and conditions for eligibility, upon consultation with the MA;

Ensuring IPARD II Programme publicity and visibility through: publication of a list of final beneficiaries; informing recipients of the Union contribution to the projects; guaranteeing that adequate publicity is given by the recipients to the Union co-financing for the respective projects (further detailed in Section 15);

Authorisation and control of commitments and payments

Establish that the applications for approval of operations and subsequent amount to be paid are eligible for the assistance claimed, through administrative and, where appropriate, on-the-spot controls, in particular those concerning the regularity and legality of the expenditure;

Execution of payments:

Issuing an instruction to pay the authorised amount to the claimant (or their assignee(s));

Accounting for commitment and payment:

Recording of all commitments and payments in the separate books of accounts for IPARD II expenditure and the preparation of periodic summaries of expenditure, including the expenditure declarations to the European Commission. The books of account shall also record the assets financed by the IPARD II funds, in particular concerning un-cleared debtors;

Debt management

Setting a system in place for the recognition of all amounts due and for the recording in a debtors' ledger of all such debts, including irregularities, prior to their receipt;

Internal audit

Ensuring that regular specific activities are carried out to provide higher management with independent review of the subordinate systems;

Other

Carrying out follow-up actions to ensure progress of projects being implemented;

Reporting on progress in the implementation of measures against indicators;

Setting up, maintaining and regularly updating the Programme information system;

Irregularity reporting

Ensuring irregularity reporting

The roles, functions and division of responsibilities of the bodies of the IPARD Operating structure are detailed in the Memorandum of Understanding of the MA and the IPARD Agency, which sets out the rules for co-ordination of the management and implementation of the IPARD Programme, including reporting and deadlines.

The European Commission considers a positive opinion for entrustment and that the structures and procedures set up for IPARD II fulfil the minimum conditions, referred to in art 13(4) of the Framework Agreement (FwA), as complemented by the Sectoral Agreement (SA).

Consequently, entrustment of budget implementation tasks for the IPARD II measure (1),(3) and (7) can be granted by means of concluding a Financing Agreement with Albania in accordance with the provisions of Article 13 of the Commission Implementing Regulation (EU) No. 447/2014, Articles 60(1) and (2), 61 and point (b) of Article 184(2) of Regulation (EU, Euratom) No. 966/2012 and provided that any other conditions are fulfilled for the conclusion of such an Agreement.

Monitoring system

The core indicators for monitoring of the implementation of the IPARD II Programme are defined in the IPARD II Programme and quantified. Each technical Measure Fische has an already developed set of indicators which have been approved by EC with the approval of the IPARD II Programme as of 21/07/2015. In addition, for the needs of the analysis and monitoring of the different aspects of an intervention, detailed monitoring indicators for each measure are developed and the way they are gathered is explained under the Manual of Procedures of Managing EBIT Package. Furthermore, the detailed information on monitoring indicators list is included in the DG Agri Guidelines on common indicators for monitoring and evaluation of IPARD II Programmes 2014-2020, based on which a Document Management System (IPARD DMS Software) was established during 2016. Following up on all of the above, and as referred to in Manual of Procedure (MoP for Monitoring, Evaluation and Reporting, a procedure for gathering/collecting the information is already developed and included in the referenced MoP.

The Managing Authority, acting as Secretariat of the IPARD II Monitoring Committee, shall present the results of the functioning of the monitoring system to the IPARD II Monitoring Committee. Semi-annual monitoring progress reports shall be presented at the autumn meeting of the IPARD II MC, while the annual monitoring progress reports shall be presented at the spring meeting for the previous year as part of the Annual Implementation Report. The Managing Authority shall make available the results of the monitoring process to the stakeholders. The Annual Monitoring Report shall be published regularly (on annual basis) after its approval by the IPARD II Monitoring Committee, on the web site or in any other type of publication.

The Annual Monitoring Report shall become an integrated part of the Annual Implementation Report of the IPARD II Programme, as described in the Operating Procedure - REP-Reporting of the IPARD Programme, which shall be delivered to the Commission before the 30th of June each year for the previous year. The Annual Monitoring Report shall be presented at the Evaluation Steering Group meetings. The employees of MA (Sector for Monitoring (SM)) elaborate summary tables, analyse and prepare reports. On a quarterly basis SM generates a table on the progress in application, payment and contracting. Semi-annually and Annually SM generates summary tables, according to the Common Monitoring Tables in the DG Agri Guidelines. The Tables are used for the preparation of the annual monitoring report and annexed to the report. The monitoring report contains the description and analysis of the data on the core monitoring indicators. The Managing Authority shall consult the IPARD Agency on the content of the Annual Monitoring Report by sending the Annual Monitoring Report to the IPARD Agency. The IPARD Agency shall submit comments on the Annual Monitoring Report no later than 10 working days after receiving the Annual Monitoring Report from the Managing Authority.

The IPARD Agency enters data from the monitoring forms/application forms in its information system – monitoring data base. The IPARD Agency validates the data entered. As stated in the Memorandum of Understanding between the MA and the IPARD Agency, the IPARD Agency submits to the MA Monitoring tables containing specified fields. The data is provided on a quarterly basis - not later than the 10 of the month for the previous month, on semi-annual basis (not

later than) and on annual basis – not later than the end of February each year for the previous year. In case errors are found, the IPARD Agency is obliged to correct the errors and submit corrections to the Managing Authority within 2 working days after the errors are spotted.

B1.4.2 Institutional and Legal Settings

The institution responsible for the agri-environment policy and measures is the Ministry of Agriculture and Rural Development (MARD) and the related institutions, like the National Food Authority, the Seed and Seedling Authority. However, there is no unit or official working exclusively on agri-environment policy and measures. Another department within MARD is the Department of Food Safety and the Sector of Plant Protection and Livestock. A series of indicators are measured by the Ministry of Tourism and Environment and the agencies related to these ministries. The Agricultural University of Tirana is involved through monitoring of some of the indicators by the Agri-environmental Laboratory, the Plant Protection Laboratory and the Centre for Genetic Resources.

The legal base for development of the agro environment policies as an important part of the sustainable development policies is included in the Constitution of the Republic of Albania, which has a specific article on the subject. The article states that "the State …*aims at d) a healthy environment and ecologically sustainable environment for the present and future generations, h) a rational use of the forests, waters, pastures, and of the other natural resources based on sustainable development"* (Albanian Constitution, Chapter V, Article 59).

Albania has adopted a good Legislative Corpus on Environment, Agriculture, Animal Production and Rural Sustainable Development. All the new laws approved in Albania, especially in more recent years, are the result of the direct transposition of the respective EU Directives. A list of laws related to the agri-environment is provided below. For a complete list of laws in the field of environment, agriculture, animal production and rural development see Annex 2:

1. Law no. 9817/2007 "On agriculture and rural development", Official Journal no. 147/2007;
2. Law no. 9244/2004 "On the protection of the agricultural land", Official Journal no. 49/2004, (as amended by Law no. 69/2013, Law no. 131/2014);
3. Law 8752 dated 26.03.2001 "On establishment and functioning of the structures for protection of agricultural land", Official Journal no. 14/2001, (as amended by Law no. 9244/2004; Law no. 10257/2010; Law no. 16/2012; Law no. 130/2014);
4. Law no. 9426/2005 "On livestock management", Official Journal no. 78/2005 (as amended by Law no. 9864/2008; Law no. 10137/2009; Law no. 72/2013);
5. Law no. 10448/2011 "On environmental protection", Official Journal no. 89/2011, (as amended by Law no. 31/2013, Amended by law no. 44/2013; Amended by law no.60/2014. The main EU Environmental Directives were fully transposed.
6. Law No. 10440/2011 "On the environmental impact assessment", Official Journal no. 101/2011, Amended by law no. 12/2015; EU Directives in this field were transposed.
7. Law no. 10463/2011 "On the integrated management of waste", Official Journal 148/2011, (as amended by Law no. 32/2013; Law no. 156/2013);
8. Law no.10465/2011, "On veterinary service in the Republic of Albania", Official Journal no. 143/2011, (as amended by Law no. 70/2013);
9. Law no. 9115/2003, "For the environmental treatment of polluted waters", Official Journal no. 78/2003, (as amended by Law no. 10448/2011; Law no. 34/2013);
10. Law no. 10448/2011 "On environmental permits", Official Journal no. 105/2011 (as amended by Law no. 44/2013; Law no. 60/2014);

11. Law no. 111/2012, "On integrated management of water resources", Official Journal 157/2012;
12. Law no. 106/2016 "For biological production, labelling of biological products and their control"
13. DCM no.1708/2008 "On the implementation of the programs for in-situ protection of autochthone ruminants", Official Journal no. 208/2008;
14. Order of the Minister no. 4/2008 approving the Regulation "On minimal standards for the breeding of house animals (cattle, calves);
15. Order of the Minister no.3/2008 approving the Regulation "On certification of the pure breed species of cattle, sheep, goat, horse, pure breed and hybrid pig and their sperm, ovules and embryo";
16. Minister Instruction no. 3, Date 30.04.2009 On Animal Health Regulations Regarding the Production, Processing, Distribution and Import of Products of Animal Origin for Human Consumption
17. Order of the Minister no. 2/2008 approving of the Regulation "On reproduction of farm animals and production and marketing of pedigree material"
18. Order of the Minister no. 363/2013 "On the procedures for the establishment of residue limits of pharmacologically active substances in foodstuffs of animal origin" (Reg. no 470/2009/ EC of 6 May 2009, Reg. 2006/1055/EC, Reg. of 12 July 2006, 2006/1231/EC of 16 August 2006, Reg.2006/1451/EC of 29 September 2006);
19. Law no. 9108/2003, "On the chemical substances and preparations", Official Journal no. 66/203, (as amended by Law no. 10137/2009; Law no. 33/2012);
20. Law no. 10390/2011 "On fertilizers used for plants", Official Journal no. 31/2011, (as amended by Law. no 64/2013);
21. Law no. 9362/2005, "On the plant protection service", Official Journal no. 29/2005, (as amended by Law no. 9908/2008; Law no. 10137/2009; Law no. 71/2013, as amended by law no.105/2016));
22. DCM no. 774/2012, "On the production requirements, labelling, packing and marketing, as well as tolerance and list of types of fertilizers named "EC fertilizers";
23. DCM no. 260/2013, "On the establishment of rules for the control, sampling, analysis and procedures, communication of results for the fertilizers analysis", Official Journal no. 57/2013;
24. DCM No. 612/2011, "On the establishment of the detailed requirements for fertilizers based on ammonium nitrate containing 28% nitrogen", Official Journal no. 139/2011;
25. DCM no.1188/2008 "On approval of rules for importation, trading, transport, storing, using and elimination of plant protection products", Official Journal no. 141/2008, (as amended by DCM no. 462/2012);
26. DCM no. 1555/2008 "On the approval of the rules on registration and evaluation criteria of plant protection products", Official Journal no. 183/2008, (as amended by DCM no. 791/2012, as amended by DCM no.32/2016);

- The "Law on Biodiversity Conservation" was approved in 2006. The Law on Biodiversity Protection established the legal basis for the conservation and sustainable use of biodiversity and for achieving the targets of the Convention on Biological Diversity.

B1.4.3 Agri-environmental policy

The integration of agricultural and environmental policies is a way to achieve sustainable development of rural areas.[XVII] In Albania, the environmental and agricultural policies require better integration, whereas in Europe these policies have started to be integrated since the mid-seventies and with the beginning of the sectorial policies in the eighties with the example of Common Agriculture Policy, which has absorbed some environmental goals and instruments into market regimes and structural activities since 1975.

The active role of governments and societies in the form of adequate policies is essential to the sustainable development of agriculture and rural areas. The multifunctional character of farms and agriculture underlined in the European Union is in line with the requirement of rural development in Albania.

According to the legal framework – the agricultural production should be developed by respecting the following principles:

- Conservation, management and development of natural soil fertility, soil stability and biological diversity in the soil, preventing and combating erosion, compaction of soil and plant nutrition primarily through the soil ecosystem;
- Reduction in the use of non-renewable resources and off-farm inputs;
- Recycling of waste and by-products of plant and animal origin as input in plant production;
- Taking account of the local or regional ecological balance in making decisions on production.

According to the Albanian current legislative framework the basic principles for environmental protection are:

- principle of sustainable development
- principle of care
- principle of prevention
- principle of "polluter pays"
- principle of legal responsibility
- principle of high-level protection
- principle of integrating environmental protection into sectorial policies
- principle of awareness and participation of the public in environmental decision-making
- principle of transparency

The agri–environmental policy is emphasised in several strategic documents listed below:

- Cross-cutting Strategy for Agriculture and Rural Development, 2014–2020
- The National Strategy for Development and Integration 2014–2020, the Medium Term Budget programme and the sectorial, subsectorial and crosscutting strategies
- National Strategy and Action Plan for Conservation and use of Farm Animal Genetic Resources
- The Environmental Cross-Cutting Strategy
- Integrated Waste Management Strategy (draft), 2018–2033

Some specific references from these documents are quoted below:

a) In the **Cross-cutting Strategy for Agriculture and Rural Development, 2014 – 2020** it is emphasized that:

…attention should be paid to adopting environmental friendly practices, given that Albania should support intensive subsectors that often have adverse environmental impacts, such as animal production…

….waste management is a serious concern. ... the major environmental problem in Albania is the lack of recycling plants. There is a strong need to improve the environmental protection by building recycling facilities... and facilities for used water in slaughterhouses and fat separation equipment at meat processing units.

…there is a significant need for the implementation of legislation regarding the collection and management of animal waste…

b) In the **National Strategy for Integrated waste management (draft), 2018–2033** it is emphasized that:

From animal production activities, considerable residues are produced in the form of excrements which, together with straw and other wastes, form organic manure. About 1.89 million tonnes of livestock remains were produced in 2015 in Albania. It is estimated that half of that amount is used as organic fertilizer in agriculture, a negligible amount used in the production of energy (in the form of biogas).

In 2016, the remains of animals from slaughterhouses, processing and storage facilities of meat, milk, eggs, fish, etc. were estimated at about 1.99 thousand tons. All this amount of organic waste is not administered. Often, it are distributed in the environment, run into rivers or in the municipal landfills.

B1.4.4 Agri-environmental measures in place

There are no agri-environmental measures in place in Albania yet, but the main draft measures related to agri-environment have been formulated. The review of the strategic documents shows that there is understanding and interest to develop and implement the pilot AE-climate and OF measure in IPARD II and the first steps were taken for the elaboration of this measure.

The strategic documents address the integration of biodiversity conservation goals in agricultural policy. The main needs identified for the agri-environment support, address the threats for biodiversity, landscape and sustainable use of natural resources, conservation of the genetic resources and the opportunities for the development of the organic farming sector. However, it is very important that the strategic objectives and the needs do not remain only on paper.

Specific focus, in the short term, will be given to developing organic farming and agricultural activities reducing the pressure on the environment, soil erosion and water pollution. In the medium term, the focus will be increasingly on integration of EU policies by including measures on restoring and preserving biodiversity, observation of Natura 2000 requirements and high nature value farming and improving water and soil management.

Efforts for recognition of the importance of the AE-climate and OF measure are still to be made by the IPARD II Managing authority. Currently, there is no formal working group (WG) set up for further elaboration of the AE-climate and OF.

Two national "agri-environment" – like schemes are currently implemented with national support schemes:

- Production of organic products and certification of organic (bio) products. The scheme supports the certification of organic farms. However, the support is fixed at approximately 500 EUR per farm without taking into account the farm size. The discussions with the stakeholders reveal that this support is not enough for the development of organic farming. The support should correspond to the size of the farm and the activities undertaken.
- Additional support is provided for planting local (autochthonous) cultivars in the case of vineyards – details on the implementation of the scheme have not been obtained yet.

With the assistance of GIZ, MARD has prepared the scheme of the AEC and OF which foresees the support for:

- Organic farming;
- Conservation of small ruminants: sheep and goats;
- Soil and nutrient management plans;
- Summer grazing;
- Maintenance of traditional olive groves.

When discussing the pilot schemes it is also important to take into account that according to the EU guidelines some of the proposed measures can be supported only if the necessary administrative and legislative requirements are in place. Albania has to adopt the new Law on Organic Farming and to further align its legislation and control system in order to implement that scheme.

The scheme providing support to the introduction of organic production methods will be available to farmers or groups of farmers who voluntary convert to or maintain organic farming practices and methods as defined in the national legislation. Payments will be granted annually and shall compensate beneficiaries for all or part of the additional costs and income foregone resulting from the commitments made. The pilot scheme providing support to the implementation of agro-environmental pilot actions will be available to farmers or groups of farmers and other land-managers who volunteer to carry out operations consisting of one or more agro-environment measures identified in accordance with the national, regional or local specific needs and priorities. The purpose of implementing the scheme as a pilot action is to prepare for the full implementation of agro-environmental actions after the accession. The payments will be made annually in accordance with the agreed commitments for protection of the agricultural land.

B1.4.5 Agri-environmental indicators

The main environmental impacts of agriculture may be characterised through the beneficial or harmful contribution of agricultural activities to:

- Soil quality (erosion, desertification, compaction, pollution, stepping, nutrient supply, moisture balance, salinity).
- Land quantity (area of ecological management of agricultural land).
- Water quality (nutrient, pesticide, sediment runoff and leaching, salinity).
- Water quantity (irrigation consumption, use efficiency, water retention capacity, flood prevention).
- Bio-diversity (farm and indigenous animal and plant diversity).

- Wildlife and semi-natural habitats (diversity of animal and plant habitats associated with farming).
- Rural landscape (environmental features of areas shaped by farming, including those associated with historic buildings and landmarks).
- Air quality (emissions of dust, odours, ammonia and greenhouse gas, absorption of carbon dioxide).[XVIII]

Impact on soils

Soil is a vital and largely non-renewable resource increasingly under pressure. Soil in Albania is increasingly threatened by a range of human activities, which are degrading it heavily.[XIX] Environmental damage to the soil is both physical and chemical. Physical damage (usually very expensive to remedy) includes, but is not limited to erosion, sealing, compaction, and water logging/bog formation. Chemical damage includes nutrient deficiencies, acidity, and reductions in the capacity to retain nutrients, as well as increased contents of salts (salinisation) and occurrence of environmental toxins. In many cases, the degradation process has reached its final phase, land desertification, when soil loses its capacity to carry out its functions.

Impact on water

Albania is one of the richest countries of Europe in respect of water resources, although the availability of water for consumption per capita is still very low. Policy reforms in years have affected the quality of surface and groundwater as well as the quantity of water used for agriculture production. The main causes of water pollution related to agricultural practices are those resulting from soil run-off and sedimentation, leaching of animal waste, nutrients and pesticides, and the consumptive use of water pumped for irrigation and livestock.

Impact on biodiversity

Albanian agriculture has had a significant influence on biodiversity because of:

i. the loss of native habitat because of agricultural conversion especially after the '60s until the '80s for opening of agricultural land, terraces and establishment of fruit plantations (300 000 ha);
ii. draining of wetlands and land reclamations (250 000 ha);
iii. its prevalence over such a large portion of the landscape, especially in some biomes;
iv. the management intensity associated with modern ways of farming;
v. the effects of some management practices (e.g., pesticide and fertilizer usage) go beyond the boundaries of the cropped area.

All of these costs for the economic development of the country and human health cannot be justified, even if the economic benefit is taken into consideration; such actions have not only impacted thousands of people but have also caused the extinction of thousands of hectares of forests, prairies and wetlands with a high ecological, social and economic value.

Impact on air and climate

The air quality issues are mostly related to the agricultural industry's emissions and their effects on air quality. The air contaminants emitted by the agricultural industry in Albania have been or are: odour, hydrogen sulphide, air toxics, fine particulates, nitrogen oxides, nitrous oxide, ammonia, volatile organic compounds, methane, carbon dioxide, and ozone depleting substances.

Indicators Related to Land Use

Land use change

The latest land use map is Corine 2012 and the one before was 2006. A previous map at country level was a forest map from 2005. Dramatic changes have happened in the territory in the meantime. In general, there is a reduction of agricultural and forest surface and increase of urban and bare land.

The Institute of Statistics (INSTAT) collects and provides statistics on the arable land. The last agricultural census was conducted in 2012 and the data are available[XX]. These statistics are updated regularly (see Annex 1). The cadastral service keeps records of the arable land which is converted to industrial/urban land.

Cropping patterns

The Institute of Statistics (INSTAT) collects and provides statistics on the surface of land cultivated with field (arable) crops, vegetables and permanent crops, as well as the number of farms cultivating various crops. The last agricultural census was conducted in 2012 and the data are available in Annex[xx]. These statistics are updated regularly.

Livestock patterns

The Institute of Statistics (INSTAT) collects and provides statistics on the livestock patterns. The last agricultural census was conducted in 2012 and the data are available in the Annex[xx]. These statistics are updated regularly[xx].

Indicators Related to Input Use

Mineral Fertilizer Consumption

The Institute of Statistics (INSTAT) collects and provides statistics on mineral fertilizer consumption. The last agricultural census was conducted in 2012 and the data are available[xx]. These statistics are updated regularly (see Annexes).

Consumption of pesticides

MARD and the National Food Authority (NFA) keep statistics of each plant protection product (pesticide) imported in the country from the Customs. These statistics are updated regularly (see Annex 1) [xx].

Irrigation

The Institute of Statistics (INSTAT) collects and provides statistics on the farms using irrigation and the methods of irrigation. The last agricultural census was conducted in 2012 and the data are available[xx]. These statistics are updated regularly (see Annexes). The share of irrigable area in UAA in 2016 is 43%.

Indicators Related to Farm Management

Soil cover

There is no data on the share of arable area is covered by plants or plant residues per year.

Tillage practices

The Institute of Statistics (INSTAT) collects and provides statistics only on the method of tillage, i.e. with tractors, animals or human-powered. The last agricultural census was conducted in 2012 and the data are available[xx]. These statistics are updated regularly (see Annexes). There is no data on the share of arable areas under conventional, conservation and zero tillage.

Manure storage

There is no data on the share of holdings with livestock which have manure storage facilities in total holdings with livestock and/or share of holdings with different manure storage facilities. There are statistics for farms with buildings, but those classified are storage rooms for agricultural products (inside the house), storage rooms for agricultural products (outside the house), hangars for mechanical equipment, stables for animals, separate buildings for other profitable activities and other agricultural buildings.

Indicators Related to Trends

Intensification/extensification

There is no data on the trend in the shares of UAA managed by low, medium and high intensity farm. The supporting indicator, the average input expenditure per hectare in constant input prices can be calculated, but there is inconsistent data.

Specialisation

There is no data on the share of the UAA managed by specialised farming, i.e., a farms where a single type of production or service dominates the farm income. Although it is not reported, it should be possible for INSTAT to calculate at least the number and share of specialised holdings relative to mixed farms.

Risk of land abandonment

This indicator is not applied and there is no data to show the risk of land abandonment.

Indicators Related to Pollution

Gross nitrogen balance

This indicator is not applied and there is no data to show gross nitrogen balance.

Risk of pollution by phosphorus

This indicator is not applied and there is no data to show the risk of pollution by phosphorus.

Pesticide risk

This indicator is not applied and there is no data to show the pesticide risk.

Ammonia emissions

This indicator is not applied and there is no data to show the risk of ammonia emissions.

Greenhouse gas emissions

NEA calculates greenhouse gas emissions from the data that are at disposal to the Ministry in charge of Transport/INSTAT and Ministry in charge of Commerce (freight, fuels consumption, transportation load etc). Another indicator is the GHG emissions inventory of 5 basic sectors, one of them being agriculture. Activity Data are at the disposal of the Ministries in charge of each

sector and INSTAT as National Accounts. NEA is responsible for the validation of calculations. The indicator is estimated by statistical data of movements and commerce. The quality of those data is essential for the overall credibility of the estimation.

Emission intensity of agriculture

The indicator is used to illustrate the decoupling of economic growth (Gross Value Added-GVA) from the environmental impact (nutrient losses). The indicator displays the percentage of change in emission of nutrients from agriculture (expressed as nutrient balance) plotted together with the change in the gross value added (GVA) of the agriculture industry over the same period of time (between 2000 and 2011). Absolute decoupling occurs when the environmentally relevant variable is stable or decreasing while the economic driving force is growing. Relative decoupling occurs when the growth rate of the emission is positive, but less than the growth rate of the GVA.

Furthermore, the indicator illustrates emission intensity of the agriculture sector expressed as the amount of nutrient balance in agriculture per unit of production of the agriculture sector (expressed as one million Euro of gross value added). The indicator illustrates both emission intensity based on total GVA (which includes subsidies) and emission intensity based on GVA, excluding subsidies.

Emission intensity is expressed in tonnes of pollutant per one million EURO (or ALL) of GVA. The calculation is based on data from the national accounts for the use of fertilizers and pesticides of the Ministry of Agriculture and/or INSTAT. The indicator is calculated annually for the entire country by the Ministry of Agriculture.

Indicators Related to Resource Depletion

Water abstraction

This indicator is not applied and there is no data to show water abstraction.

Soil erosion

Soils Erosion and Coastal Erosion monitoring are based on models that are using free data (LANDSAT images, CORINE BD, European Soil Geographical Database etc.). The monitoring frequency is every 4 to 8 years for the whole country and is conducted by the Geological Survey.

Genetic diversity

In the theme of biodiversity, the choice of indicators in the DCM 1189 (see B1.4.6) is unbalanced. As it is expected due to the importance of forests in the natural capital and the economy of Albania, the Forestry indicators (state, health management) are dominating. Actually the Decision seems to incorporate pre-existing statistic forestry indicators. The wild life (Flora, Fauna, Habitats) and protected area related indicators are defined more generally. This reflects the premature stage that the designation of natural environment areas was at, at the time when the DCM was adopted. The re-definition of biodiversity indicators is a necessity in order to present a clear picture of the ecological status of protected areas and species.

This indicator has not been applied and there is no data to show the risk of land abandonment.

Indicators Related to Benefits

High Nature Value farmland

This indicator is one of the sub-indicators of the indicator "*Agriculture: area under management practices potentially supporting biodiversity*", along with the other sub-indicator "Area under organic farming". High nature value farmland area (ha) indicates the area where farming systems sustain a high level of biodiversity. They are often characterised by extensive farming practices, associated with a high species and habitat diversity or the presence of species of European conservation concern.

In terms of methodology, high nature value farmland areas are based on a (1) selection of land cover classes made up primarily of HNV land in the different environmental zones in Europe; (2) refinement of the map obtained in point 1) on the basis of additional expert rules and country specific information; (3) addition of the biodiversity data layers (NATURA 2000, IBA - on the basis of indicator species and selected habitats only); (4) testing/adding national biodiversity data sets. The frequency is every 6 years (CORINE update) for the whole country.

Renewable energy production

Since January, 2016, a National Action Plan on Renewable Energy Resources 2015 – 2020 has been in force.

Indicators Related to Natural Resources

Soil quality

Monitoring of soil quality is carried out by the soil laboratory at the Agricultural University of Tirana. The sources of pollution are various but monitoring is carried out for heavy metals. The State of Environment Report 2016 reports 9 monitoring stations. The parameters analysed are pH, N, P, K, Ca, Mg, Organic Matter and heavy metals (Cd, Cr, Co, Ni, Pb, Zn).

Water quality – Nitrate pollution

The Nitrates Directive 91/676/EEC is yet to be transposed. However, there is a series of environmental indicators for water quality:

1. *Physio–Chemical Condition of Surface Waters (Alkaline, conductivity, acidity, COD / BOD5, nutrients PO_4, NO_3 and NH_4, pH, pollutants and WFD priority substances) Oxygen consuming substances in rivers (CSI 020), Nutrients in freshwater (CSI 020), Nutrients in transitional, coastal and marine waters (CSI 021)*. Hydrological and physicochemical parameters, e.g. water temperature, pH, dissolved oxygen, conductivity, are measured in-situ using portable field instruments. At the same time, water samples are collected for the determination of nutrients, priority substances, pollutants and other chemical substances (Cd, Cu, Ni, Fe, Pb, Zn, Mn). Sampling procedures are standardized under the ISO5667-X:20XX protocols. The laboratory analysis can include filtration and photometry or ion chromatography or other use of analytical chemical methods. An aggregate indicator should be adopted in order to provide easy to understand information. The analysis of pollutants and priority substances is made every 2 years by NEA and the Albanian Geological Survey. A total of 37 monitoring profiles are reported in the State of Environment Report 2016.

2. *Chemical Condition of Groundwater*. The indicator in the Water Framework Directive (WFD) is set to monitor the status of Underground bodies from the following major threats: (a) Saltwater intrusion as a result of groundwater over-exploitation is a major concern in many aquifers; (b) Nutrients and pesticides filtration from agricultural runoffs, urban and industrial sewage.

The determination of the chemical condition of an aquifer is being assessed by chemical analysis of samples. Characterization of the status is being done according to the Nitrates (91/676/EEC) and the Drinking Water Directive (98/ 83/EC). The monitoring is made by the Albanian Geological Survey.

3. *Biological and Ecological Condition of Inland Waters (phytoplankton and zooplankton, chlorophyll, fishes*). Sampling for biological, and analysis for biological, quality elements is usually done simultaneously with the sampling done to test the chemical quality. The biological analysis according to WFD focuses on the following parameters: (a) benthic macroinvertebrates (STAR-AQEM methodology or ISO 7828, 1985) method; (b) fishes (electrofishing and identification and biometrical measurement); (c) diatoms and macrophytes (weighted average equation). The assessment of the physical nature and quality of the habitat at the sampling stations (RHS, QBR) occurs once for every four years of the project. The characterization of the Ecological Status should be determined per water body level (not sampling site).The monitoring is made by NEA.

According to the Water Framework Directive, the above indicators are: *"% of water bodies in good chemical and ecological status"*.

Water quality – Pesticide pollution

This indicator is not applied and there is no data to show pesticide pollution in waters.

Water (inland and underground) indicators also show a good coverage of parameters that are subject to monitoring under DCM 1189 (see B1.4.6). But, although there are sufficient physiochemical and (some) biological parameters, there are no synthesis provisions in order to create advanced indicators that will provide the overall picture of the state.

The Water Framework Directive 2000/60/EC has been transposed through two laws that are already in force, Law 111/2012, dated 15.11.2012 "On Integrated Management of Water Resources" and DCM "On the Content, Development and Implementation of National Water Strategies, of River Basin District Management Plans and of Flood Risk Management Plans". Assistance is provided by World Bank and SIDA.

Indicators Related to Landscape

State and diversity of landscape

This indicator has not been applied and there is no data to show the state and diversity of landscape.

Indicators Related to Market Signals and Attitudes

Area under organic farming

This indicator is one of the sub-indicators of the indicator "*Agriculture: area under management practices potentially supporting biodiversity*", along with the other sub-indicator "High Nature Value farmland". The area under organic farming' (ha) indicates trends in the organic farming area and the share of the organic farming area in the total utilised agricultural area. Farming is only considered to be organic at the European Union (EU) level if it complies with Council Regulation (EC) No. 834/2007, which provides a comprehensive framework for production of crops and livestock; labelling, processing and marketing of organic products; and the import of organic products into the EU. Calculation of the indicator per country/per region: the Ministry of Agriculture holds the statistical data of the organic farming questionnaire.

Indicators Related to Technology and Skills

Farmers' training and environmental farm advisory services

GIZ, under IPARD Like, has organised trainings for the agricultural extension service and farmers for the years of 2011, 2013 and 2014.

Indicators Related to Public Policy

Agri-environmental commitments

Efforts for recognition of the importance of the AE-climate and OF measure are still to be made by the IPARD II Managing Authority. Currently, there is no formal working group (WG) set up for further elaboration of the AE-climate and OF.

Two national "agri-environment" – like schemes are currently implemented with national support schemes:

- Production of organic products and certification of organic (bio) products. The scheme supports the certification of the organic farms. However, the support is fixed at approximately 500 EUR per farm without taking into account the farm size. The discussions with the stakeholders reveal that this support is not enough for the development of organic farming. The support should correspond to the size of the farm and the activities undertaken.
- Additional support is provided for planting local (autochthonous) cultivars in the case of vineyards – details on the implementation of the scheme have not been obtained yet.

The schemes of the AEC and OF proposed for support are:

- Organic farming;
- Conservation of small ruminants: sheep and goats;
- Soil and nutrient management plans;
- Summer grazing;
- Maintenance of traditional olive groves.

Agricultural areas under Natura 2000

The alignment of the national legislation with Natura 2000 Directives started in 2008. The future Natura 2000 network will be based on the network of Emerald sites, 25 of which have already been identified. The main challenges for the future include implementation of the approved management plans of the protected areas, strengthening the law enforcement, capacity building of the administrative staff of the protected areas, appointing administrations and control bodies for the conservation of wild flora and fauna.

Indicators Related to Biodiversity and Habitats

Population trends of farmland birds

This specific indicator is not measured. The only indicator measured is Species Diversity. A selection is made of 24 common woodland bird species characteristic of a range of wooded habitats in Europe. The birds chosen are those characteristic of 'woodland' though many occur in other habitats such as gardens, hedges, scrub and so forth and make use of that habitat too. These birds all use these specific habitats during their breeding season and also have a large range across Europe. Through their own assessment, the national monitoring coordinators provided an estimate of the - proportion of a species' national population breeding in a given habitat type in four categories (less than 25%, 25 to 50%, 50 to 75%, more than 75%).

Agri-environmental indicators and animal production

As a general rule, wherever society asks from farmers to pursue environmental objectives beyond good farming practice, and the farmers incur a cost or forego income as a result, then society must expect to pay for that environmental service. In Albania, the current payment system

to farmers does not provide this kind of subsidy.

In rural areas, the environmental objectives are often more ambitious than "good farming practice". In such cases, environmental objectives may be achieved only if appropriately remunerated. It is therefore appropriate to pay farmers to preserve the environment through privately owned resources or factors of production, provided that this goes beyond good farming practice. In the case of Albania, there are currently no policies to support this kind of approach.

The Government should have a legal framework in which the issues that are related to agri-environment are developed in the most complete and comprehensive way. The current legal framework elaborates only issues related to: (a) collection and management of animal waste on farms; (b) the remains of animals from slaughterhouses; (c) processing and storage facilities for meat, milk, eggs, fish; (d) determining the rates of greenhouse gas emissions, discharge of ammonia and bad odour substances.

Law 10465, dated 29.09.2011, "On veterinary service in the Republic of Albania" determines that the producers and veterinary services have the responsibility for dealing with the waste derived from the animal products activities.

Draft DCM "On the approval of rules for the management of animal by-products, that are not intended for human consumption" According to this decision, operators that transfer/consign or receive animal by-products or products obtained from them, shall keep a special register for their deliveries and the related commercial documents or health certificates.

B1.4.6 Institutional monitoring capacity of indicators

Institutional setup

The main legal basis for monitoring environmental indicators is the Decision of the Council of Ministers (DCM) No. 1189 "On Rules and Procedures for Drafting and Implementing the National Programme for Monitoring of Environment". It was adopted at the end of 2009, based on Article 100 of the Constitution and item 8 of Article 53 of Law no. 8934, dated 5.9.2002 "On Environmental Protection". It is an extended and revised version of the DCM No. 103 dated 31. 03. 2002 "On environmental monitoring in the RoA". The latter was basically prepared and entered into force to support the data collection for the sake of reporting to the Barcelona Convention. The DCM has 6 articles and an ANNEX that contains the catalogue of the Indicators divided in 3 categories (state, impact and stress) and grouped by environmental theme. It is based on the existing capacities and the given administrative structure, without reviewing the responsibilities of the parties involved, but also without proceeding to ambitious innovations that could prove unrealistic. The programming provisions are also weak. Award of yearly contracts implies the danger of a late start of the monitoring, which may result in incompatibility with international regulations (and quality dismissal of data from international databases). Therefore, using the existing practices (such as the annual contracts with Institutes, or the separation of responsibility to different ministries) with any positive or negative implications this may have (see UNECE 2012), the DCM can be characterised more as "realistic" than as "ambitious" or "innovative". The obligations for annual reporting and programming are not considered to be good practises because they burden the executive structures with unnecessary workload cutting useful workdays from actual monitoring work. [XXI]

Environmental Indicators are segregated in those providing information about the "state" and those that expressing "stresses". Three types of data gathering are described. The first is the submission of annual reports by cooperative ministries. The second refers to technical reports submitted by monitoring institutions as part of their contract or in urgent needs. The third type concerns the gathering of data from economic activities by physical and legal persons through the Regional Environment Agencies. The article also institutes the obligation of storing the data to an electronic registry which shall be open to the public and defines the publication of an Annual Report on the state of environment.

In the Albanian legislation, monitoring requirements are spread through different acts. They include the criteria, standards, methodology, site selection, frequency of measurements, sampling techniques, formulas to be used, etc. Wherever there is a goal to be achieved in the legislation, there is obviously a need for monitoring and reporting of the degree of achievement of that particular goal, too. However, some of the newly approved legislation has been given a transition period to start implementation. Such acts may have entered into power but come into effect after a certain period of time, which is given to authorities, businesses and any other stakeholders to understand the new requirements, make

related plans to adopt to them, i.e. increase the necessary human and financial capacities. Such is the case with the Law 162/2014 "On protection of ambient air quality" and the DCM No. 352, dated 29.4.2015 "On the ambient air quality assessment and the requirements for certain related pollutants". They took effect as of January and July 2018 respectively. Given the fact that monitoring is an annual activity, this means that the relevant authorities must get ready to implement the new air quality monitoring requirements in the period January – December 2019 for the first time. Until then (i.e. for 2017 and 2018) they can continue with slight improvements of the existing air quality monitoring program. As far as water monitoring is concerned, one can see from Annex 2 that a number of directives have been transposed into Albanian legislation and are in force. Monitoring in water areas can follow those requirements. Other acts are yet to be transposed and/or approved.

As for the costs related to the monitoring of the quality of air, water, etc. the current budgets are far too low. Estimates made under SELEA project, show that the capital/one-off costs for implementation of the Directive 2008/50/EC on ambient air quality and cleaner air for Europe, alone, are 2.2 MEUR, which includes a technical assistance project and training for the staff involved in the air quality monitoring, assessment and planning and an annual budget of operating/recurrent costs of 182,000 EUR. A similar case appears with estimates made under INPAEL project for the monitoring under the Water Framework Directive, where capital/one-off costs are estimated at 3.582.600 EUR, including the technical assistance project, equipment, training, monitoring and inter-calibration. Operating/recurrent costs are estimated at 283.600 EUR/year and include monitoring and reporting.

The Law "On climate change" has been prepared by the IBECA project. The main monitoring and reporting requirements under this draft law relate to the national inventory and projections of GHG anthropogenic emissions by sources and removals by sinks, as well as to the measures undertaken to respond to climate change. Therefore, indicators for this purpose will need to be developed. Among other things, the draft law "On climate change" aims to open the legal base for future transposition of the EU climate Acquis. A number of Decisions of the Council of Ministers will be drafted on this bases, related to the monitoring and reporting of GHG emissions from a list of operators/activities, aviation operators, maritime transport operators, new vehicles, summing up the reporting at the national level.

Although the legislation in the area of climate change is only at its beginning, it is obvious how monitoring and reporting will take place: each of the operators mentioned above will report to the relevant REA and the line ministry, which will sum up the emission at the Regional and sector level, respectively. Then the line ministries will report to NEA, which will sum up the emission at the national level.

A draft DCM "On a mechanism for monitoring and reporting greenhouse gas emissions and for reporting other information at national and Union level relevant to climate change" is under preparation and planned to be approved by 2017. This DCM will transpose Regulation (EU) no. 525/2013 of the European Parliament and of the Council of 21 May 2013 with the same title. This draft Decision shall request indicators as below that shall be developed at the macro/national level or at the level of each relevant sector/industry, including agriculture.

DCM No.127, dated 11.2.2015 "On the requirements for the use of sewage sludge in agriculture". According to this decision both the generator and the user have monitoring and reporting obligations. The generator of the sewage sludge has the obligation to keep a register of the data below and report them to the Competent Authority by 30 June of each year: a. the quantities of sludge produced and the quantities supplied for use in agriculture; b. the composition and properties of the sludge having regard to the parameters referred to in Annex II A of this decision; c. the treatment which the sludge has undergone having regard to the treatment referred to in paragraph 2 (b); d. the name and address of each user of the sludge and the location of each site where the sludge is to be used. The user of sewage sludge in agriculture has the obligation to keep the register with data as below and report them by 30 June of each year to the Competent Authority: a. the quantities of sludge used in agriculture; b. the surface and location of the agricultural land where sludge is used; c. name and address of the facility that has produced the sludge. The competent authority (NEA/Centre for the Transfer of Agriculture Technology) shall establish, keep and update the National Register for the Use of Sewage Sludge in Agriculture, following an approved format, where they aggregate the data provided by both producers and users.

B1.5 CONCLUSIONS AND RECOMMENDATIONS

The following recommendations are based on the fact that Albania, even if a decade away from the integration, has to progress more rapidly in the process of alignment with the CAP in order to create a promising way for a more sustainable development of rural areas. In Albania, the external effects of agriculture are more positive than the negative ones and in future the public goods supplied by agriculture and countryside could be recognized and rewarded more adequately then at present.

B1.5.1 Conclusions

Expanding agri-environmental indicators

We should start by admitting the fact that for several agri-environmental areas there is incomplete knowledge and data in order to establish trends and develop policies. As referred in detail in B1.4.5, information is incomplete, for example, concerning the degree of groundwater pollution or rate of depletion resulting from agricultural activities, gross nitrogen balance, risk of pollution by phosphorous, ammonia emissions and the human health and environmental risks associated with the use of pesticides.[XXII] In other cases, the linkages between different indicators are understood but are not easy to measure, such as those between changes in farm management practices and environmental outcomes, or attributing the relative impact of agriculture and other activities, for example, on water pollution. Also for a number of areas, notably agriculture's impact on biodiversity, habitats and landscape, the understanding and measurement of these impacts is still at a preliminary stage, partly because of the high costs associated with monitoring programmes. Therefore, one of the future challenges to developing agri-environmental policies is to expand the agri-environmental indicators, i.e. apply those indicators which are not applied yet but also extend the existing ones to cover all the territory (soil erosion, water quality, etc.). This would enable a better understanding of the current state and changes in the conditions of the environment in agriculture; and using indicators for policy monitoring, evaluation, and forecasting. Improved analytical soundness and measurability of indicators, especially by overcoming conceptual and data deficiencies, will provide a better interpretation of indicator trends. This could contribute to understanding the linkages between indicators (e.g. water use, management and pricing) and to examining the synergies and trade-offs between the economic, social and environmental dimensions of sustainable agriculture.

It is also a fact that some of the changes in production, land use and farming practices resulting from reform have a larger impact on the environment than others. What constitutes a "key" change depends on the production pattern in a given area and the farming systems used, but also on the elements of the environment that are at risk, which can vary between areas within Albania.

There is a need to establish a system for design and adoption of agri-environmental policies.

Rural poverty and lack of ecological awareness

The main obstacle to sustainable development is certainly the difficult economic situation of the rural population. The farmers have been one of the social groups most negatively affected by the market reforms implemented in Albania, which has caused the steep decline of their incomes and rising unemployment. The obvious consequence of this situation is that the main concern for farmers is to keep their job and to try to achieve higher revenues. The development of environmentally sound production methods, therefore, does not constitute a priority for them. Producers, attempting to increase their profits, are for example ready to use the cheapest fertilisers or pesticides available or overexploit the soil.[XXIII] Apart from these direct threats to the environment, the poor economic conditions of the rural population also have negative repercussions on the development of an agri-environmental policy in Albania. This is due to the fact that there is no popular support for any reforms in the agricultural sector that could divert the resources devoted to alleviate the economic situation of the farmers to other goals. Consequently, providing Albania with a concrete environmental policy represents a hard task for the policy-makers, as they are faced with the challenge of reaching a difficult balance between going ahead with the progress on market reforms, improving farmers' welfare and promoting sustainable agricultural practices. Farmers' attitudes and behaviours are clearly a fundamental factor influencing sustainable development in agriculture. As we previously mentioned, economic problems probably constitute the biggest constraint to the development of environmentally

conscious attitudes on the part of the Albanian farmers. However, other aspects related to farmers' behaviours have also a significant impact on the environmental protection of the rural areas. In this respect, the limited willingness of Albanian farmers to undertake joint activities, like the creation of agricultural co-operatives, can be considered as a factor posing several problems to the reform of the agricultural sector and, indirectly, to the promotion of a sustainable agriculture. This is due to the fact that individual farmers, in the majority of the cases own very small plots of land, have a very limited influence on the formulation of the agricultural policy and the directions of rural development. In addition, lack of co-operation means also lack of common financial resources, which hampers the possibility for single small farms to build new infrastructures and carry out the necessary investments.

Another factor playing a major role in shaping farmers' behaviours towards sustainable development is their level of education, which is usually low in the rural communities. This contributes to the low awareness among farmers concerning the contribution of their activities to the preservation of the environment as well as the potential environmental risks of such activities. Sustainable farming also requires better farm management skills, given the fact that farmers usually have little information on environmentally sound practices. Cross-compliance of measures (soil, fertilizer, manure and pesticide use, etc.) are complex for the Albanian farmers. Training and information dissemination are, therefore, essential preconditions to help the farmers to develop attitudes and behaviours that will contribute to the protection of the natural environment in rural areas. GIZ, under IPARD Like, has undertaken many training courses from 2011 – 2014 with extension service officials and farmers. However, no training has been delivered on agri-environmental indicators.

Institutional constrains

Extended and improved monitoring of agri-environmental indicators also requires also better inter-institutional co-operation. As discussed in B1.4.6, further constraints are linked to the limited resources that these institutions devote to agro-environmental goals. Thus, careful consideration should be paid to the cross compliance of measures (soil, fertilizer, manure and pesticide use, etc.) because of the lack of capacities in the ministries. As stated above, the academia does not have enough information on trends. Furthermore, there is no feedback from the financial support schemes like direct payments, etc. The various strategic documents highlighted in B1.4.3 require a perfect coordination at ministerial level, especially between the Ministry of Agriculture and Rural Development and the Ministry of Tourism and Environment which are the main institutions defining the policy guidelines on agricultural and environmental matters. Co-operation between the two ministries is therefore an essential precondition for the formulation of effective policy measures and for avoiding the inconsistency of the programmes and strategies prepared by the two ministries. It is strongly recommended that a new unit must be established for the AEM, within the Directorate of Programing and Monitoring of IPARD (Managing Authority), and another unit in the Agency for Agriculture and Rural Development.

Nature conservation

The agricultural landscape in Albania is particularly valuable as it incorporates sizeable areas of less disturbed semi-natural habitat and high nature value farming systems, usually associated with more traditional, less intensive forms of production. The systems of farming which are adopted, and the ways in which land is managed, are therefore of particular concern for nature conservation.

Land abandonment and the withdrawal of historic management have become a threat to large areas of farmland in Albania. An extrapolation of current trends in farming would indicate that without intervention, a further concentration of agricultural production on the best soils and in the most productive herds is likely to occur, leading to an irreversible loss of high nature value farming (HNVP) systems.

The rich natural heritage of Albania can only be preserved if the present traditional, or low-input, farming systems are maintained or adapted in a sustainable way. The high nature value systems that remain in Albania are at risk if the same transformation of agriculture which has occurred in Western Europe is allowed to take place, so it is important this to be avoided and lessons to be learnt from past experiences. The EU is currently spending considerable amounts of money within Member States on reviving nature that has previously been sacrificed for short-term agricultural interests. In order to avoid this in our country, it is important that measures to minimise the potential impact of agriculture policies on wildlife are put in place to ensure the valuable Albanian natural capital is conserved.

Agricultural systems with fewer impacts on agro-environmental resources

It is beyond argument that the issue of safeguarding biodiversity and landscape is inseparable from farming as the performance of the latter is primarily dependent on the status of natural resources and at the same time affects the surrounding environment, the diversity and stability of natural ecosystems. On the other hand, rural people in Albania have to make their living principally from agriculture in the future, too.

While agriculture in Albania should be and still has the potential to become an engine for economic growth, the combination of past exploitation and the slow pace of economic reforms are major obstacles to implementing sustainable agricultural policies. Given the right policies and appropriate economic incentives, it may be possible for the country to improve its future agricultural outputs while making the sector economically efficient, socially acceptable and environmental friendly. The main strategic directions for increasing farm revenues in the rural areas, taking into account the tradition and the development trends of private farms should focus on adapting the agricultural production to the development of agro-tourism, in order to exploit the opportunities offered by the nature of the region to this kind of business; increasing the number of associations of rural areas production and services in order to strengthen cooperation among producers and encourage better marketing.

Albania has some advantages for the development of its agriculture. Among these are (a) a favourable geographic location relative to the European Union, particularly Italy and Greece, (b) comparably low wage levels, (c) a relatively educated rural population, many of whom have worked in other European countries for some period of time, (d) creativeness among Albanian farmers in rapidly adapting to changing circumstances, and (e) fertile soils and favourable climate in some regions. Based on these advantages, the major opportunities for growth in the agriculture sector are in the production of higher value crops, livestock, processing, and some agricultural niche markets.

Environmental dimensions of the agrarian reform in Albania should be oriented toward renovation of the soil as the main production asset in agriculture and on the improvement of quality and ecological safety of food products. The policy needs to be complemented with well-target measures to preserve rural environment, conserve biodiversity and landscape values, and to ensure sustainable and multifunctional development of rural areas.

Steps taken to protect natural resources will be critical for future development of the agriculture and rural sector. As it is, Albania has little agricultural land in total and per capita, so any loss of this land has great importance. To safeguard the sustainability of agriculture production, the Government should: (a) continue to develop and implement policies aimed at improving watershed management, particularly by facilitating the commune/village level management of mountain pastures and forests; (b) ensure sustainable long-term availability of water resources to competing users; and (c) develop and implement policies on marine resource monitoring and surveillance.

It is also a fact that some of the changes in production, land use and farming practices resulting from reform have a larger impact on the environment than others. What constitutes a "key" change depends on the production pattern in a given area and the farming systems used, but also on the elements of the environment that are at risk, which can vary between areas within Albania.

The existing agricultural policy in Albania is one of the factors for the development of a conventional agriculture in the country in order to create a competitive Albanian agriculture. Nevertheless, because of the low use of inputs in agricultural production, lack of state support and existing legislation (and in some cases institutions) it seems that the transition to an environmentally friendly agriculture will be easy and not expensive.

The increase in agricultural production and total environmental emission levels can be offset, to some extent, by improvements in farm input and natural resource use efficiency. This is the case with the use of fertilisers, pesticides and water, where improvements in technology and farm management practices can lead to a reduction in the use of these inputs per unit volume of production.

Organic farming is a rapidly growing and a competitive sector of European agriculture, which favours high biodiversity and nature conservation. There are only few organic farms in Albania. In the future the spreading of organic farms and of organic agriculture will succeed in conditions of an institutional framework and development capacity of the market for organic products.[XXIV] The institutional framework must stimulate and sustain the Albanian agricultural producers in developing this type of agriculture, because there is an important external demand and, in addition to this, through Albanian consumers' education (which have the tendency to consume "natural products").

Another motivation is given by the situation of the people living in the rural areas. The Albanian rural area has quite a low development level due to the fact that agriculture is the main economic activity (the rural population accounts for 45% of total population, while 80% of the active rural population is employed in agriculture). The incomes obtained from agricultural activities are low and rural people live under the poverty line. Considering the demand of organic products from the foreign markets and the prices paid for these products, organic farming can become an important source of money for Albanian farmers.

However, the financial support for stimulating organic farming initiation should be continued and increased, considering the Albanian farmers' financial situation and because it is up to them to decide whether they will practice a certain type of farming, even if this type of farming is formulated in the strategies and policies.[XXV]

At present, "unintentional organic farming" is practiced by individual farmers who cannot afford to pay all the necessary agricultural inputs. The products obtained in this way are not recognised or certified as organic products, but they are very much demanded on the city markets. At the beginning, Albanians were very delighted with the size and aspect of imported agrifood products (obtained by using large amounts of chemical substances). With time, they noticed the lack of taste and side effects upon their health; at present, by carefully investigating the consumers' behaviour at the market place, consumers are increasingly interested about the origin of the respective products and whether they have been chemically treated or not. This situation represents an argument in favour of the necessity to promote organic farming practices on a larger scale in Albania. Furthermore, at present there are organic farms belonging to individual farmers, some of them still being in the conversion period.

Animal husbandry

In Albania, the indicators that could be used for compiling the agri-environment policies, focused to animal husbandry, have not been elaborated. Therefore it is necessary to: (a) develop a conceptual and analytical understanding of the various animal production and environmental processes; (b) identification of appropriate indicators and methods of measurement; (c) collection of data and calculation of the indices; (d) integration of indicators into policy analysis.

In order to elaborate the legal framework for agri-environmental policies, with focus on animal husbandry, issues related to farm management, soil quality, water use for animals, processing animal products, forage products, animal genetic resources for agriculture and food, farm financial resources and socio-cultural issues should be taken into account. Furthermore, the Ministry of Agriculture and Rural Development should adopt the National Waste Monitoring Plan for livestock products.

In terms of specific indicators and data collection, it is recommended to the Albanian public statistical service to strengthen their capacities for collecting and elaborating the data that can be used to calculate and periodically evaluate the **livestock patterns** indicator (stocks, density and share) found in the FAO Agri-environment dataset.

B1.5.2 Recommendations

The review in the previous sections, coupled with consideration of the common issues described above, allows for some general points to be made regarding the design of future agri-environmental policy for Albania. Apart from the considerations resulting from this analysis summarised as a series of choices concerning the balance and distribution of policy measures, the final choices are those of individual farmers, in their selection of resource use, crops, livestock, systems, rotations, target markets, etc. These are the choices that ultimately affect the sustainability of agriculture. Underlying these final choices, there are a whole series of choices that policy makers are confronted by, decisions which will determine the uptake and success of agri-environmental schemes, and the level of achievement of agri-environmental objectives.

Although agri-environmental measures are voluntary and as such they are supported from rural development, their inclusion in the rural development plans is an obligatory measure in terms of policy. Designing specific agri-environmental measures does not necessary mean establishing a coherent and comprehensive agri-environment policy. However, there is a need for a system for design and adoption of agri-environmental policies and measures. A specific project is required to define the gaps and needs for an agri-environmental policy in order to enable the environment for better implementation of such policies. More specifically, there is a need for increased institutional and technical capacities for development and implementation of agri-environmental policies. This includes staffing of MARD with full-time officials working on agri-environment, in order to follow the recommendations of this report, collate agri-environmental indicators, improve coordination between relevant institutions and push-forward the agri-environmental policies and measures. This should also lead to the establishment of common technical working groups to a) coordinate and enhance the enforcement of existing regulations through controls, inspections etc., and b) prepare for the development and implementation of agri-environment-climate measures under IPARD II from 2019.

There are also many other interconnected options and incentives, not specifically environmental, but policy measures which affect the environmental outcome of agricultural activity, and which can be incorporated in a policy mix designed to deliver agri-environmental objectives. We need to demonstrate clearly that both these functions are valued, and that both can contribute to farm incomes. Those who are currently principally responsible for the much-praised richness of the rural environment in Albania are often some of the least advantaged in society, not only in financial terms, but also in access to services. If we are really to succeed in protecting the environment, then it needs to be worthwhile for those most directly involved.

In order to increase the effectiveness of policies, restrictions and incentives must be combined. Compulsory requirements have to be set, sanctions to be applied and enforced by applying the "Polluter Pays Principle". This is particularly important in the case of Albania, where rights and obligations have not always been clear and have not even been defined yet. Considering the above, there is a need to directly fund the agri-environmental measures, starting in 2019 in the review of DG-Agri at the end of this year.

In most rural areas of Albania, where land abandonment is a widespread phenomenon, diversified activities need to be encouraged by balancing development and conservation. Rural tourism can significantly contribute in many areas of high landscape or nature value, producing food produced in accordance with specific environmental codes of practice, or associated with particular high nature value areas in order to benefit from better prices.

Organic farming is an established and promising sector of European agriculture, which favours high biodiversity and nature conservation. The Albanian government has provided support to organic farmers and those wishing to convert to organic farming through the agri-environmental measures, which both support farm incomes and protect the environment. However, support should not be limited only to the certification costs.

Agro-environmental measures have to address the many environmental challenges based on the different agricultural systems and especially anticipating farmer expectations and aspirations. At the current stage, it would be recommended to apply broad and shallow measures rather than deep and narrow, simply because the latter have complex requirements and management prescriptions. The actual technical and organisation level of agri-environment authorities does not demonstrate the right skills to monitor and evaluate all the measures. Establishing complex conditions is of little value if there is no means of monitoring whether they have been fulfilled, or if the burden of monitoring is too heavy to be achieved in practice. Measures must be sufficiently simple to understand and be able to be realistically incorporated into the farming system. In this case, they could be attractive to potential applicants. However, particular regions may be targeted or specific problems be addressed.

In Albania, with a lower average intensity of land use, rather than on restoration as in the case of EU15, it may be more appropriate to place greater emphasis on the preservation of existing habitats and areas of high environmental value. It is recommended that the quality of data should be improved for proper delineation of a HNVP map to be compiled along with a map for Areas with Natural Constraints (ANC) and support measures should be given to farmers operating in these areas as well.

To assist farmers to cope with this new situation, and to facilitate the uptake of the schemes on offer, information must be clearly presented and easily understood. Farmers need information, support, training and advice from sources they know and trust. This may well require investment in reinforcement of the farm advisory services, perhaps recruitment and training of specialist advisors to publicise the schemes, and to help farmers to prepare applications. This should be combined with an awareness raising campaign, including a training of extension officers and large farmers on agri-environmental indicators. NGOs which are well-known and well-regarded by the farming community may serve as appropriate organisations which have both the knowledge and the credibility to support the implementation of agri-environment measures. Apart from farmers, awareness campaigns should also involve the consumers and the public.. The use of model farms is another valuable way of demonstrating the opportunities available through participation in agri-environment programmes. The most carefully designed schemes will fail to meet their objectives if there is insufficient uptake, either because potential applicants do not know about their existence, are daunted by the paperwork involved in applying, or are not convinced in the potential benefits of participating. The cost of this type of support should not be overlooked when budgets are being allocated.

Considering the complexity of implementation, especially in terms of information and data collection, we recommend to pilot it in environmentally sensitive areas (i.e. around Shkodra or Ohrid lakes).[XXVI XXVII]

LITERATURE

(Endnotes)

I. INSTAT, January 2015

II. Volk et al. (eds) 2014

III. FAO Country Report, http://www.fao.org/ag/agp/agpc/doc/counprof/albania/albania.htm

IV. Report on the National Situation of Biodiversity in Albania

V. FAO Country Report for Albania

VI. Second National Communication of Albania to the United Nations Framework Convention on Climate Change, 2009

VII. Banka Botërore (2011) Climate Change and Agriculture – Country Note.

VIII. National Report on Climate Change, 2008.

IX. Albania has ratified both the United Nations Framework Convention on Climate Change and its Kyoto Protocol with the status of a Non-Annex 1 Party.

X. Draft Environmental Inter-sectorial Strategy 2015–2020

XI. ISARD 2014 – 2020

XII. Environmental Status Report for Albania, 2014, National Environmental Agency, Ministry of Environment

XIII. Intrasectorial Environmental Strategy 2015-2020, Ministry of Environment

XIV. Kullaj, E. (2004) Examination of environmental implications of agricultural activities in Albania and anticipation of sustainable development policy objectives. Paper submitted for the 3rd Course of Specialisation in Sustainable Development of Agricultural, Environmental and Rural Systems organised by UniAdrion.

XV. Kullaj, E. and M. Çakalli (2013). Albanian Agriculture: Analyzing the Past to Decide for the Future. In Pillarisetti et al. (Eds.), Multifunctional Agriculture, Ecology and Food Security: International Perspectives. Nova Science Publishers ISBN 978-1-62618-294-3

XVI. Kullaj, E. (2004) Anticipating Organic Farming Policy Measures and Market-Based Instruments as tools for Sustainable Development of Rural Albania. Summer School "International Cooperation and Sustainable Development Policies, Porretta Terme (BO), Italy.UniAdrion.

XVII. Kullaj, E. (2010) Organic farming policies for a sustainable development of rural areas. Lambert Academic Publishing, Germany ISSN. 978-3-8383-6360-8

XVIII. Kullaj, E. (2005) Environmental implications of Agriculture Activities in Albania and Sustainable Development Policy Objectives. Est-Ovest, n.3, 2005

XIX. Kullaj, E. (2002) The environmental implications of agriculture on the soils of Albania. International Scientific Symposium on 'The Role of Environment in Agriculture and Rural Development', Cephalonia, Greece

XX. http://www.instat.gov.al/en/themes/censuses/agriculture-census/#tab2

XXI. Georgladis, G. and Panariti, N. (201X) Assessment of Albania's Capacities on Environmental Monitoring. GEF, MoE and UNDP

XXII. Brahushi, F. and Kullaj, E. (2014). The assessment of pesticides residues in some organic cultivated and wild-collected medicinal plants in Albania. Vol. 13, pp. 25 – 29. Special Issue. Papers in this issue are presented in the 1st International Conference "Biotechnology in Agriculture" hold on Agricultural University of Tirana, April 22 - 23, 2014

XXIII. Çakalli, M. Brahimsulaj, E. and E. Kullaj (2010) Profitability of mixed fruit tree farms in Albania. AgroSym, Jahorina, Sarajevo, Bosnia-Herzegovina. 978-99938-670-4-3

XXIV. Kullaj, E. (2007) Organic farming policies for a sustainable development of rural Albania. *Est-Ovest*, n.3, 2007

XXV. Spornberger, A., Kullaj, E., Mehmeti, A., Öhlinger, B., Sylanaj, S., Demaj, A., Thomai, T.(2013) Organic apple growing in Kosovo* and Albania—a survey of the current situation and possibilities for improvement. *Organic Agriculture*, Volume 3, Issue 3, page 175-182

XXVI. Kullaj, E. (Ed.) (2013) Overview of the agriculture impacts and the adjoining activities on pollution of Lake Skadar. Baseline study under EMA-Plan (IPA Cross – Border Programme Albania – Montenegro, 2007 – 2013)

XXVII. Kullaj, E. (Ed.) (2013) Impact of agricultural activities and related industries to the ecosystems of Ohrid, Prespa and Shebenik. Baseline study under EMA-Plan (IPA Cross – Border Programme Albania – FYROM, 2007 – 2013)

B1.6 ANNEXES

ANNEX1 – Data related to agri-environmental indicators

Tabular information relevant for agri-environment following the indicators are extracted from the Agricultural Census Data (2012) or Agricultural Statistical Yearbook, which can be found in these sources:

Agricultural Census Data (2012):

http://www.instat.gov.al/en/themes/censuses/agriculture-census/#tab2

Agricultural Data Updated Annually:

http://www.instat.gov.al/en/themes/agriculture-and-fishery/agriculture/#tab2

Prefectures	Total	UTILISED AGRICULTURAL AREA (UAA)							
		Without UAA	Only ownership	Only rent	Only other kind of land tenure (free use etc)	Ownership and rent	Ownership and other kind of land tenure	Rent and other kind of land tenure	Ownership, rent, other kind of land tenure
Gjithesej Total	**333,592**	**-**	**251,320**	**4,551**	**1,008**	**65,521**	**7,116**	**409**	**3,667**
Berat	19,865	-	17,890	10	32	1,045	633	11	244
Dibër	10,621	-	8,918	20	199	1,045	377	1	61
Durrës	24,457	-	18,940	85	22	5,120	250	2	38
Elbasan	34,496	-	31,662	105	29	2,143	435	4	118
Fier	82,461	-	69,584	552	147	10,778	929	107	364
Gjirokastwr	22,947	-	9,004	633	184	10,599	793	17	1,717
Korçë	27,831	-	21,271	618	37	4,924	765	27	189
Kukës	3,619	-	3,406	11	4	132	54	-	12
Lezhë	17,308	-	15,482	31	21	1,510	182	1	81
Shkodër	15,237	-	12,979	15	11	1,688	436	7	101
Tiranë	26,606	-	22,572	63	5	3,331	471	-	164
Vlorë	48,144	-	19,612	2,408	317	23,206	1,791	232	578

Table B1.6.1 Utilised agricultural area by prefectures and land tenure (Area in ha)

Other data related to land use from Agricultural Census (2012) can be accessed in the following link:

http://www.instat.gov.al/en/themes/censuses/agriculture-census/#tab2

Updated data can be accessed in the following link:

http://www.instat.gov.al/en/themes/agriculture-and-fishery/agriculture/#tab2

Table B1.6.2 Farms and area of crops in arable land (area in Ha)

Prefectures	Total cereals	Wheat	Patatoes	White Beans	Industrial Crop	Tobacco	Total Vegetables	Vegetables under greenhouses	Forage Crops
NUMBER OF FARMS									
Total	**210,077**	**135,318**	**40,307**	**52,265**	**10,234**	**4,637**	**55,981**	**6,268**	**146,006**
Berat	15,518	12,264	2,590	3,479	250	49	4,342	1,096	10,236
Dibër	15,971	4,839	2,184	3,068	90	14	657	40	7,937
Durrës	15,178	7,403	4,500	8,961	541	251	8,582	302	12,793
Elbasan	30,482	20,290	3,490	3,703	2,435	2,067	3,235	477	20,002
Fier	48,697	42,617	5,926	8,601	2,092	160	12,521	3,325	36,684
Gjirokastër	6,222	3,194	1,506	1,321	155	17	1,236	24	5,455
Korçë	19,796	17,262	6,030	6,789	1,650	128	3,881	31	11,000
Kukës	7,035	2,478	1,228	430	41	16	418	7	1,300
Lezhë	14,214	7,746	1,984	2,512	188	15	2,150	68	10,304
Shkodër	11,817	3,603	4,947	4,393	2,040	1,707	4,646	245	8,119
Tiranë	17,984	9,846	4,643	7,508	551	186	11,595	572	17,088
Vlorë	7,136	3,776	1,279	1,500	201	27	2,718	81	5,088
AREA									
Total	**111,145**	**52,700**	**3,059**	**5,720**	**3,578**	**256**	**6,802**	**1,098**	**71,993**
Berat	7,043	3,647	91	277	54	1	530	237	3,815
Dibër	3,708	1,143	119	156	11	2	42	1	1,705
Durrës	7,688	3,041	158	908	125	10	675	43	7,197
Elbasan	13,069	5,927	155	275	625	8	282	58	5,919
Fier	32,875	18,587	833	1,584	1,677	24	2,329	575	24,438
Gjirokastër	4,180	1,211	66	114	69	2	338	11	3,183
Korçë	12,304	8,190	1,078	992	245	184	459	4	4,699
Kukës	1,326	525	101	17	3	-	20	1	217
Lezhë	6,109	3,059	55	127	34	5	199	15	5,265
Shkodër	4,231	1,187	178	173	574	5	437	36	3,926
Tiranë	8,636	3,861	164	889	43	3	855	86	7,480
Vlorë	9,976	2,322	61	208	118	12	636	31	4,149

Other data related to cropping pattern (arable crops) from Agricultural Census (2012) can be accessed in the following link:

http://www.instat.gov.al/en/themes/censuses/agriculture-census/#tab2

Updated data can be accessed in the following link:

http://www.instat.gov.al/en/themes/agriculture-and-fishery/agriculture/#tab2

Table B1.6.3 Farms with permanent crops and related crop area by kinds (area in Ha)

Prefectures	Fruit trees	Olives	Citrus	Vineyards	Nurseries
			NUMBER OF FARMS		
Total	**38,459**	**74,770**	**10,421**	**51,186**	**951**
Berat	3,695	12,199	463	3,878	58
Dibër	2,627	-	-	1,453	13
Durrës	3,849	4,406	1,327	6,089	94
Elbasan	5,545	12,236	1,371	7,787	127
Fier	4,788	24,291	3,008	7,747	197
Gjirokastër	746	1,166	12	1,986	38
Korçë	6,685	10	5	3,268	39
Kukës	761	2	-	530	4
Lezhë	2,055	1,647	643	5,173	42
Shkodër	2,224	1,379	495	3,654	55
Tiranë	4,443	6,217	1,506	6,394	184
Vlorë	1,041	11,217	1,591	3,227	100
			AREA		
Total	**8,142**	**24,619**	**1,595**	**7,230**	**99**
Berat	968	4,836	83	678	8
Dibër	676	-	-	139	1
Durrës	489	1,057	74	751	5
Elbasan	1,094	3,330	81	973	7
Fier	1,084	8,474	435	1,398	27
Gjirokastër	132	422	1	450	3
Korçë	2,046	2	2	368	13
Kukës	161	-	-	39	-
Lezhë	256	315	28	474	6
Shkodër	309	307	27	345	3
Tiranë	733	1,396	76	844	12
Vlorë	194	4,480	788	771	14

Other data related to cropping pattern (permanent crops) from Agricultural Census (2012) can be accessed in the following link:

http://www.instat.gov.al/en/themes/censuses/agriculture-census/#tab2

Updated data can be accessed in the following link:

http://www.instat.gov.al/en/themes/agriculture-and-fishery/agriculture/#tab2

Table B1.6.4 Livestock heads by prefectures, species and livestock categories

Categories and Species	Total	Berat	Dibër	Durrës	Elbasan	Fier	Gjirokastër	Korçë	Kukës	Lezhë	Shkodër	Tiranë	Vlorë
Total sheep	**1,179,540**	**88,264**	**52,149**	**44,880**	**87,038**	**131,976**	**254,231**	**125,937**	**30.890**	**19,902**	**35,549**	**33,210**	**275,514**
Rams	72,093	4,714	4,417	2,151	5,596	8,477	16,242	5,412	1,712	1,349	2,755	2,920	16,349
Breeding female	883,548	64,135	44,596	39,309	73,032	99,452	169,393	101,105	25,960	15,809	27,788	26,948	196,020
Other sheep	223,899	19,415	3,136	3,420	8,410	24,047	68,596	19,420	3,218	2,744	5,006	3,342	63,145
Total goats	**496,192**	**57,227**	**23,154**	**12,298**	**47,184**	**32,562**	**117,251**	**38,858**	**9,773**	**26,789**	**21,349**	**16,695**	**92,962**
Aries	35,671	3,632	1,632	818	3,188	2,765	8,194	2,411	724	1,700	1,616	1,200	7,791
Breeding female	363,190	39,926	19,229	8,942	37,960	23,906	77,551	32,035	8,244	19,791	16,709	13,779	65,118
Other goats	97,241	13,669	2,293	2,538	6,036	5,891	31,506	4,412	805	5,298	3,024	1,716	20,053
Total pigs	**73,328**	**2,164**	**344**	**7,429**	**972**	**15,597**	**1,345**	**3,912**	**299**	**23,021**	**13,511**	**339**	**4,395**
Piglets live weight <20kg	29,474	741	91	2,686	654	8,520	878	1,673	200	7,152	4,853	175	1,851
Breeding sows weighting 50 kg and over	17,440	709	114	625	247	2,682	354	731	8	7760	2,993	103	1,114
Other pigs	26,414	714	139	4,118	71	4,395	113	1,508	91	8109	5,665	61	1,430
Total Equidae	**77,245**	**7,286**	**7,077**	**2,610**	**12,228**	**15,154**	**5,705**	**9,518**	**2,642**	**1490**	**2,205**	**1,092**	**4,238**
Horses	25,136	2,089	3,350	841	2,885	3,382	1,767	4,614	1,599	297	1,093	1,992	1,227
Donkey	38,719	3,993	2,138	1,558	6,687	11,284	1,718	2,605	725	929	756	4,748	1,578
Mules	13,390	1,204	1,589	211	2,656	488	2,220	2,299	318	264	356	352	1,433
Total rabbits	**36,118**	**3,021**	**489**	**2,116**	**1,005**	**17,958**	**1,061**	**6,331**	**13**	**898**	**562**	**962**	**1,702**
Breeding female	17,933	1,590	290	998	679	8,244	556	3,309	11	374	279	598	1,005
Other rabbits	18,185	1,431	199	1,118	326	9,714	505	3,021	3	524	283	364	697
Total poultry	**10,156,943**	**836,726**	**233,125**	**3,061,800**	**597,658**	**2,456,701**	**125,816**	**841,720**	**78,785**	**228696**	**447,072**	**928,205**	**320,639**
Broilers	4,138,754	392,484	51,777	844,991	194,996	1,329,695	34,141	428,872	17,780	48285	147,064	570,093	168,576
Laying hens and cocks for reproduction	5,103,118	488,689	175,682	2,187,657	324,298	518,342	78,805	400,409	58,155	167245	285,550	287,993	130,293
Turkeys	763,009	35,555	4,656	19,345	73,111	515,057	11,880	11,079	2,598	10055	10,867	49,378	19,428
Geese and Ducks	147,788	9,886	784	9,064	5,184	92,280	815	1,266	194	2933	3,002	20,392	1,988
Other poultry not mentioned elsewhere (pheasant, ostriches, etc.)	4,274	112	226	743	69	1,327	175	94	58	178	589	349	354
Beehives	**123,428**	**5,054**	**6,909**	**5,148**	**12,940**	**12,631**	**15,866**	**14,884**	**7, 246**	**5,479**	**10,188**	**10,547**	**16,536**

Other data related to livestock from Agricultural Census (2012) can be accessed in the following link:

http://www.instat.gov.al/en/themes/censuses/agriculture-census/#tab2

Updated data can be accessed in the following link:

http://www.instat.gov.al/en/themes/agriculture-and-fishery/agriculture/#tab2

Table B1.6.5 Farms with fertilization practice and related fertilized area by kind of fertilizer, on prefectures level (area in Ha)

Prefectures	Total			Organic Fertilization			Chemical Fertilization		
	Arable Land	Permanent crops	Pasture and Meadows	Arable Land	Permanent crops	Pasture and Meadows	Arable Land	Permanent crops	Pasture and Meadows
FARMS									
Total	238,577	67,499	9,168	143,134	39,165	4,558	198,794	43,964	5,771
Berat	16,319	9,092	226	8,491	3,862	75	14,297	7,118	180
Dibër	16,350	1,771	2,172	14,277	1,355	897	12,930	1,041	1,577
Durrës	21,797	5,419	792	12,774	3,753	354	16,741	2,701	480
Elbasan	32,873	10,609	445	17,620	4,900	191	30,327	7,695	321
Fier	52,407	16,167	193	24,008	8,085	86	48,227	11,864	130
Gjirokastër	6,581	1,645	250	4,262	1,437	246	4,771	768	53
Korçë	19,230	3,900	607	10,738	2,319	448	16,055	2,509	244
Kukës	7,109	383	1,964	6,358	307	1,085	4,516	112	1,152
Lezhë	14,297	2,660	343	8,237	1,875	201	11,536	1,099	192
Shkodër	16,237	2,220	1,031	12,002	1,682	380	11,415	861	756
Tiranë	27,108	6,690	989	19,052	4,313	509	22,259	4,182	598
Vlorë	8,269	6,943	156	5,315	5,277	86	5,720	4,014	88
AREA									
Total	180,590	27,619	4,053	48,259	11,149	1,442	132,331	16,470	2,611
Berat	10,243	4,697	75	2,683	1,300	19	7,560	3,397	56
Dibër	7,070	597	591	3,431	285	206	3,639	312	385
Durrës	14,625	1,607	629	4,032	831	148	10,593	776	481
Elbasan	19,423	3,678	133	4,210	1,231	46	15,313	2,447	87
Fier	58,743	7,457	204	12,168	2,543	74	46,575	4,914	130
Gjirokastër	5,556	652	155	1,982	386	134	3,574	266	21
Korçë	16,052	1,630	209	4,561	734	135	11,491	896	74
Kukës	2,041	340	470	1,042	321	222	999	19	248
Lezhë	8,640	568	491	2,455	348	103	6,185	220	388
Shkodër	8,803	439	315	3,299	252	94	5,504	187	221
Tiranë	17,606	1,878	546	5,115	874	165	12,491	1,004	381
Vlorë	11,688	4,076	235	3,281	2,044	96	8,407	2,032	139

Other data related to mineral fertilizers from Agricultural Census (2012) can be accessed in the following link:

http://www.instat.gov.al/en/themes/censuses/agriculture-census/#tab2

Updated data can be accessed in the following link:

http://www.instat.gov.al/en/themes/agriculture-and-fishery/agriculture/#tab2

Table B1.6.6 Farms with irrigation by irrigation methods and prefecture level (area in Ha)

Prefectures	Total	Irrigation System				
		Surface Irrigation		Irrigation in form of rain (sprinkler irrigation)	Drip Irrigation	Other
		Manual Irrigation	Flooding, furrows			
Total	**158,444**	**16,558**	**99,408**	**27,467**	**9,473**	**15,923**
Berat	8,176	660	4,925	1,778	519	842
Dibër	15,294	317	14,381	571	86	94
Durrës	10,749	3,465	2,687	1,473	603	3,464
Elbasan	24,129	1,282	18,835	3,501	766	631
Fier	26,237	2,706	16,005	5,902	3,871	1,849
Gjirokastër	4,465	490	3,417	378	187	159
Korçë	14,239	725	10,887	2,308	363	641
Kukës	5,872	218	4,888	623	142	41
Lezhë	9,415	688	4,384	2,966	381	1,304
Shkodër	12,248	1,112	6,109	3,413	509	1,463
Tiranë	19,856	2,822	8,686	3,893	1,012	4,810
Vlorë	7,764	2,073	4,204	661	1,034	625

Other data related to irrigation from Agricultural Census (2012) can be accessed in the following link:

http://www.instat.gov.al/en/themes/censuses/agriculture-census/#tab2

Updated data can be accessed in the following link:

http://www.instat.gov.al/en/themes/agriculture-and-fishery/agriculture/#tab2

Table B1.6.7 Manager by type and education level

Education Level	Total	Holder	Spouse	Other family members working on farm	Non-family worker
			TOTAL		
Total	**321,495**	**315,330**	**4,791**	**985**	**386**
Elementary	38,058	37,077	767	163	52
Secondary	179,670	176,291	2,723	452	204
High school general	76,495	75,089	1,070	270	66
Agricultural high school	17,552	17,341	143	56	12
University	9,717	9,532	88	44	53

Other data related to farm manager educational level from Agricultural Census (2012) can be accessed in the following link:

http://www.instat.gov.al/en/themes/censuses/agriculture-census/#tab2

Updated data can be accessed in the following link:

http://www.instat.gov.al/en/themes/agriculture-and-fishery/agriculture/#tab2

Annex 2.
National minimum standards

Measure: Investments in physical assets of agricultural holdings

A. **Establishment, registration and licensing of business entities**

1. Law no. 9901/2008 ''On entrepreneurs and commercial enterprises'', Official Journal no.60/2008, (as amended by Law no. 10475/2011 and Law no.129/2014);
2. Law no. 9723/2007, ''On the National Registration Center'', Official Journal no. 60/2007, (as amended by Law no. 9916/2008 and Law no. 92/2012, Amended by the law no.8/2015, OJ no.32);
   2/1. Decision of the Council of Ministers (DCM) no.506/2007 "On the procedures and publication in the National Registration Center", Official Journal no. 113/2007, Amended by DCM no.864/2015, OJ no.188 ;
3. Law no. 1008/2009, "On licenses, authorisation and permissions in the Republic of Albania", Official Journal no. 31/2009 (as amended by Law no. 10137/2009);
   3/1. DCM no. 538/2009 "On the licenses or permissions processed by or through the National Licensing Centre and on some other secondary legislation regulations", Official Journal no. 80/2009, (as amended by DCMs no. 1295/2009, no. 385/2010, no. 436/2011, no. 421/2013, as amended by DCM no.20/2016; no.107/2016; no.827 /2016);
4. Law no. 38/2012 ''On agricultural cooperation companies'', Official Journal no. 42/2012;
5. Law no. 9136/2003 "On the compulsory social and health contributions in the Republic of Albania, Official Journal no. 84/2013, (as amended), Amended by Law no. 87/2014; by DCM no.77/2015, OJ no.9; Legal initiative no. 1/2017, OJ nr.11);
6. Law no. 9975/2008 "On national taxes", Official Journal no. 128/2008 (as amended, by law no.157/2014; Amended by law no.141/2015; Amended by law no.127/2016;
7. Law no. 9632/2006 "On the system of local taxes", Official Journal no.123/2006, (as amended), Amended by law no.106/2013; by law no.85/2014; Amended by law no.142/2015);
8. Law no. 9920/2008 "On the tax procedures in the Republic of Albania", Official Journal no. 85/2008, (as amended) Amendedby law nr.99/2015);
9. Law no. 8438/1998 "On income tax", Official Journal no. 32/1998, (as amended) Amended by law no.177/2013 Amended by law nr.156/2014; no.129/2016);
10. Law no.7928/1995 "On the value added tax (VAT) in the Republic of Albania", Official Journal no. 12/1995, (as amended) Amended by law no.182/2013; Amended by law no.92/2014);
    10/1. Instruction of the Minister no. 19/2014 "On the special regime for the compensation scheme of the agricultural producers for the purpose of the VAT".

B. **Construction and Environment**

1. Law no. 107/2014 "On planning and development of the territory", Official Journal no. 137/2014;
2. Law no. 9244/2004 "On the protection of the agricultural land", Official Journal no. 49/2004, (as amended by Law no. 69/2013, Law no. 131/2014);
3. Law 8752 dated 26.03.2001 "On establishment and functioning of the structures for protection of agricultural land", Official Journal no. 14/2001, (as amended by Law no. 9244/2004; Law no. 10257/2010; Law no. 16/2012; Law no. 130/2014);
4. Law no. 9426/2005 "On livestock management", Official Journal no. 78/2005 (as amended by Law no. 9864/2008; Law no. 10137/2009; Law no. 72/2013);
5. Law no.8402/1998 "On the controls and discipline of the construction works", Official Journal no. 22/1998 (as amended) Amended by law no.11/2012; Amended by law no.20/1013);
6. Law No. 10440/2011 "On the environmental impact assessment", Official Journal no. 101/2011, Amended by law no. 12/2015;
7. Law no. 10448/2011 "On environmental protection", Official Journal no. 89/2011, (as amended by Law no. 31/2013, amended by law no. 44/2013; amended by law no.60/2014);

8. Law no. 10463/2011 "On the integrated management of waste", Official Journal 148/2011, (as amended by Law no. 32/2013; Law no. 156/2013);
9. DCM no. 99/2005, "On the approval of the Albanian catalogue of waste classification", Official Journal no. 15/2005, (as amended by DCM no. 579/2014);
10. Law no.10465/2011, "On veterinary service in the Republic of Albania", Official Journal no. 143/2011, (as amended by Law no. 70/2013);
11. Law no. 9115/2003, "For the environmental treatment of polluted waters", Official Journal no. 78/2003, (as amended by Law no. 10448/2011; Law no. 34/2013);
12. Law no. 10448/2011 "On environmental permits", Official Journal no. 105/2011 (as amended by Law no. 44/2013; Law no. 60/2014);
13. Law no. 111/2012, "On integrated management of water resources", Official Journal 157/2012;
14. DCM no. 267 of 7.05.2014 'On the adoption of the priority substances in the aquatic environments', Official Journal 71/2014;
15. DCM no. 246 of 30.04.2014 'On the establishment of environmental quality standards for surface waters', Official Journal 65/2014;

C. **Identification and registration of animals/ farm**

1. Law no. 9817/2007 "On agriculture and rural development", Official Journal no. 147/2007;
2. Law no. 10465/2011, "On veterinary service in the Republic of Albania", Official Journal no. 143/2011, (as amended by Law no. 70/2013);
3. Law no. 9426/2005 "On livestock management", Official Journal no. 78/2005 (as amended by Law no. 9864/2008; Law no. 10137/2009; Law no. 72/2013);
4. Law no.10201/.2009, "On general registration of agricultural economic units", Official Journal no. 193/2009;
5. Law no. 7802/2002 "On identification and registration of animals and farms"', Official Journal no. 47/2000, (as amended by Law no. 66/2013);
6. DCM no. 320/2008 "On the animal identification system and the registration of farms", Official Journal no. 49/2008, (as amended by DCM no. 198/2009 and DCM no. 381/2009);
7. Regulation no. 1/2002 "On the system for the identification and registration of the animals and the livestock enterprises";
8. Minister Order no. 407/2008 approving the Regulation "On the implementation of Regulation no. 1/2000, in relation to ear tag, passport and farm register ";
9. Minister Order no. 459/2006 approving the Regulation "On identification and registration of small ruminants";

D. **Animal welfare and health, primary production**

1. Law no 7802/2002 "On identification and registration of animals and farms"', Official Journal no. 47/2000, (as amended by Law no. 66/2013);
2. Law no.10465/2011, "On veterinary service in the Republic of Albania", Official Journal no. 143/2011, (as amended by Law no. 70/2013);
3. Law no. 9441/2005 "On the production, collection, processing and marketing of milk and milk-based products", Official Journal no. 93/2005, (as amended), Amended by law no.73/2013; OJ no.31);
4. DCM no. 1132/2008 "On the approval of the rules on the collection of unprocessed milk", Official Journal no. 134/2008;
5. DCM no.1708/2008 "On the implementation of the programs for in-situ protection of autochthone ruminants", Official Journal no. 208/2008;
6. DCM no. 320/2008 "On the animal identification system and the registration of farms", Official Journal no. 49/2008, (as amended by DCM no. 198/2009 and DCM no. 381/2009, Amended by DCM no 198/2009, OJ no. 40, DCM no. 831/2009 OJ 30 DCM no 957/2016, OJ no 272);
7. Regulation No. 3/2006 "On hygiene of food products", Annex 1 "Primary Production PART A: General Conditions in the Subject for Primary Production and Operations Hygiene Related";
8. Order of the Minister no. 4/2008 approving the Regulation "On minimal standards for the breeding of house animals (cattle, calves);
9. Order of the Minister no.3/2008 approving the Regulation ""On certification of the pure breed species of cattle, sheep, goat, horse, pure breed and hybrid pig and their the sperm, ovules and embryo";
10. Order of the Minister no. 1/2009 approving the Regulation "On the standards for breed-

ing of pigs and hens";

11. Minister Instruction No 3, Date30.04.2009 On Animal Health Regulations Regarding the Production, Processing, Distribution and Import of Products of Animal Origin for Human Consumption
12. Order of the Minister no. 2/2008 approving of the Regulation "On reproduction of farm animals and production and marketing of pedigree material"
13. Instruction No. 5/2011 "Specific Hygienic Requirements for Establishments/Units for Production, collection and processing of milk and milk- based products";
14. Order of Minister No. 354, date 21.12.2011 approving Regulation "On protection of animals during transport";
15. Order of the Minister no. 91/2012 "On certain protection measures in relation to highly pathogenic avian influenza and movements of pet birds accompanying their owners" (Commission Decision 2007/25/EC, 22 December 2006);
16. Order of the Minister no. 92/2012 approving the regulation "On the placing on the market and administration of bovine somatotrophin (BST)" (Dec.1999/879 EC ,17 December 1999);
17. Order of the Minister no. 24/2012 "On specific provisions for the control of African swine fever" (Directive 2005/624/EC);
18. Order of the Minister no. 286/2012 "On protection of animals kept for farming purposes", (Council Directive 98/58/EC of 20 July 1998);
19. Order of the Minister no. 363/2013 "On the procedures for the establishment of residue limits of pharmacologically active substances in foodstuffs of animal origin" (Reg. no 470/2009/ EC of 6 May 2009, Reg. 2006/1055/ EC, Reg. of 12 July 2006, 2006/1231/EC of 16 August 2006, Reg.2006/1451/EC of 29 September 2006);
20. Instruction of the Minister no. 7/2013 "On the protection of animals at the time of killing" (Council regulation (EC) no 1099/2009 of 24 September 2009);
21. Order of the Minister No. 188/2013 "On additional guarantees for the trade in bovine animals relating to infectious bovine rhinotracheitis", (Commission Decision of 15 July 2004, 2004/558/EC).
22. Order of Minister No. 328/2014 approving Regulation "On the diagnostic manual for the African Swine Fever" (Decision 2003/422/ EC);
23. Order of Minister No. 329/2014 approving Regulation "On minimum standards for the protection of calves" (Dir.2008/119/EC);
24. Order of Minister no. 370/2014 approving Regulation "On veterinary medicinal products", (Directive 2001/82/EC);
25. Order of Minister no. 351/2014 approving Regulation "On the measures for the control of foot-and-mouth disease" (Directive 2003/85/EC);
26. Order of Minister no. 336/2014 approving Regulation "On the protection measures for the control of Avian Influenza".
27. Order of the Minister no. 370/2014, approving the Regulation "On veterinary medical products";

E. **Plant protection**

1. Law no. 9244/2004 "On the protection of the agricultural land", Official Journal no. 49/2004, (as amended by Law no. 69/2013, Law no. 131/2014);
2. Law no. 9108/2003, "On the chemical substances and preparations", Official Journal no. 66/203, (as amended by Law no. 10137/2009; Law no. 33/2012);
3. Law no. 10390/2011 "On fertilizers used for plants", Official Journal no. 31/2011, (as amended by Law. no 64/2013);
4. Law no. 9362/2005, "On the plant protection service", Official Journal no. 29/2005, (as amended by Law no. 9908/2008; Law no. 10137/2009; Law no. 71/2013, as amended by law no.105/2016));
5. DCM no. 923/2011, "On composition and functioning of the Commission for the Evaluation and registration of Fertilizers and the procedures for the evaluation and registration", Official Journal no. 182/2011;
6. DCM no. 774/2012, "On the production requirements, labelling, packing and marketing, as well as tolerance and list of types of fertilizers named "EC fertilizers";
7. DCM no. 260/2013, "On the establishment of rules for the control, sampling, analysis and procedures, communication of results for the fertilizers analysis", Official Journal no. 57/2013;
8. DCM No. 612/2011, "On the establishment of the detailed requirements for fertilizers based on ammonium nitrate containing 28% nitrogen", Official Journal no. 139/2011;

9. DCM no.1188/2008 "On approval of rules for importation, trading, transport, storing, using and elimination of plant protection products", Official Journal no. 141/2008, (as amended by DCM no. 462/2012);
10. DCM no. 1555/2008 "On the approval of the rules on registration and evaluation criteria of plant protection products", Official Journal no. 183/2008, (as amended by DCM no. 791/2012, as amended by DCM no.32/2016);
11. DCM no. 750/2010 "On the approval of the rules on phytosanitary quarantine inspections", Official Journal 139/2010;
12. Order of the Minister no. 1/2003 approving the Regulation "On production, protection and use of the certified material in fruit and grape plants";
13. Instruction of the Minister no. 1/2007, "On the approval of the rules concerning the phytosanitary measures for the limitation of the bacterial afta (Erwinia amylovora (Burr.) Winsl. et al) in the Albanian territory";
14. Instruction of the Minister no. 2/2007, "On the approval of the rules concerning the phytosanitary measures for protection of the pure potato from the quarantine parasites";
15. Instruction of the Minister no. 3/2007, "On approval of the rules on monitoring, control, and quarantine measures to be adopted for the corn rootworm (Diabrotica virgifera Le Conte)";
16. Instruction of the Minister no. 7/2007, "On the approval of the rules on the phytosanitary safety of the woody packing material in the international and domestic trade"
17. Order of the Minister no. 51/2009. "On the functioning of the State Commission for the registration of the plant protection products", Amended by Order of Minister no.345/2016";
18. Order of the Minister no. 250/2012, "On the establishment of the Commission for the Evaluation and Registration of the fertilizers used in plants not named "EC Fertilizers";
19. Order of the Minister no. 268/2012, "On the form and content of the plant fertilizers' register"
20. Instruction of the Minister no. 9/2012, "Conditions for the transport, storage and conservation of fertilizers".

Measure: Processing and marketing of agricultural products

A. <u>Establishment, registration and licensing of business entities</u>

1. Law no. 9901, date 14,04,2008 ''On entrepreneurs and commercial enterprises", Official Journal no.60/2008, (as amended by Law no. 10475/2011 and Law no.129/2014, amended by law no.129/2014, OJ no.163);
2. Law no. 9723 date 03.05.2007, ''On the National Registration Center", Official Journal no. 60/2007, (as amended by Law no. 9916/2008 and Law no. 92/2012 Amended by law 8/2015, OJ no.32);

2/1. Decision of the Council of Ministers (DCM) no.506, date 1.8.2007 "On the procedures and publication in the National Registration Center", Official Journal no. 113/2007;

3. Law no.9863/2008 "On food", Official Journal no.17/2008, (as amended by Law no. 10137/2009; Amended by law no.74/2013, OJ no.31);
4. Normative Act no. 4/2012 "On the adoption of rules on the animal slaughter and sale of meat products", Official Journal no. 110/2012;
5. Law no. 10081 date 23.02.2009, "On licenses, authorisation and permissions in the Republic of Albania", Official Journal no. 31/2009 (as amended by Law no. 10137/2009);

5/1. DCM no. 538 date 26.05.2009 "On the licenses or permissions processed by or through the National Licensing Center and on some other secondary legislation regulations", Official Journal no. 80/2009, (as amended by DCMs no. 1295/2009, no. 385/2010, no. 436/2011, no. 421/2013, as amended by DCM no.6/2015, OJ no.31);

6. Law no. 38/2012 ''On agricultural cooperation companies", Official Journal no. 42/2012;
7. Law no. 9136/2003 "On the compulsory social and health contributions in the Republic of Albania, Official Journal no. 84/2013, (as amended by law no.87/2014, OJ 126, DCM no.77/2015 OJ no.9);
8. Law no. 9975/2008 "On national taxes", Official Journal no. 128/2008 (as amended, by law no141/2015, OJ no.252; by law no.127/2016', OJ no.250);
9. Law no. 9632/2006 "On the system of local taxes", Official Journal no.123/2006, (as amended by law no.142/2015, OJ no.252);
10. Law no. 9920/2008 "On the tax procedures in the Republic of Albania", Official Journal no. 85/2008, (as amended by law nr.164/2014, OJ no.198; by law no.99/2015 OJ.185);

11. Law no. 8438/1998 "On income tax", Official Journal no. 32/1998, (as amended by law no. 129/2016 OJ no.259);
12. Law no.7928/1995 "On the value added tax (VAT) in the Republic of Albania", Official Journal no. 12/1995, (as amended by law no.92/2014, OJ no.128);

B. Construction and Environment

1. Law no. 107/2014 "On planning and development of the territory", Official Journal no. 137/2014;
2. Law no.8402/1998 "On the controls and discipline of the construction works", Official Journal no. 22/1998 (as amended, by law no.20/2013, OJ no. 29);
3. Law No. 10440/2011 "On the environmental impact assessment", Official Journal no. 101/2011 as amended by law no.12/2015, OJ no.38;
4. Law no. 10448/2011 "On environmental protection", Official Journal no. 89/2011, (as amended by Law no. 31/2013);
5. Law no. 10463/2011 "On the integrated management of waste", Official Journal 148/2011, (as amended by Law no. 32/2013; Law no. 156/2013, amended by law no.32/2013, OJ no.30; by law 156/2013, OJ no. 172);
6. DCM no. 99/2005, "On the approval of the Albanian catalogue of waste classification", Official Journal no. 15/2005, (as amended by DCM no. 579/2014);
7. Law no. 9115/2003, "For the environmental treatment of polluted waters", Official Journal no. 78/2003, (as amended by Law no. 10448/2011; Law no. 34/2013, OJ no.30);
8. Law no. 10448/2011 "On environmental permits", Official Journal no. 105/2011 (as amended by Law no. 44/2013; Law no. 60/2014);
9. Law no. 10138/2009, "On the public health", Official Journal no. 87/2009, (as amended by Law no. 52/2013);
10. Law no. 9441/2005 "On the production, collection, processing and marketing of milk and milk-based products", Official Journal no. 93/2005, (as amended by law no. 73/2013, Fletorja Zyrtare no.31);
11. Order of the Minister no.22/2010 "On the general conditions and in particular of the hygiene in the food establishments".

C. Food safety. Milk, meat and fruit/vegetables

1. Law no. 9441/2005 "On the production, collection, processing and marketing of milk and milk-based products", Official Journal no. 93/2005, (as amended by law no. 73/2013, OJ no.31);
2. Law no.9863/2008 "On food", Official Journal no.17/2008, (as amended by Law no. 10137/2009; Law no. 74/2013);
3. Law no.10465/2011, "On veterinary service in the Republic of Albania", Official Journal no. 143/2011, (as amended by Law no. 70/2013);
4. Law no. 7659/1993 "On seeds and seedlings", Official Journal no. 1/1993;
5. Law no. 7929/1995 "On the protection of fruit trees", Official Journal no. 12/1995;
6. Law No. 10416/2011,"On plant seeding material", Official Journal no. 46/2011, (as amended by Law no. 67/2013, amended by law no. 105/2015, OJ no.182);
7. Law no. 9587/2006 "On protection of biodiversity", Official Journal no. 84, (as amended by Law no. 37/2013; Law no. 68/2014);
8. DCM no. 1132/2008 "On the approval of the rules on the collection of unprocessed milk", Official Journal no. 134/2008;
9. Instruction of the Minister no.5, date 25.03.2011 "On specific requirements of hygiene in establishments of the milk production, collection and processing, also for the milk based products";
10. Instruction of the Minister no.22/2010 "On the general conditions and in particular of the hygiene in the food establishments", Official Journal no. Extra 80/2012;
11. Instruction of the Minister no.21/2010 "On specific requirements of hygiene and official controls for products with animal origin", Official Journal no. Extra 80/2012;
12. Instruction no. 20/2010 "On the implementation of the preventive programs, GMP. GHP and procedures based on risk analysis and CCP-s (HACCP) in the food establishments", Official Journal no. Extra 80/2012;
13. Instruction no.23/2010 "Specific requirements of the hygiene for meat and meat products", Official Journal no. Extra 80/2012;
14. Instruction of the Minister no. 7/2013 "On the protection of animals at the time of killing" (Council regulation (EC) no 1099/2009 of 24 September 2009);

15. Instruction no.7/2012 "On the use of food additive "E 960 Steviol Glycoside" in the food products";
16. Order of the Minister no.327/2012 approving the Regulation "On the monitoring of the zoonosis";
17. Instruction of the Minister no.15/2012 "On the materials and articles in contact with food", as amended by DCM no.3, dt.08.03.2016;
18. Order of the Minister no.363/2013 approving the Regulation "On the limitation of the residues of active pharmacologic substances in the foods of animal origins";
19. Instruction of the Minister no.1/2014 "On the enzymes in the food products";
20. Instruction no. 4/2014, "On food products and food ingredients treated with rays";
21. Order of the Minister no.235/2014 approving the Regulation "On the requirements for traceability of the food with animal origins";
22. Instruction of the Minister no. 6/2014 "On the extracting solvents used in the food production and food ingredients"
23. Instruction of the Minister no. 5/2014 "On the maximal level of the pesticide residues in the products such as bananas, tomatoes, grain, cucumbers, apples, potatoes, grape, vine grape, olives and peppers";
24. Order of the Minister no.127/2014, "On the approval of the Action Plan in the milk and milk products sector";
25. Order of the Minister no. 350/2014, "On certain lactoproteins (casein and caseinate) used for human consumption";
26. Order of the Minister no. 234/2014 amending the Order no. 261/2009 "On the microbiologic criteria for food products", as amended by order no.645, dt.08.03.2016;

Chapter B2

AGRI-ENVIRONMENTAL POLICY IN BOSNIA AND HERZEGOVINA

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B2.1 INTRODUCTION

The current status of the country regarding the EU integration process

Bosnia and Herzegovina (BIH) has the status of a potential candidate, as the application for EU membership was submitted on February 15, 2016.

The answers to the Questionnaire of the European Commission of BIH were submitted to the European Commission on February 28, 2018. After reviewing the responses, the European Commission should give an assessment on the ability of BIH to gain candidate status and to enter into negotiations.

Brief history of the progress and achievements regarding the EU approximation process with a focus to agriculture and rural development

The House of Representatives of the Parliamentary Assembly of Bosnia and Herzegovina adopted the Strategic Plan for Rural Development of Bosnia and Herzegovina (SPRR BIH) on January 31, 2018 - a framework document. The operational plan for establishing the IPARD Payments Agency in BIH should be adopted in the first quarter of 2018. The review of the document "Plan of Harmonization of Rural Policy Measures and General Services in Agriculture of BIH" is ongoing.

Main country indicators

The total area covers 51,209.2 km^2, 51% of which are under the Federation of Bosnia and Herzegovina Enitiy (FBIH), and 49% under the Republic of Srpska Entity (RS).

According to the 2013 census (published in 2016), there are 3,531,159 inhabitants in BIH - 2,219,220 in FBIH and 1,282,423 in RS. RS did not accept the published results of the Agency for Statistics of Bosnia and Herzegovina, therefore they published the results of the census including only the Republic of Srpska: 1,170,342 inhabitants. GDP of BIH is 15,300 milion EUR or 4,354 EUR per capita (Agency for Statistics of BIH for 2016).

Agriculture in the country

Agriculture and the food industry are important economic branches of the BIH economy. The total agricultural area in BIH is 2.2 million hectares (1.6 million hectares of cultivable land and 600.000 hectares of pastures). In BIH, the Gross Value Added for agriculture (with forestry and fishing) varied in the last period in an absolute amount of 1.6 to 1.8 billion KM, with a growth trend. Agriculture has a greater significance for the RS than for the FBIH and BD (Brčko District). Gross Value Added for agriculture in 2015 was 4.6% in FBIH, 9.3% in RS and 10% in BD. Employment in the BIH agriculture sector, according to the labor force surveys, was 17.9% in FBIH and 10.6 and in RS 29.1% by the end of 2015.

Livestock breeding has a major role in agriculture in BIH, especially in FBIH because of the dominant share of meadows and pastures (about 60%). Cattle breeding, i.e. milk production is the most important branch of livestock production in BIH, followed by pig farming, sheep, poultry and goat farming. Plant production is more dominant in RS, where cereals dominate with 65.4% (2/3 corn and wheat), followed by forage crops, vegetables and industrial plants (SPRR BIH).

Strategic approach of rural development policy of the country

In February 2018, the Strategic Plan of Rural Development of Bosnia and Herzegovina was adopted for the period 2018 – 2021 at the BIH level.

The Medium-term Development Strategy of the Agricultural Sector for the period 2015-2020 is in force in FBIH, and the Rural Development programme for FBIH for the period 2018-2020 is in the process of adoption.

The Strategic Plan for the Development of Agriculture and Rural Areas, 2016-2020, is in force in RS, in accordance with the adopted SPRR BIH.

The BD is currently developing a Strategy for the Development of Agriculture, Food and Rural Development.

Major challenges and strategic objectives with regards to environmental and agri-environmental issues

There are three main challenges: preventing the destruction of the environment and biodiversity, the disappearance of animal and plant genetic resources (indigenous varieties and breeds) and the loss of agricultural land.

The following strategic measures result from these main challenges:

- better utilization of agricultural land;
- increasing the areas under the irrigation system;
- establishing efficient monitoring of agricultural land status;
- plan and implementation of programmes for development and protection of areas with natural constraints;
- revitalization of pastures and natural meadows;
- conservation and sustainable use of genetic resources;
- organic production support;
- environmental protection and reduction of the negative impacts of climate changes.

Data and expert view on major environmental and agri-environmental issues of relevance for the country/territory

Environmental protection was not one of the development priorities, but the process of EU approximation has improved the environment protection policies. Significant environmental problems are the emission of harmful gases from industrial plants (for example, thermoelectric power plants) and the lack of ecological awareness.

Agroecological problems are:

- reduction of organic matter on arable land due to irregular and insufficient application of organic fertilizers,
- inadequate management of organic fertilizers,
- growing plants in monoculture,
- inadequate management of natural resources.

Special issues regarding the environmental pollution are the management of various types of waste, including waste from agriculture. Animal waste, generated as a by-product of the food industry, primarily waste from slaughterhouseas, has not yet been adequately addressed in BIH. In addition, an insufficient level of awareness on preservation of the environment among farmers represents a main challenge,

National rural development support policy

Direct support to farmers and additional support to the following:

- investments of agricultural enterprises, producer groups and processors;
- professional development,
- development of knowledge and providing advice and information;
- development of rural infrastructure and improved accessibility of services for the rural population;
- diversification in rural areas;
- development of public infrastructure of quality and services in the agri-food sector;
- systems and services in the veterinary and phytosanitary field;
- organic production,
- environmental protection and mitigation of climate change impacts;
- development of the administrative sector and information support services;
- capacity building of institutional governance.

Relevant laws and regulations for agri-environment

The environmental issues are not included in the ten points in which the BIH Constitution defines the competences of the state institutions and therefore they fall within the competence of the Entities. The analysis of legislation points to a lack of certain corresponding acts. In addition, some of the adopted acts are incompatible with the EU standards and regulations. There is also a discrepancy between the laws that have been adopted at different levels of government.

B2.2 AGRICULTURE IN BIH

Bosnia and Herzegovina can be divided into three agroecological zones (AEZ) as follows:

- AEZ I - Lowlands in the north,
- AEZ II - Highlands and mountainous central area,
- AEZ III - Mediterranean area in the south of BIH.

AEZ I is located in the north of BIH in the lower streams of the Rivers Una, Sana, Vrbas, Bosna and Drina. It is a lowland and slightly wavy area of up to 300m altitude with a moderate continental climate. This area represents the ˝granary˝ of BIH (Prijedorsko polje, Lijevče polje, Posavina and Semberija). The most common tree fruits are plums, apples and pears. The lands of this zone are mainly medium deep on the carbonate substrate and with predominantly acidic or poorly acidic reactions. By administrative division, most of this area belongs to RS, and a smaller part to FBIH. The entire territory of Brčko District belongs to AEZ I.

AEZ II, a mountainous area, occupies the central part and at the same time most of the territory of BIH. This zone is rich in forest resources. Depending on data sources, forests account for 55% or 63% of the total area of BIH. According to official data, BIH is classified as one of the European countries rich with forests. Meadows and pastures occupy a significant part of this AEZ. If sown meadows are taken into account, there are about 2.3 hectares of meadows and pastures per single livestock unit in BIH. This resource is used in livestock development, especially for cow-calf breeding, as well as for sheep and goat breeding (which can provide 70% of nutritional needs). In recent years, the production of small fruit in this AEI has shown a strong expansion (raspberry, strawberry). The highest peak in BIH, Maglić, with an altitude of 2386, m is located in this zone. By administrative division, most of this AEZ belongs to the FBIH.

AEZ III, consists of the Mediterranean area of the southern part of BIH, the karst area and karst fields in the valeys of the Neretva River and the sinking river Trebišnjica. It is a significant vineyard area. It's most common fruit plants are cherry, peach and mandarin. In the Neretva valley, there is also a significant vegetable production. This area is characterized by mild winters with high precipitation and hot summers. The frequency of drought occurrence is 85%, and the duration of drought is 50 days on average, as it appears from the beginning of July to the beginning of September. By administrative division, most of this area belongs to the FBIH.

Table B2.2.1. Key agricultural indicators (BIH)

	2010	2015	2017
Share of Agricultural land in total land	41.6 %	42.4 %	42.3 %
Share of Arable Land in agricultural land*	80.1 %	79.9 %	81.4 %
Share of Permanent Crops in agric. land	4.9 %	4.9 %	4.9 %
Share of Agricultural GDP in total GDP	5.94 %	5.23 %	**
Share of Agricultural Labour in total Labour	19.7 %	17.9 %	18.8 %
Share of Agricultural Export in total Export	8.45 %	10.01 %	10.05 %
Share of Agricultural Import in total Import	22.52 %	22.31 %	20.82 %

*Data source: Agency for Statistics of BIH; * arable land with pastures; **This data will be available in July 2018*

- According to statistical sources, BIH has 2.2 million ha of agricultural land, which is about 42% of the total area. However, the share of pastures in agricultural land is about 27% (about 600,000 ha), where a significant area is made of low-yield pastures on karst areas.
- Incoherence can be observed in Table B2.2.1, where the share of agricultural land in 2015 increased in relation to 2010, which may be the result of a change in the methodology of data collection. However, one of the visible problems in BIH is the incompatibility of data, thus it is necessary to harmonize the system of data collection and analysis.
- In BIH, the gross value added (GVA) of agriculture (including forestry and fishing) in relative terms is decreasing due to the faster growth of other non-agricultural sectors GVAs (from 8.1% in 2006 to 6.2% in 2015).
- Bosnia and Herzegovina had a negative foreign trade balance (deficit) in the period from 2006-2015, and the coverage of export-import in the agricultural and food products was even lower. Despite solid natural resources, the trade deficit in agricultural and food products is a consequence of the uncompetitive nature of the domestic agricultural production, the main causes of which are: low productivity, non-standardized quality and origin of products, less incentives and a liberal foreign trade regime.
- As mentioned in point B1, agriculture has a greater significance for the Republic of Srpska than for the Federation of BIH and the Brcko District of BIH, which is evident from the subsections listed in Table B2.2.2, showing the major agricultural indicators by Entities and the BD for 2015.

Table B2.2.2. Key agricultural indicators BIH by entities and BD for 2015

	FBIH	RS	BD
Share of Agricultural land in total land	53.7%	44.7%	1.6%
Share of Arable Land in agricultural land	36.2%	58.7%	83.3%
Share of Permanent Crops in agric. land	4.2%	5.3%	11.1%
Share of Agricultural GDP in total GDP	4.6%	9.3%	10.0%
Share of Agricultural Labour in total Labour	10.6%	29.1%	No data
Share of Agricultural Export in total Export	n/a	n/a	n/a
Share of Agricultural Import in total Import	n/a	n/a	n/a

Data sources: Strategic Plan of Rural Development of Bosnia and Herzegovina (2018-2021)

Table B2.2.3. Land Use BIH for 2017

	ha	% of total land
Land Total	5,119,700	100
Forest*	2,822,663	55
Agricultural land	2,164,522	42
Arable land & gardens	594,002	12
Permanent crops (fruit, grapes, olives)	106,727	2
Pastures and meadows	1,061,293	21
Wooded pastures	No data	No data
Agroforestry*	118,476,2	2
Fallow	No data	No data
Abandoned land	402,500	8
Agricultural land/capita (ha)	0.61	
Arable land & permanent crops/capita (ha)	0.50	

*Data source: Agency of Statistcs of BIH; * data for 2016;*

One of the major problems for plant production is the insufficient utilization of arable land. Out of the available 594 002 ha arable land and gardens (Table B2.2.3), about half is sown (although there are some reservations according to this statistical data). Furthermore, 402 500 ha is kept as abandoned (Table B2.2.3), According to BIH MAC data for 2016, BIH's total mine suspected area covers 114 500 ha (2.3% in relation to the total area in BIH), and most of these areas are in the category of agricultural land i.e. neglected areas.

Table B2.2.4. Land Use BIH by entities and BD

Structure of land use	BIH	FBIH	RS	DB
Arable land and gardens*	1,004,931.0	396,182.0	582,270.0	26,479.0
Orchards	99,389.6	43,978.0	52,191.6	3,220.0
Vineyards	5,603.5	5,090.0	513.5	0.0
Meadows	460,166.3	275,516.0	183,815.3	835.0
Pastures	588,181.0	424,794.0	162,662.0	725.0
Agricultural land - Total	2,158,271.4	1,145,560.0	981,452.4	31,259.0
Forest land	2,795,090.0	1,522,886.0	1,272,204.0	0.0

**Also contains (or includes) abandoned areas. In Table B2.2.3 abandoned land is a separate LU category.*

Data source: NAP UNCCD BIH (2016)

The information on farm structure is very limited. The last published official data regarding the structure of farms were from the 1981 agricultural census (Table B2.2.5).

Table B2.2.5. Farm Structure 1981

Groups of farms according to their size	Farms		Utilized agricultural area	
	Number	Structure (%)	ha	Structure (%)
Total	540,301	100	1,639,921	100
Up to 2 ha of UAA	291,593	54	254,584	16
Between 2 ha and 5 ha	159,263	29	547,109	33
Between 5 ha and 10 ha	73,776	14	527,142	32
Between 10 ha and 100 ha	15,669	3	311,086	19

Source: Republic Institute for Statistics of BIH, Statistical Bulletin 101, 1983.

The agricultural census from 1991 collected information on the total number of farms (569,581 farms) but did not sub-divide this by size of farm.

The agricultural registration in BIH has not been implemented so far. The Ministries of Agriculture at entity levels have an administrative register for agricultural households, but the registrar did not encompass all farmers. In the RS register, there are data on plots and the surface area, but only for the agricultural households which receive subsidies. Therefore, it is stil a small percentage comparing to the total number of agricultural households.

In absence of new data, according to the data from 1981, there were 291,000 (54%) agricultural households with less than 2 ha of land, and only 15,669 (3%) agricultural households with a holding larger than 10 ha (Institute for Statistics of BIH, 1983). The situation has certainly changed and is likely to be even more unfavorable. More up-to-date and reliable data can be expected only after the implementation of the agricultural census.

Restitution orders have not been issued and for the time being there is no possibility of returning the confiscated agricultural land to the legitimate owners or their legal successors.

Greater privatization of state land is not anticipated, as it could result in further fragmentation and poor property structure. It should also be noted that only 5% of the total agricultural area has remained in state ownership.

Table B2.2.6. Agricultural production, 2017

Crop Production (total)	Areas ha	Production t
Cereals	313,983	1,163,363
Oilseeds	10,584	18,587
Tobacco	1,496	1,760
Fruits	No data	227,715
Olives	No data	281
Vegetables	27,674	291,505
Potatoes	34,941	337,137
Livestock (total)	Livestock units	Number of farms
Cattle	221,306	No data
Pigs	548,011	No data
Sheep and goats	1,090,022	No data
Horses	15,599	No data
Poultry	21,583,300	No data
Other animals	No data	No data

** Data source: Agency for Statistcs of BIH for 2017*

The main characteristics of crop production are low average yields. For example, the average yield of potatoes is 9.6 t/ha, compared to Serbia's average potato yield of 11.4 t/ha, 16.4 t/ha in Croatia, and 29.9 t/ha in the EU, respectively. This is one of the reasons for the low competitiveness of BIH agricultural producers. According to the SPRR BIH data, the only product with a higher average yield per hectare in BIH and its neighboring countries is raspberries.

Agricultural statistics in BIH regarding fruit and grapevine production (with the exception of strawberry and raspberry) are still analyzed by the number of fruit trees and vines, so data on total fruit and grape production is available only per tree/vine. This, as well as the fact that the data does not distinguish between intensive and extensive production, makes it difficult to analyze the available data and make valid conclusions.

B2.3 ENVIRONMENT AND ENVIRONMENTAL POLICY IN BIH

State of the environment and environmental policy in the country

As a transitionl country in the post-war period, BIH has faced a large number of social, economic and other problems. Therefore, environmental protection has not been a development priority, but the EU approximation process has improved the environmental protection policies. According to the Constitution, environmental policy and the use of natural resources are part of the responsibilities of the Entity Governments and the BD Government, which regulate environmental issues within the respective entitiy's laws, regulations and standards. In line with the country's political organisation, there are a number of fragmented jurisdictions on the environment, which are located at four administrative levels: state, entity, cantonal (FBIH) and municipal (RS). In such a complex administrative structure, a major problem is the lack of vertical (entity/cantonal/municipal) and horizontal (inter-entity/inter-ministerial/ inter-municipal) co-operation. There is a visible shift in the implementation of environmental sector reforms. The BIH approximation process to the European Union is one of the main drivers of reform, largely related to the harmonization of the domestic legislation with the EU. In that sense, a set of environmental laws was adopted in FBIH, RS and BD during the period from 2002 to 2004, which is the basis for adopting environmental regulations at all levels. In addition to the government institutions, state and entity agencies and institutes, scientific and research institutions, professional and/or business associations, associations of citizens or non-governmental organisations play an important role in the protection of the environment. Over the last decade, there has been a growing trend in the number of institutions and organisations, both governmental and non-governmental, which is the result of the increase in the public awareness about the need to preserve the environment.

Environmental problems of importance

As the center of the heavy industry, as well as the main source of raw materials and energy of the former Yugoslavia, BIH has been exposed to severe pollution of its basic natural resources - water, land and air since the pre-war period. In the war period, between 1992 and 1996, the economic activity collapsed in all the sectors in BIH, and the country came out of the war with a completely devastated infrastructure and industry, and a devastated economy. The war has left a large number of mined areas, large quantities of different types of waste, thousands of hectares of cut or destroyed forests, etc. Although in the postwar period directed toward reviving the economic activities, environmental protection was not one of the development priorities, the EU approximation process has contributed to the improvement of the environment protection policy. Despite the success achieved so far in some areas, BIH is facing great challenges when it comes to meeting the set goals for environmental protection. The absence of a coordinated mechanism with clear mandates and a clear delineation of responsibilities and obligations between the state, entities, cantons and municipalities, the lack of harmonized methodology of data collection and processing, i.e. domestic standards in accordance with EU norms, the lack of bylaws and the lack of funding for some important measures for the implementation of environmental protection policies can be identified as the main obstacles that may slow down the implementation of environmental issues.

Water Framework Directive

The legal transfer of the Water Framework Directive to BIH's legal framework was carried out by amendments to the Law on Waters in the Entities and the adoption of the Law on Waters of the Federation of Bosnia and Herzegovina (Official Gazette of FBIH No. 70/06) ("FBIH Water Law") and RS Water Law 50/06 and 92/09) (hereinafter: RS Water Law). Entity Water Laws transferred the key requirements of the WFD.

Nitrate Directive

Presently, there is no Regulation in BIH that determines compliance with the provisions of the Nitrate Directive, but given the interest to join the EU, the implementation of the Nitrates Directive will become an imperative. In the framework of USID/SIDA FARMA projects 2010-2014 (*Fostering Agricultural Markets Activity*), a training programme for educators in the field of the "EU Nitrate Directives in livestock production", as well as a training programme for farmers on the principles of the Nitrate Directive, was implemented. The project has also provided support to a number of farmers in order to implement the Nitrate Directive on their farms, which will then serve as farms for practical trials and training of other farmers.

Climate change

The climate in BIH varies from moderately continental in the northern part of the Pannonian Plain along the Sava River and in the foothill zone, to Alpine climate in the mountainous regions, and Mediterranean climate in the coastal area and the region of the lowland Herzegovina in the south and southeast. The lowland regions of the northern BIH have an average annual temperature between 10 and 12°C, while in areas above 500 m altitude, the mean annual temperature is below 10°C. In the coastal area, the mean annual air temperature varies between 12 and 17°C. In the period from 1981 to 2010, a temperature increase was recorded on the entire territory of BIH. The highest increase occurs during the summer and winter periods and amounts to about 1°C. The annual precipitation varies from 800 mm in the north along the Sava River, up to 2,000 mm in the central and southeastern mountain regions (1961-1990). The average annual precipitation in BIH is about 1,250 mm, but the precipitations are not equally distributed, neither spatially nor temporally (Second National Report on BIH in line with the UN Framework Convention on Climate Change, UNDP, 2013).

Climate data for Bosnia and Herzegovina, presented in the First National Report on Climate Change in BIH, point to the changes observed at the Mediterranean Sea coast and in the Balkans. The model used in the report estimates that BIH will continue to be affected by global warming with an average increase of 0.7 to 1.6°C, and that the amount of precipitation in the region will decrease, especially in the summer periods, which will lead to increased drought. In the past, droughts affected BIH every three to five years, and depending on their duration and yield strength, yields were reduced by 30 to 95 percent on average. Droughts were recorded in 1992, 1995 and 1998, while in 2000, 2003, 2007, 2011 and 2012 the status of a natural disaster was declared in some regions. For the past hundred years, the temperature recorded has risen by 0.8°C on average (which is in accordance with global trends). An acceleration tendency has been observed for this rise, as the mean temperature in the previous decade, 2000-2010, was the hottest for the past 120 years. It is expected that the duration of dry periods, the frequency of torrential floods and the intensification of soil erosion will increase during this century. In addition, an increase in the frequency of hail, storms, thunderstorms and maximum wind speeds is expected, which can pose a threat to all forms of human activity (First National Report on Climate Change according to UNFCCC, 2009; Vulnerability Study of the Federation BIH, 2011). Due to the diverse topography and diversity of Bosnia and Herzegovina, the prevailing land use patterns in each of the regions in the country must be taken into account when designing possible scenarios.

Biodiversity

The richness of the living world in BIH is the result of its ecological heterogeneity of space, geomorphological and hydrological diversity, specific geological past and climate diversity. In Bosnia, more than 5,000 species and subspecies of vascular plants, more than 100 fish species, and over 320 species of birds and other elements of biological diversity have been identified. According to the data of the First (2009) and the Fourth (2010) National Report to the UNCBD, Bosnia and Herzegovina belongs to the group of areas with quite valuable biological diversity. However, the latest data from BIH show the following:

- The Red List of RS contains 818 species of vascular plants, 304 bird species, 46 fish species, 57 mammal species, 20 amphibian species, 25 reptile species and 273 insect species (Official Gazette of RS, No. 124/12);
- The Red List of FBIH contains 658 plant species, 27 mammal species, 40 bird species, 6 reptile species, 4 amphibian species, 36 fish species, as well as a great number of different species of invertebrates (Official Gazette of FBIH, No. 7/14).

In 2011, the Republic of Srpska Nature Protection Strategy noted that the level of biodiversity research in the Republic of Srpska is scarce, and concluded that the situation is best in the fields

of ichthyology and ornithology. The programme for the conservation of plant genetic resources of the Republic of Srpska was adopted in 2008, thus establishing a legal framework for preserving biodiversity within its territory, and in 2009 the Institute for Genetic Resources of the RS was founded as an organisational unit of the University of Banja Luka. In addition to this program, the Republic of Srpska adopted the programme for Conservation of the Forest Genetic Resources in 2013.

Natura 2000

In 2014, the project "Support to the implementation of the Birds Directive and the Habitats Directive" proposed 122 potential Natura 2000 sites (58 in the Federation, 61 in Republika Srpska and 3 in Brčko District) but no further work on Natura 2000 has been done after the completion of the project.

In 2011, the Federation of Bosnia and Herzegovina adopted the Regulation on Natura 2000 (OG FBIH, No. 43/11). The appropriate assessment procedure for plans and projects that are likely to have significant effect on the conservation and integrity of ecologically significant areas, i.e. the future Natura 2000 sites, has been introduced in the Law on Nature Protection but is not yet applied. There are no mechanisms in place to ensure that EIA studies take into account the effects on the potential Natura 2000 sites.

In Republika Srpska, the 2014 Law on Nature Protection stipulates that the Government of Republika Srpska, at the proposal of the ministry responsible for environmental protection, shall adopt a regulation that establishes the ecological network. As of early 2017, no subsidiary legislation on Natura 2000 has been adopted.

Protected areas

The territory of protected areas in BIH is relatively small, and the percentage share as compared to the total BIH territory is very low and significantly below the European average. In 2011, the percentage of protected areas in BIH was 2%.The percentage of protected areas has increased over the past 9 years with the establishment of the National Park "Una" in 2008 and similar activities. However, that percentage is still below the level of protection envisaged in numerous strategic documents. At present, there are three National Parks in BIH: the National Park "Kozara" and the National Park "Sutjeska" in the RS and the National Park "Una" in the FBIH. The establishment and management of these national parks is in accordance with the 2nd category of IUCN, but it ought to be emphasized that the National Park "Una" was declared a national park in accordance with the IUCN categorization, while the national parks "Sutjeska" and "Kozara" were constituted in the former Yugoslavia. The adoption of the Law on the National Park "Kozara" and the Law on the National Park "Sutjeska" was completed in December 2012. These legal acts are also in line with the IUCN categorization. The existing national parks cover 39,759.9 ha. Ten areas are designated as Natural Monuments (3rd category of IUCN), four of which are located in the FBIH, and six in the RS. These are: Skakavac, Prokoško Lake, Vrelo Bosne and Tajan in the FBIH, and Ljubačevo cave, Žuta Bukva, Orlovača Cave, Rastuša Cave, Dedana Pit and Vagan Cave in the RS. Apart from these, two protected areas are designated parks of nature (Blidinje and Hutovo Blato), but this category is not envisaged in the Law on Nature Protection of the FBIH.

Ramsar sites

There are three Ramsar sites in BIH: Hutovo Blato (Hutovo Mud), Bardača and Livanjsko polje (Livanjsko Field). Hutovo Blato was declared a natural park in 1995. Due to its significance for the migration of a large number of wetland birds, it was enlisted in the Specially Protected Areas of Mediterranean Importance in accordance with the Barcelona Convention. The International Council for Bird Protection (ICPB) included Hutovo Blato on the list of internationally recognized areas of importance for birds (1998.). Since 2002, Hutovo Blato has been on the list of wetland habitats of international importance according to the Ramsar Convention. Bardača, another Ramsar site in BIH (identified in 2007), is situated in the north of the country on the alluvial plain of the Sava River. The third internationally recognized site of importance for birds is Livanjsko polje, which was declared a Ramsar site in 2008. At present, several other locations are in the designation process (USAID, 2011).

Relation of environmental sector with agriculture

Generally speaking, there are numerous agro-environmental problems in BIH that are related to the destruction of natural resources and to the poor quality of agricultural plant and animal products. Compared to the total area of agricultural land in BIH, the area of arable land is decreasing, while the area of unused and untreated land is increasing. One of the major problems encountered by plant production is the insufficient utilization of arable land. From the available 594 002 ha of arable land and

gardens (12% of the territory), about half is being cultivated. In addition, 8% of the territory is being neglected. According to the Bosnia and Herzegovina Mine Action Centre (BIH MAC) data for 2016 in BIH, the total mine suspected area covers about 2.3% of the total area, and the largest part of these areas falls into the category of agricultural land, i.e., abandoned areas. It is estimated that in the future, the impact of climate change, through the increase in the average temperatures and decrease in the average precipitation, will have an even greater negative impact on agricultural production, so irrigation will become a necessity. In addition to investing in irrigation systems, it is also necessary to invest in drainage systems and protection from large waters (external and internal) by constructing drainage, drainage canals, embankments and pumping stations.

B2.4 AGRI-ENVIRONMENTAL STATE IN BIH

In accordance with the Constitution of Bosnia and Herzegovina, the creation of agro-ecological policy should be done at the level of its entities -- FBIH, RS and BD, and in the Federation of Bosnia and Herzegovina at a cantonal level (10 cantons). In both entities, certain forms of support are provided at the municipal level.

B2.4.1 Agri-environment in the national strategic and programme documents

The common document adopted at the BIH level is the Strategic Plan for Rural Development of Bosnia and Herzegovina (SPRR BIH) - Framework Document 2018-2021, which emphasizes that, in BIH, there are numerous agro-ecological problems related to the destruction of natural resources and the lower quality of agricultural plant and livestock products. On the one hand, they relate to the disruption of the rural population structure and the ecosystem in general, and, on the other hand, these problems are related to the inadequate use of natural resources and lower quality of agricultural plant and livestock products. Problems mainly relate to inadequate and uncontrolled use of pesticides, inadequate management of fertility and land use. Regarding the livestock production (on medium and large farms), management of the environment is inadequate. There is still a low level of awareness about the protection of the environment among farmers. The SPRR BIH give a special interpretation of the state of the land, climate and water. In the field of agroecology, the following problems were identified: land degradation, waste management, agroecological policy and protection of biodiversity of animal and plant genetic resources as well as not giving adequate significance to the products with protected geographic origin, original and traditional products. Sustainable Management of Natural Resources and Adaptation to Climate Changes is one of the six defined strategic goals in the SPRR BIH.

This goal should be achieved through:

- promotion and strengthening of good agricultural practices;
- equalization of business conditions in areas with natural constraints and preservation of valuable landscapes;
- strengthening the water management system in agriculture;
- strengthening awareness of climate change, its consequences and methods for mitigating or protecting the sector from such changes;
- promoting the use of renewable energy sources and using waste from agriculture;
- revitalization and preservation of pasture areas;
- improvement of biodiversity and preservation of indigenous genetic resources;
- protection and improvement of fertility;
- establishing and strengthening the mechanisms of sustainable land management.

Factors influencing the access to natural resources in BIH requiring remedy actions are also the contamination of agricultural land with mines, especially in areas affected by floods and landslides, unresolved property and legal relations, the lack of good practices of land-use planning such as land consolidation, demographic problems, etc.

FBIH:

The FBIH is in the process of adopting the "FBIH Rural Development programme for the period 2018-2020", and agricultural policy is implemented based on the **Medium-Term**

Development Strategy of the Agricultural Sector in FBIH for the period 2015-2019. The Strategy emphasizes the need to raise the technical-technological level of the sector, to make more efficient use of the available resources as well as to improve the overall standard and quality of living in rural environments. There are plans to implement 37 measures, deployed within three pillars of agricultural policy - 10 measures refer to the first pillar and direct support to the producers, 17 measures refer to the second pillar, i.e. the restructuring of the sector and the rural development policy, while the remaining 10 measures relate to the third pillar of the entity's agricultural policy and measures from the domain of general services in agriculture. The FBIH rural development programme is currently being drafted and will be fully aligned with the BIH Strategic Plan for rural Development; therefore, all measures related to agri-environmental policy will be the same as described in the previous chapter.

RS:

The Strategic Plan for the Development of Agriculture and Rural Areas of RS 2016-2020: Unlike the previous strategy, the new strategic document covers both fields - agriculture and rural development, and contains six strategic goals, 16 specific objectives and 52 measures for their realization. Agroecology objectives include sustainable management of natural resources and mitigation of the consequences of climate change, balanced integrated rural development and systematic support to the development of agriculture and rural areas.

The Basis of Agricultural Land Protection, Use and Reclamation of Republic of Srpska as the Component of Land Use Planning Process (2008). This is a strategic document of the Government of the RS concerning sustainable agricultural land management. Data on land and climate resources are systematically sorted into digital GIS databases which provide the possibility of a large number of different analyzis and combinations depending on the set-up aim. Although the Basis has been prepared by innovative methods in accordance with the EU standards, the implementation of the comprehensive proposed measures has not been conducted in practice at a satisfactory level. Over the last period, a continuous upgrade of the GIS database has been carried out; hence it is necessary to revise the Basis and to propose new measures in accordance with the current situation in RS.

Waste Management Strategy 2016-2025 and Spatial Plan RS 2015-2025. The Environmental Protection Act provided the basis for the development of the **RS Environmental Protection Strategy**, which will combine nature protection and air protection that had existed as a separate strategies (2011-2017) in the previous period.

BD:

The strategy for development of agriculture, food and rural development in BD BIH was carried out for the period 2008-2013, but was never adopted by the Assembly of BD BIH. The process for the creation of a new strategy for agriculture, nutrition and rural development is ongoing.

B2.4.2 Institutional and Legal Settings

The Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina (MOFTRBIH) carries out tasks and duties within BIH's areas of competence related to policy definition, basic principles, coordination of activities and alignment of the plans of its entity authorities and institutions in the field of agriculture at the international level. These activities are carried out within the Sector of Agriculture, Food, Forestry and Rural Development. The MOFTRBIH administrative bodies are: the Veterinary Office of BIH, the Management of Bosnia and Herzegovina for Plant Health and the Office for Harmonization and Coordination of the Payment Systems in Agriculture and the Food and Rural Development of BIH. In addition, at the level of BIH there is also the Food Safety Agency of BIH, as an independent administrative organisation, which is directly subordinated to the Council of Ministers of BIH on an administrative level.

The Inter-Entity Environment Body addresses all environmental protection issues that require a harmonized approach for both Entities and is responsible for harmonizing environmental laws, regulations, standards and action plans, international environmental agreements and their implementation. It also participates in international processes and cooperates with international organisations, monitors the environment, sets up information systems, executes information exchange as well as addresses cross-border and inter-entity environmental issues. This Committee

meets at least six times a year. It consists of ten members, four of whom are appointed by the RS Government, four by the FBIH Governments, and two members by the BDs.

FBIH

The FBIH agro-environmental administration has a fragmented institutional infrastructure divided in three levels: at the level of federation, cantons, and municipalities. FBIH level: **The Federal Ministry of Agriculture, Water Management and Forestry** (FMAWF)**.** Cantonal level: aantonal ministries of agriculture, water management and forestry (in 7 cantons) and agriculture departments under the ministries of economy (in 3 cantons). The Ministry carries out administrative and other expert tasks, the following of which are important for agro-environmental issues: protection and use of agricultural land; protection of agricultural plants and products against diseases, pests and weeds; animal health protection; propagation, protection, regulation and improvement of forests; afforestation of degraded and extinct forests, bare and karst areas, water use and management, as well as other tasks established by law.

The main organisational units in the FMAWF are the following: Office of the Minister, Sector for Agriculture and Food Industry, Sector for Rural Development and Agricultural Extension Services, Sector for Agricultural Payments, Veterinary Sector, Sector for Water, Sector for Forestry and Hunting, Project Management Sector, Sector for Finance and Accounting, Sector for Legal, Personnel and General Affairs, Information Systems Sector and Internal Audit Unit. The Federal Ministry of Forestry is a part of the Ministry. The innternal organisational units are departments, i.e. a total of 22 departments for agriculture and the food industry. The Sector for Rural Development and Agricultural Extension Services is divided into two departments, while the Agricultural Payments Division consists of three departments. In the FBIH, two independent federal scientific and professional institutions (the Federal Institute of Agriculture Sarajevo and the Federal Agro-Mediterranean Institute Mostar) have been established and operate, while one specialized agricultural land agency (the Federal Institute for Agropedology) is active.

The Ministry of Environment and Tourism FBIH performs administrative, professional and other tasks within the competence of FBIH related to: air, water, soil protection, waste management, development of environmental strategy and policy, environmental quality standards, environmental monitoring and tourism affairs. There are five sectors within this Ministry, three of which deal with environmental affairs: the Sector for Environmental Protection, the Environmental Permit Sector and the Project Implementation Sector. This Ministry is the National Focal Point for BIH (NFP BIH) for biodiversity in the European Environment Agency (EEA).

The FBIH Environmental Protection Fund supports, among other things, activities related to the collection of funds by encouraging and financing the preparation, implementation and development of programs, projects and similar activities in the field of conservation, sustainable use, protection and improvement of the environment and use of renewable energy resources. It also performs special activities, such as management and use of the resources of the Fund; management in relation to the financing of environmental protection from foreign countries, international financial institutions and bodies, as well as domestic and foreign legal entities and individuals; provision of expert services related to the financing of environmental protection; keeping a database of programs, projects and similar activities in the 13 areas of environmental protection, and the necessary and available financial means for their realization; encouraging, establishing and implementing cooperation with international and domestic financial institutions and other legal entities and individuals for the purpose of financing environmental protection in accordance with the Federal Environmental Protection Strategy, developing environmental protection plans adopted under the Strategy, dealing with international treaties (that BIH is a member of), and developing other programmes and documents in the field of environmental protection.

RS

In the RS, the agroecological policy is managed by two ministries: the Ministry of Agriculture, Forestry and Water Management and the Ministry of Spatial Planning, Construction and Ecology.

The Ministry of Agriculture, Forestry and Water Management of RS carries out administrative and other expert tasks, the following of which are important for agro-environmental issues: protection and use of agricultural land; protection of agricultural plants and products against diseases, pests and weeds; animal health protection; propagation,

protection, regulation and improvement of forests; afforestation of degraded and extinct forests, bare and karst areas; Integrated management of ambient waters; preparation and adoption of plans and bases; implementation of protection against the harmful effects of water; hydromelioration; inspection in the field of agriculture and veterinary medicine, forestry, hunting and water management. The Ministry composists of 5 departments, including: Agriculture, Food Industry and Rural Development, Agricultural Extention Services, Veterinary Department, Forestry and Hunting, Water Management. The internal organisational units consist of 9 departments. The republic administrative organisations within the Ministry are: the Agrarian Payment Agency, the Hydrometeorological Institute of RS and the Coordination Unit for Agricultural Projects. Public companies (PC) under the supervision of the Ministry are PC "RS Forests" and PC "RS Anti-Hail Protection", while public institutions (PI) under the supervision of the Ministry are: PI Veterinary Institute "Dr. Vaso Butozan" Banja Luka, PI "Vode Srpske" (Waters of Srpska) Bijeljina and PI "Ergela Vučijak" (horse farm) Prnjavor. This ministry is the NFP BIH for the implementation of the United Nations Convention to Combat Desertification (UNCCD).

The **Ministry of Spatial Planning, Construction and Ecology of RS** encompasses five sectors, with the Environment Protection Sector being the one responsible for the integral environmental quality assurance and its improvement through research, management planning and protection measures, as well as protection of goods of general interest, of natural resources and of the natural and cultural heritage. Its goal is to establish cooperation with the relevant ministries and institutions from the FBIH; provide information through the media and other forms of information about their work and perform other tasks in accordance with the law and other regulations of the Republic of Srpska and Bosnia and Herzegovina "(Article 29 of the Law on the Republic Administration," Official Gazette of RS "No. 118/08 and 11/09). This ministry is the NFP BIH for climate change.

The **Environmental Protection and Energy Efficiency Fund of RS** was established by the Law on the Fund for the Protection of the Environment ("Official Gazette of RS" No. 51/02 and 53/07) for the financing, preparation, implementation and development of programs, projects and similar activities in the field of conservation, sustainable use, protection and improvement of the environment. The Fund's financial recourses are allocated to finance environmental protection, with a focus on: protection, preservation and improvement of water and air quality; dumpsites sanitation; protection and preservation of bio and geo-diversity; encouraging the sustainable use of natural resources; fostering sustainable rural development; encouraging educational, research and development studies, programmes and projects, as well as other activities, including advertising actions.

BD

The **Department for Agriculture, Forestry and Water Management of the BD** is responsible for agriculture and rural development. It is divided in the following sub-departments: Water Management, Veterinary Sub-Department and Sub-Department for Analysis, Administrative Support and Rural Development. Inspection in the BD is performed by the BD Inspectorate, which operates within the Mayor's Office and includes, among other things, agricultural, veterinary and phytosanitary inspection.

B2.4.3 Agri-environmental policy

The SPRR BIH Plan has defined 11 measures to be implemented, which include agri-environmental policies for the period 2018-2021. Most measures are indirectly linked to agri-ecology (10) while one measure is in direct connection to agri-environmental interventions - **Support for organic production, environmental protection and the mitigation of climate change impacts.**

Organic production: BIH has a relatively well preserved agricultural environment which is a significant prerequisite for the development of this type of production. In addition, the traditional production methods, commonly used in BIH, are in many ways in line with the principles of organic agriculture and therefore offer an added advantage to many producers who would be interested in developing organic production systems.

Organic production in RS is regulated by the Law on Organic Production (Official Gazette of RS, No. 12/13) and its by-laws. The Ministry, through the Agency for Agrarian Payments of Republic of Srpska, has been encouraging organic producers and producers in the transition period for two years, directly by means of two measures: 1. the premium for certified organic production and certified production in the transition period;

2. funds for introducing quality standards of organic agricultural production. This production is ideal for creating job opportunities in rural areas.

For the above reasons, this measure will support the strengthening of the organic production sector in line with the EU practices and the requirements of the organic agriculture market, based on organic production control and certification systems in accordance the with internationally recognized standards at the level of EU, IFOAM and *Codex Alimentarius*.

Protection of the Environment and Biodiversity: BIH is rich in plant and animal genetic resources (indigenous varieties and races) that make up an important part of the genetic and cultural heritage of rural areas. Preservation of this resource base is of utmost importance as part of a broad integrated plan and rural development program. This measure will promote the introduction of policies, programmes and practical initiatives to ensure the application of good agricultural and ecological practices; protection and sustainable use of agricultural land; and wider biodiversity protection and rural landscapes. This will include: establishing a system for continuous monitoring of the use of agricultural land; monitoring the level of potential pollution and erosion; monitoring the possible loss of agricultural land due to its conversion into construction land; and monitoring of state and privately owned lawns and meadows and their sustainable use and protection.

Managing Climate Change Risks and Mitigating Consequences: The development of agriculture in BIH is increasingly affected by the consequences of climate change. This includes the increase of extreme climatic conditions that cause more frequent and abundant rainfall and flooding, unpredictable temperature changes and unpredictable seasonal conditions for certain crops. For this reason, sub-measures will be developed and implemented to assist farmers in addressing climate change impacts by helping them to manage risks and strengthen the advisory, training and information capacities to help the sector handle changing conditions, guided, where relevant, by the EU experiences and best practices.

List of envisaged sub-measures:

- Support for production, certification and control of organic production at all levels, in accordance with EU best practices and market requirements;
- Development and implementation of an agricultural land monitoring programme (fertility, pollution, erosion, conversion, etc.) and creation of a regulatory framework for efficient monitoring of agricultural land status;
- Development and implementation of a pilot programme for development and protection of areas with natural constraints (disadvantaged areas);
- Development and adoption of a revitalization programme for pastures and natural meadows;
- Development and implementation of programmes to support the conservation and sustainable use of genetic resources (for example: gene banks, field collection, botanical gardens, raising awareness, publications, etc.);
- Support targeted programmes for reducing the impact of climate change on agricultural production and innovative actions (for example: investing in renewable energy resources on agricultural holdings - solar and geothermal energy, energy from organic waste, etc.).

Support to investments by agricultural enterprises, producer groups and processors

This measure has the ultimate goal of changing the structure of production, but also of the structure of agricultural holdings towards production of high-yielding cultures and the incorporation of farms, as well as raising their competitiveness through the economy of scale and the modernization of technology.

List of sub-measures of importance for the agro-ecological policy:

- Support for the construction of infrastructure for irrigation and drainage and flood protection;
- Support for investments in energy production from agricultural waste biomass.

Support for professional development, knowledge development and the provision of advice and information

This measure is designed to help farmers, forest owners and small and medium-sized producers to improve the sustainable management, economic and environmental impact of their farms and/or companies.

List of sub-measures of importance for the agro-ecological policy:

- Strengthen the system of expert information services, training and Extension Services through the development of joint training programs, certification systems, knowledge exchange portals and monitoring and evaluation of the quality of the system;
- Support the development of public and private advisory services to support agriculture and rural development;
- Development and strengthening of the research system in agriculture and support for practical demonstrations.

Support for the development of rural infrastructure and improved accessibility of services to rural population

The measure is designed to promote balanced rural territorial development aimed at improving the living conditions and work of the rural population and improving their overall connectivity and access.

List of sub-measures of importance for the agro-ecological policy:

- Support for research and protection of natural heritage and cultural and historical heritage;
- Support for revitalization of livestock and green markets.

Support for diversification in rural areas

Diversification is considered to be a key component of rural development of a particular area. Taking into account BIH's rich natural, cultural and historical heritage, the diversity of its gastronomic landscape and its outstanding biodiversity, rural tourism is defined as one of the key activities to better utilize these potentials through this measure.

List of sub-measures of importance for the agro-ecological policy:

- Support for investing in rural tourism development.

Support to the development of quality and services in the agri-food sector

Quality assurance and food safety have become an imperative in the current market situation: Fulfilling the preconditions for controlling, monitoring and proving food quality and traceability in the process of production and processing has become one of the key challenges and prerequisites for export, not only to the EU market, but also to other international markets.

List of sub-measures of importance for the agro-ecological policy:

- Harmonization of legislation in the area of food safety in accordance with the EU standards and best practices to support the development of competitiveness of agricultural and food products;
- Gradual harmonization of the legislation and practice with quality policy - EU PGI-PDO-TSG regulations - for the introduction, registration and promotion of PGI-PDO-TSG products and other quality schemes;
- Supporting producers to be certified according to GLOBALGAP standards;
- Supporting producers to certify integral production (IP).

Support for the development of the administrative sector and information support services

This measure will support the establishment of basic elements of a harmonized agricultural information and administrative system to support the sector, related to the development of improved registers of agricultural producers in accordance with the EU standards at the entity level and in the Brcko District of BIH, which will represent a platform for ensuring producer eligibility criteria for future financial support.

List of sub-measures of importance for the agro-ecological policy:

- Establishment, development and maintenance of harmonized registers of agricultural producers in accordance with the constitutional competencies;
- Improvement and maintenance of the Animal Identification and Movement System in accordance with the constitutional competences;
- Improvement and maintenance of FADN Accounting data networks in accordance with constitutional competencies;
- Strengthening the system and statistics services in agriculture in accordance with the relevant responsibilities;

- Establishment and maintenance of the Agricultural Market Information System (AMIS) in accordance with the relevant competencies;
- Establishment of the Land Parcel Identification System (LPIS) in accordance with the relevant competencies;
- Establishment of the Agriculture Forecasting and Reporting Service (AFRS) in accordance with its competences;
- Implementation of the agricultural survey in accordance with the constitutional competencies.

Support for capacity building of institutional management

Strengthening the institutional capacity to create and implement the agricultural policy in BIH is one of the most important and complex multidisciplinary goals of the Strategic Plan, without which the effective implementation of practical activities and measures defined therein cannot be achieved.

List of sub-measures of importance for agro-ecological policy:

- Strengthening the capacities and increasing the efficiency of ministries and related public institutions and organisations in the context of constitutional competencies;
- Adoption and harmonization of the regulations in the field of agriculture at all levels of government in accordance with the constitutional competencies;
- Improvement of the payment management structures in agriculture and rural development, as well as the control and coordination structures and capacities in accordance with the constitutional competencies;
- Setting up a system for monitoring and evaluating public policies in the field of agriculture and rural development;
- Adoption of measures for improvement of foreign trade in agricultural and food products and protection of domestic production at all levels;
- Improvement of horizontal and vertical institutional coordination and exchange of information between competent bodies for agriculture and rural development with other relevant sectors in BIH in accordance with the constitutional competencies.

Multidisciplinary activities

In addition to the problems arising due to the aging of agricultural producers and gender inequalities, cross-cutting topics include an agri-environment that is explicitly shaped through non-agri-environmental measures. These include the promotion, training and certification of farmers to suppor their compliance with good agricultural and environmental practices. In fact, this refers to cross compliance, ie meeting environmental protection requirements, maintaining soil fertility, animal welfare, and so on.

List of sub-measures of importance for the agro-ecological policy:

- Support for agri-ecological protection

B2.4.4 Agri-environmental measures in place

As mentioned in the paragraph 1.4. (page 14) the creation of the agro-ecological policy is at the level of its entities FBIH, RS and BD, and in the Federation of Bosnia and Herzegovina at cantonal level (10 cantons). In both entities, certain forms of support are provided at the municipal level.

For the achievement of strategic goals, measures and sub-measures forseen by the SPRR BIH funds are provided from the entity budgets, because the state budget (BIH budget) is used only for the continued existence of the state institutions. Of the six strategic goals, three goals are in the field of agro-ecology and following amounts have neem provided for their realization in 2018:

Goal 4. Sustainable management of natural resources and adaptation to climate change:

- 420,000 KM (214,742.75 EUR) from the FBIH budget,
- 805,000 KM (411,590.28 EUR) from the RS budget.

Goal 5. Improving the quality of life in rural areas by establishing new sources of income and improvement of the physical infrastructure, social inclusion and the availability of public services:

- 5,700,000 KM (2,914,365 EUR) from the FBIH budget,
- 4,000,000 KM (2,045,169 EUR) from the Canton budgets in FBIH,
- 2,914,625 KM (1,490,225 EUR) from the RS budget,
- 300,000 KM (153,387 EUR) from the BD budget.

Goal 6. Improvement of the institutional systems and capacities and harmonization of the legal framework in the field of agriculture and rural development, at all levels of government, in accordance with the constitutional competencies, towards gradual approximation to the common agricultural policy of the EU.

- 7,380,000 KM (3,773,336 EUR) from the FBIH budget,
- 6,210,000 KM (3,175,125 EUR) from the RS budget,
- 200,000 KM (102,258 EUR) from the BD budget.

B2.4.5 Agri-environmental indicators

There is no institutional environmental monitoring scheme with the defined National Reference Centre (NRC) for certain environmental segments in BIH. Data on individual indicators are collected from different institutions at the Entity level and in BD and then reported to Entity governments and the BD government. Since BIH is a potential candidate for EU membership, it has no obligation to report. However, reports for certain sectors like air quality and climate change have been prepared. Most environmental monitoring has not been established. However, a certain level of data is collected, and reporting to the EU is mainly based on the reports to the adopted conventions and other accepted obligations (UNCBD, UNFCCC, UNCCD, SOER, EPR).

The project "Development of the National Environmental Monitoring System in BIH" (RANSMO) funded by the EU (2002-2005) was aimed at supporting BIH's compliance with the European Network for Monitoring and Information on the Environment (EIONET, EEA).

The project proposed an institutional monitoring scheme for all segments of the environment. A reporting model was also recommended with respect to the country's territorial organisation. However, the proposed institutional structure has not been adopted at all levels of government and therefore has not been implemented in practice. A possible cause for the lack of implementation could be the fact that the project was carried out at a time when environmental issues were not the main focus of decision makers. However, in 2017, the **Strategy for Regulation Aproximation to the EU Acquis in the Area of Environment Protection** was adopted in BIH, with defined key priority areas and goals to be achieved by the date of accession as well as a schedule for future full compliance. This also applies to the approximation of the environmental regulations in BIH.

Table B2.4.5.1. Agri-environmental indicators

Domain	Sub-domain	No	Title	*Available*	*Frequency*	*Spatial reference/ resolution*	*Responsible institutions*	*How to access the data*
Resposes	Public policy	1	Agri-environmental commitments	NO	-	-	-	-
		2	Agricultural areas under Natura 2000	NO	-	-	-	-
	Technology and skills	3	Agri-environmental indicator - farmers' training and environmental farm advisory services	NO	-	-	-	-
	Market signals and attitudes	4	Area under organic farming	NO	-	-	-	-
Driving forces	Input use	5	Mineral fertilizer consumption	YES/NO	-	-	-	FAOSTAT
		6	Consumption of pesticides	NO	-	-	-	-
		7	Irrigation	YES	-	National scale	Entity Ministries of Agriculture	Entity Agency of statistics
		8	Energy use	NO	-	-	-	-
	Land use	9	Land use change	YES	6-year period	National scale	FAFS	Corine Land Cover
		10.1	Cropping patterns	YES	Yearly	Entity	Entity Ministry of Agriculture	Entity Agency of statistics
		10.2	Livestock patterns	YES	Yearly	National scale	Entity Ministries of Agriculture	Entity Agency of statistics
	Farm manage-ment	11.1	Soil cover	YES	6-year period	National scale	FAFS	EEA
		11.2	Tillage practices	NO	-	-	-	-
		11.3	Manure storage	NO	-	-	-	-
	Trends	12	Intensification/extensification	YES	6-year period	National scale	FAFS	EEA
		13	Specialisation	NO	-	-	-	-
		14	Risk of land abandonment	YES	6-year period	National scale	FAFS	EEA

Domain	Sub-domain	No	Title	*Available*	*Frequency*	*Spatial reference/ resolution*	*Responsible institutions*	*How to access the data*
Pressures and risks	Pollution	15	Gross nitrogen balance	NO	-	-	-	-
		16	Risk of pollution by phosphorus	NO	-	-	-	-
		17	Pesticide risk	NO	-	-	-	-
		18	Ammonia emissions	NO	-	-	-	-
		19	Agri-environmental indicator - greenhouse gas emissions	YES	2 – 4 years	National scale	MPUG RS	In RS RHMZ in FBIH not defined institution
	Resource depleteon	20	Water abstraction					
		21	Soil erosion	Yes/NO	Not applicable (according to project needs)	By location	Contractor	UNCCD UNEP
		22	Genetic diversity	NO	-	-	-	-
	Benefits	23	High Nature Value farmland	NO	-	-	-	-
		24	Renewable energy production	NO	-	-	-	-
State/Impact	Biodiversity and habitats	25	Agri-environmental indicator - population trends of farmland birds	NO	-	-	-	-
	Natural resources	26	Soil quality	Yes/NO	Not applicable (according to project needs)	By location	Contractor	UNCCD UNEP FAO AIRS FIA
		27.1	Water quality - Nitrate pollution	Yes	Yearly	By river basins	ASBH	WMASR AASWAPAVS
		27.2	Water quality - Pesticide pollution	Yes	Yearly	By river basins	ASBH	WMASR AASWA PAVS
	Landscape	28	Landscape - state and diversity	NO	-	-	-	-

B2.5 CONCLUSIONS AND RECOMMENDATIONS

B2.5.1 Conclusions

According to the fact that BIH has the status of a potential candidate, environmental protection was not one of the development priorities. Since BIH is a potential candidate for EU membership, it has no obligation to report, but the process of EU approximation has improved the environment protection policies.

There is no institutional agro-environmental monitoring scheme within the defined National Reference Centre (NRC) for certain agro-environmental segments in BIH. The data on individual indicators are collected from different institutions at the Entity level and in BD and then reported to Entity governments and the BD government. Since BIH is a potential candidate for EU membership, it has no obligation to report. However, reports for certain sectors such as air quality and climate change have been prepared. Most environmental monitoring has not been established. However, a certain level of data is collected, and reporting to the EU is mainly based on the reports to adopted conventions and for other accepted obligations (UNCBD, UNFCCC, UNCCD, SOER, EPR).

State:

- In accordance with the Constitution of Bosnia and Herzegovina, the creation of agro-ecological policy should be done at the level of its entities FBIH, RS and BD, and in FBIH at cantonal level (10 cantons).
- There are adopted strategies on rural development at BIH and entity level, but the agri-environmental policies are not clearly defined in accordance with the EU recomendations. There are no direct agri-environmental measures, but there are certain indirect measues which are not a part of a separate agri-environemntal policy.
- The analysis of legislation indicates a lack of certain acts and incompatibility with the EU standards
- The Agrarian Payment Agency has been operating since 2010 in RS. In FBIH there is no Agrarian Payment Agency. The payment of subsidies is done through the Ministry of Agriculture.
- Agricultural data is published sporadically by various institutions, thus they are not always based on actual measurements, but rather on estimates.
- There are discrepancies between laws that have been adopted at different state and entity levels.
- According to the Constitution, the environmental policy and the use of natural resources are part of the responsibilities of the Entity Governments and the BD Government, which regulate the environmental issues with their laws, regulations and standards.
    - In line with the country's political organisation, there are a number of fragmented responsiblities regarding the environment which are located at four administrative levels: state, entity, cantonal (FBIH) and municipal (RS).
    - Although a major problem in such a complex administrative structure is the lack of enough vertial (entity/cantonal/municipal) and horizontal (inter-entity/inter-ministerial/ inter-municipal) co-operation, there is still a visible shift in the implementation of environmental sector reforms.

Needs:

- The last published official data regarding agriculture were from the 1991 agricultural census, consequently BIH needs a new agricultural census.
- Improvement of statistics in the area of environment and agriculture as a permanent activity within the scope of responibilities of entity and state bodies with the aim to improve coordination and harmonization.
- Development of a coherent system of agri-environmental indicators to capture the main positive and negative effects of agriculture on the environment and provide valuable information for assessing of the agricultural policy in terms of its contribution to the preservation of environmental resources that the future of agriculture and society at large depends on.
- Increasing the subsidies for the agri-enviromental measures in place.

Challenges:

- To harmonize the existing legislation vertically (due to multiple gaps between laws at the entity (RS - FBIH) and cantonal levels - between cantons and the FBIH), and horizontally - environmental legislation varies in the FBIH and the RS.
- To adopt all the relevant acts in the FBIH, the RS and the BD according to AEP.
- To develop and strengthen the institutional agri-environmental monitoring system at entity and local level.
- To raise the public awerensses and public participation on the importance of decision making related to agri-environmental issues.
- To link the scientific research and other relevant institutions from the entitiy level down to the local community, through developmnet of joint project proposlas targeted to addressing the issue of agri-environment.

Constraints:

- Insuficient capacity for the agro-environmental data collection, processing and reporting.
- Lack of relevant data and indicators.
- Low level of awareness on the preservation of the environment among farmers and other stakeholders

B2.5.2 Recommendations

Recommendations for institutional set-up improvements

- Improvement of the horizontal and vertical institutional coordination and exchange of information between the competent agri-environmental institutions in BIH in accordance with the constitutional competences.
- Strengthening of the capacities and increasing the efficiency of ministries and related public institutions and organisations in line with the constitutional responsibilities.
- Adoption and harmonization of regulations in the field of agri-environment at all levels of government in BIH in accordance with the constitutional competences.
- Strengthening the extension information services, training services and advisory services through the development of joint training programs, certification systems, knowledge sharing portals and monitoring and evaluation of the quality of that system.

Recommendations for policy improvements

- Harmonization and adoption of legislation in the field of agrl-environment in accordance with the EU standards.
- Harmonization between the laws that have been adopted at different levels of government.
- Candidate through Apply with our own agri-environment programme for pre-accession funds for rural development.
- Supporting targeted programmes to implement the Nitrate directive and Nature 2000.
- Supporting targeted programmes to improve the implemenation of the Water Framework Directive.
- Supporting targeted programmes to reduce the effects of agriculture on climate change (eg reducing emissions of harmful gases, investing in renewable energy sources in agricultural holdings - solar and geothermal energy, energy from organic waste, etc.).

Recommendations for improvements in information and data availability

- Improve and harmonize the methodology for data collection (entity and state Agency for Statistics with constitutional competences).
- Conduct a new census of agriculture in BIH.
- Improve the cooperation between the different sectors and institutions in the process of data collection.
- Improve the monitoring of relevant data with regards to agri-environmental indicators according to EU standards.
- Activities on the establishment of various systems such as LPIS, AMIS, NVZ, HNVF, etc.

LITERATURE

1. Agency for Statistcs of BIH (http://www.bhas.ba).
2. BIH Agriculture, Food and Rural Development Harmonisation Strategic Plan (2008-2010), MOFTER BIH.
3. Bruno Marić, Sabina Hadžiahmetović, Mihajlo Marković and Jugoslav Brujić (2017). Overview of the Natural resource management in Bosnia and Herzegovina. In: Dragovic N., Ristic R., Pülzl H,. B. Wolfslehner (eds.) (2017): Natural Resource Management in Southeast Europe: Forest, Soil and Water. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, Skopje; ISBN: 978-608-4536-07, Chapter 2, p. 87-130.
4. Bosnia and Herzegovina Mine Action Centre, BHMAC (http://www.bhmac.org).
5. Environmental Performance Reviews, Bosnia and Herzegovina, UNECE, 2017.
6. FAO (2002): Inventory of the Post-War Situation of Land Resources in BiH, GIS database.
7. Federal Ministry for Spatial Planning and Environment (2003). National Environmental Action Plan (NEAP BIH).
8. Federal Ministry of Agriculture, Water Management and Forestry (2011). Strategy of Agricultural land management.
9. Federalni hidrometeorološki zavod (http://www.fhmzbih.gov.ba/latinica/bihklima.php „Klima BiH").
10. Harij Tonco van Velthuizen (2001): Agro-ecological zonation in BiH, Mission Report 2, Inventory of the Post-War Situation of Land Resources in BiH, Sarajevo/Banja Luka
11. Husnija, R., Esad B., Vesna Kraisnik (2010): Purposes of Soi Use – Contrarietes and Possibilities for Harmonisation in the Function of Sustainable Development, Agrosym, Jahrina, Book of proceedings pg. 102 – 110.
12. Markovic, M. (2012): Land and Soil Resources, Agriculture, in: State of the Environment Report in Bosnia and Herzegovina (SoERBIH). MDG-F Programme "Environment and Climate Change", UNDP, UNEP, UNESCO, FAO and UNV, (http://www.unep.ba/tl_files/unep_ba/PDFs/Izvjestaj_prelom_ENG_10-2013_elektonski.pdf).
13. Ministry of Agriculture, Forestry and Water Management of the Republic of Srpska, (2009). The Basis of Agricultural Land Protection, Use and Reclamation of Republic of Srpska as the Component of Land Use Planning Process.
14. Ministry of Foreign Trade and Economic Relations – MoFTER and Ministry of Agriculture, Forestry and Water Management of the Republic of Srpska (2016). Action Programme to Combat Land Degradation and Mitigate the Effects of Drought in Bosnia and Herzegovina (UNCCD AP BIH), final. (http://www.unep.ba/tl_files/unep_ba/PDFs/BHAP_eng_FINAL.pdf).
15. Predić T. (2001): Preparation of Agro-ecological Zones Map of BIH at Scale 1:200000 Activties – Final Report, 1-60, Banjaluka.
16. Predić, T., Lukić, R., Kusturić, Tatjana, Biancalani, R., Kalensky, Z. (2004): Interpretation of Bosnia and Herzegovina Land Cover and Land Use Classes from Satellite Images EARSel Workshop - Remote Sensing of Land Use and Land Cover, Abstract Book, page 17, Dubrovnik – Croatia
17. Strategic Plan of Rural Development of Bosnia and Herzegovina 2018-2021 - framework document.
18. Strategic Development of Bosnia and Herzegovina 1991.

B2.6 ANNEXES

This annex should provide tabular information relevant to thek agri-environment following the indicators from chap. 4.5 and extended. The following information should be considered:

Table B2.6.1. Data on agricultural land use (ha)

	2002	2017	2017 in % of total land
Land Total	5,123,197*	5,119,700	100
Agricultural land	1,919,427	2,164,522	42
Arable land & gardens	392,546	594,002	12
Permanent crops	484	106,727	2
Pastures and meadows	1,357,585	1,061,293	21
Abandoned land	168,813	402,500	8

*Data source: 2002 - LC/LU - Inventory of post war situation in BIH; 2017- Agency for Statistics of BIH; * data for 2016;*

**This land total from 2002 represents area of shp file, scale 1:200.000*

Table B2.6.2. Data on Soils

No.	Soil Type WRB	Participation	
		Ha	%
	I Automorphic soils		
1.	Rubble, rocks, lithosol, regosol	442,300	8.65
2.	Rendzic leptosols and dystric leptosol	217,200	4.25
3.	Chromic vertisol	98,700	1.93
4.	Calcic cambisols	816,200	15.97
5.	Rhodic cambisol and calcic cambisol	797,700	15.50
6.	Eutric cambisol	250,000	4.89
7.	Cambic umbrisol and dystric leptosol	1,469,100	28.73
8.	Luvisol	68,500	1.34
9.	Stagnic luvisol (albic pseudogley)	237,539	4.64
	Total Automorphic soils:	**4,750,039**	**92.9**
	II Hydromorphic soils		
1.	Fluvisol	188,300	3.68
2.	Stagnic luvisol (lowland pseudogley)	79,761	1.56
3.	Gleysol	81,600	1.60
4.	Histosol	13,200	0.26
	Total Hydromorphic soils:	**362,861**	**7.1**

Data source: Resulovic H. et all.2010.

Table B2.6.3. Data on climate - Monthly and annual means of temperature (°C) and precipitation (mm) for the period 1960 – 1991

Meteo stations	Alt	Temp/ Prec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Annual
Banja Luka	153	°C	-0.7	1.9	6.1	10.9	15.7	18.9	20.5	19.7	15.9	10.8	5.9	1.2	10.6
		mm	69	63	79	87	131	111	95	93	82	72	91	87	1062
Bihać	247	°C	0.3	2.3	6.1	10.7	15.1	18.3	20.1	19.2	15.9	11.3	6.3	1.7	10.6
		mm	86	91	99	115	116	109	106	109	108	110	146	113	1308
Bijeljina	90	°C	-0.7	2.1	6.3	11.3	16.3	19.2	20.9	20.3	16.8	11.4	6.0	1.4	10.9
		mm	48	46	56	61	67	98	71	66	52	47	65	60	738
Bileća	491	°C	2.8	4.2	7.0	10.7	15.4	18.8	21.6	21.1	17.5	12.8	8.1	4.4	12.0
		mm	169	149	149	138	93	90	58	76	121	165	216	211	1634
Bjelašnica*	2067	°C	-6.7	-6.9	-4.4	-1.2	3.8	7.3	9.3	9.4	6.7	2.6	-1.3	-4.8	1.2
		mm	77	76	76	73	85	108	85	99	94	124	105	82	1085
Kozarska Dubica	100	°C	-1.1	1.6	6.0	10.8	15.5	18.8	20.3	19.5	15.7	10.5	5.4	0.7	10.3
		mm	63	54	64	81	81	94	82	82	78	67	88	76	911
Bugojno	562	°C	-1.7	0.7	4.5	8.9	13.4	16.2	18.1	17.6	14.2	9.5	4.5	-0.4	8.8
		mm	51	56	61	64	72	77	63	65	71	75	95	79	827
Butmir*	503	°C	-2.2	0.6	4.8	9.2	14.0	17.0	18.6	18.1	14.6	9.7	4.7	-0.5	9.1
		mm	72	72	71	72	77	87	75	74	71	82	101	97	952
Doboj	146	°C	-0.7	2.1	6.3	11.1	15.6	18.7	20.3	19.7	16.2	11.1	5.9	1.2	10.6
		mm	57	56	64	71	86	102	84	76	67	57	76	75	871
Drvar	485	°C	-1.0	1.2	4.6	9.2	13.6	16.7	18.8	18.0	14.5	10.0	5.1	0.5	9.3
		mm	77	82	84	89	95	98	71	90	98	93	128	105	1108
Ivan Sedlo*	970	°C	-2.9	-1.2	2.5	6.5	11.4	14.4	16.1	15.9	12.8	8.3	3.6	-1.2	7.2
		mm	116	137	135	133	109	103	86	95	114	139	174	161	1502
Jajce	430	°C	-1.1	1.8	5.5	10.1	14.5	17.5	19.2	18.8	15.4	10.8	5.7	0.7	9.9
		mm	60	61	65	70	87	96	82	75	75	68	90	80	912
Kalinovik*	1073	°C	-1.7	-0.2	2.7	6.6	11.5	14.4	16.3	16.2	12.9	8.5	4.6	0.3	7.7
		mm	90	80	85	101	98	103	71	79	98	131	146	128	1210
Mostar	99	°C	4.8	6.6	9.6	13.3	17.9	21.5	24.7	24.2	20.4	15.3	10.1	6.2	14.6
		mm	165	153	150	127	102	78	45	74	97	151	200	179	1520
Sanski Most	158	°C	-0.8	1.8	5.8	10.4	14.8	18.1	19.7	18.9	15.5	10.7	5.7	1.0	10.1
		mm	68	62	79	88	96	104	96	93	80	80	94	84	1024
Sarajevo	630	°C	-0.9	1.5	5.1	9.4	14.1	16.9	18.9	18.5	15.1	10.4	5.3	0.3	9.5
		mm	71	67	70	74	82	91	80	71	70	77	94	85	932
Sokolac	872	°C	-4.8	-2.3	1.6	6.4	11.4	14.3	16.0	15.5	12.0	7.3	2.1	-2.8	6.4
		mm	52	49	56	62	72	84	73	70	64	67	84	68	802
Tuzla	305	°C	-0.8	1.7	5.7	10.4	14.8	17.7	19.3	18.9	15.4	10.6	5.6	0.9	10.0
		mm	59	55	61	76	92	112	94	84	64	56	72	72	896
Zenica	344	°C	-0.9	2.0	5.9	10.5	15.0	17.9	19.7	19.2	15.7	10.8	5.3	0.5	10.1
		mm	51	48	54	63	76	85	64	69	65	67	74	67	783

Source: Inventory of post war situation of land resources in BIH, mission report 2, Agro-ecological Zonation 2001

Table B2.6.4. Agricultural production, 2017

Crop Production (total)	Areas in ha	Production in t
Cereals	313,983	1,163,363
Oilseeds	10,584	18,587
Tobacco	1,496	1,760
Fruits	No data	227,715
Olives	No data	281
Vegetables	27,674	291,505
Potatoes	34,941	337,137
Cattle	221,306	No data
Pigs	548,011	No data
Sheep and goats	1,090,022	No data
Horses	15,599	No data
Poultry	21,583,300	No data

** Data source: Agency for Statistics of BIH for 2017*

Table B2.6.5. Data on fertilizer consumption

COMMODITY	A			B		C		D		E	
	Plant nutrient content %			PRODUCTION (metric tons of product)		IMPORTS (metric tons of product)		EXPORTS (metric tons of product)		DOMESTIC AVAILABILITY (metric tons of product)	
	2012 N	2012 P_2O_5	2013 K_2O	2012	2013	2012	2013	2012	2013		
STRAIGHT NITROGENOUS FERTILIZERS											
Ammonia, anhydrous	82					31,172.9	23,478.1		0.02	31,172.9	23,478.1
Ammonium nitrate	33					17,430.9	19,028.2	72.7	2.4	17,358.1	19,025.8
Ammonium sulphate	21					589.6	711.1	16,086.8	17,952.3	15,497.2	17,241.2
Calcium ammonium nitrate	26			243,384.6	188,107.7	89,293.9	88,368.0	147,482.2	12,5910.4	185,196.3	150,565.4
Urea	46					40,778.9	52,626.1	0,07	56.3	40,778.8	52,569.8
STRAIGHT PHOSPHATIC FERTILIZERS											
Superphosphate		*46*				618.6	41.7			618.6	41.7
Superphosphate above 35%		*35*				52.2				52.2	
Superphosphate other		18				566.4	41.7			566.4	41.7
Phosphate rock		30				3.4	129.7		0.2	3.4	129.5
STRAIGHT POTASSIC FERTILIZERS											
Potassium chloride			*60*			1,598.6	3,742.1		0.01	1,598.6	3,742.1
Potassium sulphate			50				23.7				23.7

COMPOUND FERTILIZERS											
Diammonium phosphate (DAP)						248.42	150.6			248.4	150.6
Monoammonium phosphate (MAP)						910.26	2,271.7			910.3	2,271.7
Other NP compounds						244.5	37.9	0.9		243.6	37.9
Other nitrogen & phosphates compounds							2.4				2.4
Other nitrogen & phosphorus compounds						244.5	35.5	0.9		243.6	35.5
NPK complex						60,946.6	50,014.4	68.3	55.2	60,878.3	49,959.2
NPK complex <=10kg						139.5	128.7			139.5	128.7
NPK complex >10kg						60,807.1	49,885.7	68.3	55.2	60,738.9	49,830.5
PK compounds						75.8	104.1			75.8	104.1
Potassium nitrate							61.8				61.8
OTHER FERTILIZERS (specify below)											
Mineral or chemical fertilizers, nitrogenous, n.e.c	20					24.5	23.1			24.5	23.1

Data source: Agency for statistics of BIH;

Table B2.6.5a. Fertilizer consumption by nutrients in BIH

Year	Agricultural Use of Nutrients in BIH in tons		
	Nitrogen (N)	Phosphorus (P_2O_5)	Potassium (K_2O)
2002	18,600	7,000	7,000
2003	10,768	3,537	3,652
2004	33,671	13,150	13,258
2005	24,647	216	390
2006	15,500	120	282
2007	21,396	112	261
2008	11,700	78	188
2009	63,431	4,586	4,477
2010	61,304	10,244	10,308
2011	84,152	9,676	10,067
2012	101,451.4	9,842.9	9,811.9
2013	85,024	8,817.2	8,708.8
2014	104,702.5	8,034.9	8,017.0
2015	112,140	9,450.6	10,160.1

Source: FAOSTAT

Table B2.6.6. Data on pesticide - Pesticide imported on 2 major BIH border crossing in kg (l)

Year	Herbicides	Zoocides	Fungicides	TOTAL Pesticides
2000	324,469	223,074	246,624	794,167
2001	320,540	83,061	111,416	515,017
2002	369,000	108,678	172,599	650,277
2003	684,090	198,603	217,595	1,100,288
2004	646,682	471,199	221,089	1,338,970
2005	436,926	91,389	132,794	661,109
2006	417,793	141,866	165,972	725,631
2007	432,597	248,865	164,420	845,882
2008	301,143	132,262	141,755	575,160

Note: No official data exists on pesticide quantity; the source of data is independent research

Table B2.6.6a. Pesticide import and export in BIH

Year	Import value in 1000 $	Export value in 1000 $
2003	4,046	65
2004	13,360	720
2005	20,190.4	1,025.8
2006	12,002.4	783.9
2007	18,777.8	191
2008	20,079.7	534.8
2009	20,977.9	476.9
2010	21,787.3	323.1
2011	22,288.9	711.7
2012	18,231.3	562.5
2013	19,867.3	241.9
2014	22,898.8	259.6
2015	20,300.2	448.9

Source: FAOSTAT

Data on energy use in agriculture: Agriculture and forestry energy use as a 0,21% of the total Energy use in BIH in 2009. No other data.

B2.6.7. Greenhouse gas emissions from the agricultural sector, 2009-2013, Gg CO_2 eq/y

	2009	2010	2011	2012	2013
Enteric fermentation	855	841	822	808	814
Manure management	338	344	333	323	331
Agricultural soils	1,566	1,695	1,761	1,335	1,411
Total:	2,759	2,880	2,916	2,566	2,555

Source: Environmental Performance Reviews BIH, 2017.

Table B2.6.8. Existing areas for irrigation in Republic of Srpska

Municipalities	ha	Necessary quantities of water (m3)	Water withdrawal	The catchment area of the river
Bijeljina	758	3,174,125	Ground water	Sava, Drina i Janja
Gradiška	1,756	7,357,250	Ground water	Sava
Laktaši	440	1,815,000	Ground water	Vrbas i Turjanica
Modriča	215	886,875	Ground water	Bosna, Tolisa
Nevesinje	1,110	2,913,750	Accumulation	Basins of unnamed streams
Pelagićevo	270	113,750	Surface excavation	Tinja Žabar Pond
Trebinje	2,713	117,490,000	Accumulation of HE Plat Trebišnjica River	Trebišnjica
Total:		133,750,750		

Source: Integrated Water Management Strategy of Republika Srpska 2014-2024

There are also data onirrigation for FBIH, but they have not been provided by the time of finalizing this report.

Chapter B3

AGRI-ENVIRONMENTAL POLICY IN KOSOVO*

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** This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence*

B3.1 INTRODUCTION

Since the declaration of independence in 2008, Kosovo* has made the EU integration one of its key foreign policy objectives. Over the past years Kosovo* made progress in its efforts to come nearer to the European Union - most recently with the signing of (SAA) Stabilization and Association Agreement with the European Union. Nowadays Kosovo* is ready to take the final step in its path to the EU integration process by applying for EU membership and obtaining the candidate status. [1;2]

The (SAA) Stabilization and Association Agreement between the European Union and Kosovo* entered into force in April 2016. This agreement is a milestone for Kosovo*'s path towards the EU future, providing an inclusive framework for closer economic relations, a political dialog between Kosovo* and the European Union, including opening the EU markets to Kosovo* products. [3]

Taking into consideration the experience gained during the implementation of the Agriculture and Rural Development Plan (ARDP) during the period 2007-2013, the Stabilization and Association Agreement has paved the road for implementation of Kosovo's* rural development policy 2014-2020. This agreement will be oriented in accordance with the new strategic direction of the European Union Rural Development Policy.

The ARDP 2014-2020 stated objectives were closely based on the IPA II strategic policy objectives as well as focused on and reflecting the country's strategic development objectives with the specific needs of Kosovo* agro-food sector, forestry and rural areas.

Great efforts have been made in the preparation of the accreditation of institutions for IPARD II. The procedures for accreditation of the Managing Authority and the Agency for Agricultural Development are being enforced in the framework of the preparation process for accreditation of the institutions for IPARD II. The prevention of illegal changes to the use of agricultural land remains an obstacle for the development of the agricultural sector. There are no data indicating the annual loss of agricultural land.

Based on data [4,5], in 2017 the Kosovo* population was 1.783.531 with 163,50 inhabitants/km$^{2.}$ The official currency in Kosovo* is Euro (€), and in 2010 GDP was 4.4 billion with 2,479 €/capita whereas in 2016, 6.070 billion EUR with 3,356 €/capita[6;7;8]. In 2010, a total of 13.6% of the GDP originated only from agriculture in 2010, but this contribution in 2016 dropped to10.48%. In 2010, agriculture accounted for 8.4% of the exported goods, which almost doubled in 2015, amounting to 15%. Whilst in 2010 and 2016 imported agricultural goods had marginal differences in terms of contribution to the GDP with 22.4% and 23.6%, respectively.

Based on the results of (LFS) Labor Force Survey for 2016, the employment rate was 28.0%. In accordance with the survey data, the highest employment rate 43.0%, was recorded among males, whereas it was 12.7% for females. [9]

Taking into consideration the experience gained during the implementation of ARDP 2007-2013, the Rural Development Policy will be oriented in accordance with the new strategic direction of the EU Rural Development Policy as well as the draft Country Strategic Paper Kosovo* (09.2013).[10]

Taking into consideration the obstacles in regard to the agri-enviromental issues, the major challenges and strategic objectives are to protect the natural resources and environment in rural areas, as well as to address the issue on climate changes by achieving sustainable and efficient use of the land, forestry management and by introducing new methods of agricultural production which will preserve the environment.

Kosovo* has adopted the EU Legislation basic principles in regard to the preservation of nature, and water and air protection. A part of the secondary legislation is in place in accordance with the laws mentioned in subchapter 4.3. To date, MAFRD has 25 laws (approved or amended), 5 other laws are in procedure (four of them are to be amended and the fifth is a new law).

With the important advances in the legislation concerning Environmental Protection up to date, Kosovo* has pursued approximation to EU

standards as a whole, as well as the EIA, SEA, IPPC and Nature Protection. In addition, the establishment of 10 new environmental laws and further recruitment of staff on central and local level are seen as positive steps forward. The main policy documents which refer to integration of environmental objectives in agriculture are the Agriculture Rural Development Plan (ARDP) 2007-13, the current ARDP 2014-2020, the National Environmental Action Plan (NEAP) 2011-2015 and Kosovo*'s European Partnership Action Plan 2012 (KEPAP).[11]

B3. 2 AGRICULTURE IN KOSOVO*

The agricultural sector has a strategic role in the process of economic development, while the production has made a significant contribution to the economic development of Kosovo* and as such is of vital importance. The agricultural production has potential and is a source of growth and economic development of the country, while plant and animal production is in close correlation with the land area in use, but also with other factors, which determine the yield and quantity of production in the country.

Table B3.2.1. Key agricultural indicators

	2010	2015	2016
Share of Agricultural land in total land use	79.50	79.80	81.22
Share of Arable Land and Permanent Crops in total land use	57.55	52.99	52.62
Share of Agricultural GDP in total GDP	13.6	10.3	10.48
Share of Agricultural Labour in total Labour	N/A	26.77	N/A
Share of Agricultural Export in total Export	8.4	12.8	15.0
Share of Agricultural import in total import	22.4	23.9	23.6

Sources: [10]MAFRD (2017): Green Report 2017, Pristina, Kosovo*

Agricultural land in relation to the total land area was: 79.50% (2010) and 81.22% (2016). Arable land and permanent crops in total land use had different shares: 57.5% (2010) and 52.62% (2016). This indicator identified that the arable land and permanent crops decreased due to the two main factors:

1. The migration of the rural population due to the destruction of households during the war
2. The socio-economic changes in the country.

In 2014, 86,620 or 26.77% of Kosovo* employees were employed in the agricultural sector. The agricultural output was 8.4% (2010) of total exports, and 15% (2016). The agricultural exports have doubled, while the imports show a slight upward trend of 22.4% and 23.6%. Furthermore, this has resulted in a decline in the total contribution toward the GDP that originated from agriculture, from 13.6% in 2010 to 10.45% in 2016 (Table B3.2.1).

Land Use

Kosovo* has a total area of 10,905.25 km^2, 46.95% out of which qualify as land that can be used for agricultural purposes, while the reminder (42.62%) is covered in forests and other non-agricultural purpose lands. The total area of agricultural land in 2016 was 415,831ha, 52.62% of which were pastures and meadows and 45, 02% arable land and gardens (Table B3.2.2). The arable land and permanent area is 0.11ha and 0.23ha of the agricultural land/capita. The use of agricultural land in the last decade of the 20th century and the beginning of the 21st, as well as in the two first decades of the 21st century has dramatically changed, both qualitatively and quantitatively.

Each year, sizeable areas of agriculture fields are lost due to construction, but mostly due to the inability of the state institutions to prevent this phenomenon. Their effects have produced new realities, some unmanageable and irreversible, while the effects and consequences of these policies are paradoxical:

1. Arable land and gardens have decreased, but meadows and pastures have increased.
2. The increase of the meadow and pasture areas did not result in an increase in the livestock fund!
3. The consequences -- an increase in imports of products which also can be produced domestically.

Table B3.2.2. Land Use

	2017 (ha)	2017 in % of total land
Land Total	1,090. 525	100
Forest	464,800	42.62
Agricultural land Total	512.000,29	46.95
Agricultural land Used in 2016	415,831	81.22
Arable land & gardens	187,223	45.02
Permanent crops (fruit, grapes, olives)	8,610	2.07
Pastures	218,808	52.62
Agricultural land/capita (ha)	0.23	-
Arable land & permanent crops/capita (ha)	0.11	-

Sources: [10]MAFRD (2017): Green Report 2017, Pristina, Kosovo*

Farm structure

Based on the indicators: the size of utilized agricultural area (UUA) and the number of owners, farms can be structured into four main categories:

1. **Very small farms,** with a size of 0.5 to 2 ha, include the largest number of farms with 80.738 holdings or 74.12% of them, utilizing 53.661 ha.
2. **Small farms** with a size of 2 to 5 ha, with 21,792 owners, using 64,876 ha or 34.94% of the areas of arable land.
3. **Medium-sized** farms, size of 5 to 10 ha, with the increase in the size of the farm, the number of owners decreases in both number and in percentage. In this category there were 4,531 owners using 29,498 ha or 15.88% of the arable areas.
4. **Commercial farms**, with a size of 10 to 100 ha, in this category there were 1,742 owners using 37,667 ha or 20.27%.

The size of farms is a serious challenge, which must be overcome in the view of increasing the production in terms of both quantity and quality, but also in order to increase productivity. Diversification of the current plant production is based on the farmers' strategy and tradition, everything to a lesser extent to reduce the risk, the production is mainly for household consumption, not for the market. Farmers' support and increased subsidies for small farms, clustering of parcels make it possible to increase the productivity and competitiveness of small farmers. The growth of agricultural production is very difficult, as production capacities have not increased through land cultivation and increasing of farm size as well.

If the commercial purpose of production for the first two types of farms is abstracted, then the assessment assumes another dimension. From the environmental assessment and the use of agricultural and natural resources for the two types of farms, numerous values can emerge since the era of global climate change presents great interest not only in rural areas but also for the reasons as follows:

a. Two types of farms together include 102,530 farms or owners, utilizing 118,547 ha.
b. Such farms, in rural areas, mainly produce food for the family needs.
c. In terms of vertical altitude distribution, these farms are located from 265 to 1200m above sea level.
d. Plant production at these vertical altitudes is an opportunity and source of agro biodiversity.
e. In some of these farms there are also important plant genetic resources, with very specific production and nutritional value.
f. These farms are the best contributors to the conservation of plant genetic resources, as part of the national heritage in Kosovo*, but have not been paid institutional state attention.

*Table B3.2.3. Farm Structure and number of agricultural holdings in Kosovo**

	Source/year	
	Number of holdings	Percentage of holdings
Total	108803	100
Up to 2 ha of UAA	80738	74.21
Between 2 ha and 5 ha	21792	20.03
Between 5 ha and 10 ha	4531	4.16
Between 10 ha and 100 ha	1742	1.60
Above 100 ha UAA	N/A	N/A

Sources: [10]MAFRD (2017): Green Report 2017, Pristina, Kosovo*

Agriculture production in Kosovo*

Components such as geography, geology, soil, hydrology, and climate condition enabled the development of a rich biodiversity and agro-biodiversity in Kosovo*, including endemic, sub-endemic, and relic species[12]. The agriculture and forestry sector have an important role in providing employment opportunities for rural areas. The agricultural production has an impact on improving the trade balance, reducing the unemployment rate and improving food security, environmental protection and livelihood of its citizens. The agricultural production activates the three main factors: land (natural resources), work (human resources) and capital (financial and technical resources), in the function of food production, commodities for the market, but also for other purposes and uses. Plants cultivated in Kosovo* are rich in diversity, and according to the agronomic classification such diversity is: 12 crops + 32 vegetables + 10 fodder crops+ 18 fruits + 1 grape. Therefore, agriculture and forestry have an important role in providing employment opportunities in rural areas.

Cereals: The largest areas are used for cereals cultivation. In 2016, 134,886 ha were planted, while production was 562,895 tons. Wheat and maize are two of the most important crops according to the area and production. Based on area and production, wheat production doubles that of maize, so wheat is also considered the most important crop in the country (Table B3.2.4).

Vegetables: A diversity of species is cultivated, which are cultivated on an area of 13,599 ha, while the total production is 236,884 tons. Most vegetables are cultivated in open fields (large or small), close to water sources for irrigation, but also in greenhouses. Based on the indicators, such as area and production, but also based on their importance, the ranking would be: peppers, beans, onions, lettuce, watermelons, cabbage, tomatoes, etc.

Potato: is cultivated on an area of 3,795 ha, with a production of 98,583 tons. After the war, potato has mostly been cultivated for the industry; it is mainly processed into various products, sold in the country, but also exported to the foreign markets.

Industrial plants: Sunflower, rapeseed, malting barley, sugar beet and tobacco were once cultivated on 28,192 ha. Currently there is no accurate data on the surfaces under their production (VSK-87). The processing capacities (sugar, oil and tobacco factories) were damaged during the war and later privatized. The lack of these capacities is the main factor for non-cultivation of these industrial crops!

Fruits crops: This group is also diverse in species, cultivated on 5,669 ha, while the annual production was 54,838 tons. Recently, there has been a positive trend of raising orchards of different species, mainly new orchards are growing every year, especially with raspberries, and this rise is supported by the government.

Grape vine: cultivated on 3,117ha, with annual production of 23,666 tons. Grapes have a dual importance, as a product for fresh consumption and table grapes, but also processed as wine and alcohol.

Fodder plants: provide grain and voluminous mass for livestock feed. Improving the productivity of agricultural crops and forage enables healthy use of natural resources, reducing soil erosion and improving its quality.

Table B3.2.4. Agricultural Production

Crop Production (total)	Areas in ha	Production in t
Cereals	134.886	562.899
Oilseeds	N/A	N/A
Sugar beet	-	-
Tobacco	N/A	N/A
Fruits	5669	54838
Grapes	*3117*	23666
Olives	-	-
Vegetables	13.599	236.884
Potatoes	3.795	98583
Other crops	176	836
Livestock (total)	Heads Number	Number of farms
Cattle	264,971	66,589
Pigs	42,309	6,302
Sheep and goats	212,040	4,687
Houses	2,353	N/A
Poultry	2.7(mil)	67,150
Other animals	162,355	6, 018

Sources: [10]MAFRD (2017): Green Report 2017, Pristina, Kosovo*

The total value of agricultural production during 2010 was EUR 570.3 million. Out of this total, the value of plant products amounted to €324 million or 56.81%, and the livestock was EUR 246.4 million or 43.2%. The total value of agricultural production during 2016 was EUR 714.6 million, from which plant products had a value of €412.3 million or 57.69%, while livestock production was €302.4 million or 42.31%. The difference in the value of agricultural production between 2010 and 2016 is 144.3 million, i.e. plant production increased by 88.3 million and livestock production by 56 million. During 2010, Kosovo* exported goods worth EUR 295,957milion, while the value of importing goods amounted to EUR 2,157.725 billion. Its trade balance is negative with a deficit of -1.861.769 EUR billion, and an import coverage of 13.7%. During 2017, Kosovo* exported goods worth 378.010 million EUR, while imports of goods totaled EUR 3,047.207 million. Kosovo's* trade balance is negative with a deficit of -2.669196 EUR billion, and an import coverage by 12.4%! etc[13].

B3. 3 ENVIRONMENT AND ENVIRONMENTAL POLICY IN KOSOVO*

The establishment of environmental policies belongs with the Ministry of Environment and Spatial Planning. But, of course, other institutions of the government, and especially the MAFRD, are involved in the creation of these policies. The following are some of the basic problems of land and livestock that have effect on the Agri-environment:

Damage related to agricultural soil and soil loss in Kosovo*

The problems with damage in Kosovo* can be divided in three main groups:

1. **Contamination** (ingraining of various land polluters which results in physical, chemical and biological changes), such as: Damage from the application of pesticides and fertilizers, damage from vehicle pollution, waste landfills etc.
2. **Degradation** (the process of damaging which is seen in the case of the physical, water-physical, chemical and biological degradation of the land), such as; Floods as a result of snowing and deterioration of riverbeds', erosion as a result of forest degradation and irregular and improper treatment (irregular application of agricultural measures)
3. **Destruction** (the physical process of land destruction as a result of which the land losses its productivity function) which results in land reduction such as; industrial depositing sites and surface diggings, dumping of damaged vehicles and their spare parts, temporary settlements etc. Ongoing land reduction as an effect of change of land use; Housing construction (illegal or without proper urban planning), construction for industrial, economic, trade and sport facilities. Trafficking, riverbeds sand exploitation etc.

Livestock factors affecting the environment

The following factors are considered as environment pollutants, livestock components and livestock according to MAFRD government mandate, currently noted in the list of documents:

1. **Inadequate (organic) manure treatment**

   Inadequate treatment and uncontrolled use of manure negatively affects groundwater, soil quality (humus) as well as surrounding environment.

2. **Inadequate treatment of wastewaters in farms and the processing industry**

   Inadequate treatment of wastewaters in a negative way affects the quality of groundwater and leads to surface pollution of water and the environment in general. A problem that has also been addressed, apart from infrastructure, for wastewater treatment, is the industry processing.

3. **Not applying good practices for composting nutrients, voluminous food.**

   Decomposition of organic mass in inorganic mass is underlined by a complex chemical reactions induced by enzymes or microorganisms. The impact of organic mass decomposition process, if the processes and spaces in which the process is developed

are inadequate and good practices are not implemented, can negatively affect the surrounding environment (causing bad odour, being a source of microorganisms, etc.) and in the environment.

4. **Not implementing the zoo-technical and zoo-hygienic criteria in livestock farms**

   Inadequate implementation of the zootechnical and zoohygienic good practices results in overcrowding in animal placement, insufficient monitoring and ventilation. Lack of zootechnical and zoohygienic standards in farms adversely affects good hygiene practices such as animal hygiene, stable hygiene etc., which directly reflects on the animal health and quality of the products. Scientific research data also indicated the impact of the microclimate factor on the stables and the environment.

5. **Inadequate treatment of waste from the processing industry**

   Treatment of animal by-products and sewage by the processing industries remains to be an ongoing problem. Animal by-products from the slaughter industry, wild boars and wastes from the processing industry are a concern despite their sufficient legal base.[14]

B3. 4 AGRI-ENVIRONMENTAL STATE IN KOSOVO*

B3.4.1 Agri-environment in the national strategic and programme documents

The vast majority of the agri-environment national strategic and programme documents was produced by the Government of Kosovo*, Ministry of Environment and Spatial Planning (MESP) and Ministry of Agriculture, Forestry and Rural Development (MAFRD)

National Development Strategy (NDS) 2016-2021

The National Development Strategy 2016-2021 includes a wide range of activities: Consolidation of agricultural land, municipal development plans and zoning maps. Regulation of agricultural land, unfinished agricultural land consolidation (1983-1989). Land Parcel Identification System (LPIS). Rational use of renewable energy sources, produced by forest biomass. Agricultural infrastructure (irrigation, warehousing and storage facilities, market). Sustainable forest use and management, preventing deforestation, measures against land erosion, floods. Sustainable waste management, reducing environmental pressure, using recycling of residues, which could be used as raw materials by industries. The implementation of these measures will contribute to reduce the damage to the environment, the ecosystem and improve the quality of life of citizens, especially their health.[15]

Kosovo* Environmental Strategy – KES (2013-2022)

KES (2013-2022) aims to provide answers to the current and future needs of Kosovo's* society and specifically address the environmental management obligations at the national and international level. The said document sets out the objectives and priorities which have to be implemented through the Kosovo* Environmental Action Plan (KEAP) 2013-2017[16].

It is crucial for a new country like Kosovo* to consider the Strategy of Environmental Protection (SEP) as part of the long-term development strategy.

In fact, the KES represent an important step forward and for the first time these issues can be developed, properly planned and managed to be used as a long-term concept. This is clearly defined in the Constitution, Chapter II–*Fundamental Rights and Freedoms, Article 52* stating:

1. Nature and bio-diversity, the environment and national inheritance are everyone's responsibility.
2. Everybody should be given the opportunity to be heard by the public institutions and have their opinions considered on issues that impact upon the environment in which they live.
3. Environmental impacts will be taken into consideration by public institutions during their decision-making process.

The **Strategy for Environmental Protection (SEP)** clearly indicates not only society's development in general, but also in the social welfare for the citizens. With regards to the capacity building and the harmonization of the legislation with EU standards, significant advancements have commenced in recent years. However the implementation of the legislation is accompanied by difficulties and remains at an unsatisfactory level.

This Strategy for Environmental Protection will improve the current situation, but it must be harmonized with the social and economic demands, and also well aware that the more pressure is placed for the purpose of protection of the natural resources and environment, meaning measures to protect these priority resources such as for air, soil, water, cultural heritage and so forth are in place, the better results we will have for future generations. This is the responsibility of each and every citizen. Under such a premise, this strategy recommends integration of environmental management and protection into all sectors in Kosovo*.

Spatial Plan of Kosovo*/Spatial Development Strategy of Kosovo* 2010-2020+

The Kosovo* Spatial Plan is a document which should promote the common interests of the residents of Kosovo*, for an accelerated economic development, with the aim of improving the quality of life, but simultaneously protecting the resources, and the natural and cultural heritage. The drafting of the Spatial Plan of Kosovo* helps spatial extension development at the national level, municipal and urban, as does the drafting the General Development Strategy of Kosovo*. The Spatial Plan should:

- Guide governmental sectors and agencies in drafting and implementation of policies and decisions on public investments with a distinct spatial dimension or that may be affected by space;
- Approve the policy guidance on strategic investments in infrastructure, especially in transport and telecommunications, then establish policies regarding the development of industry, housing, services, rural development, tourism and natural and cultural heritage;
- Support balanced development between developed and under-developed areas;
- Identify strategic locations which would favor both urban and rural areas;
- Identify the role of major cities in the overall development of the socio-economic and cultural aspects of Kosovo*;
- Also, the Spatial Plan must guide the drafting of the other municipal plans – Municipal and Local.
- Establish general principles of good practices in spatial planning, to facilitate the population placement, employment and utilization of natural resources serving sustainable economic development and a better quality of life[17].

Strategy and Action Plan for Biodiversity (2011-2020)

The Strategy and Action Plan for Biodiversity (2011-2020) defines the long-term objectives and goals for preserving biological diversity, landscapes and protected natural values. The strategy includes: preservation of landscapes, ecosystems, habitat types, wild and domestic species; protected natural values; monitoring of the state of nature; nature protection in the sectors; promotion and preservation of biological diversity and landscapes; public information, fulfillment of international obligations in the field of nature protection; etc. In the agricultural sector, management methods for sustainable and environmentally friendly technologies and practices are mentioned. Creating of biological reserves within farms; developing a network of natural habitats around and between farms, reducing the change of wild natural habitats in agricultural land using sustainable practices in livestock and utilization of pastures. Such a strategy for agro-biodiversity does not plan anything about the protection and conservation of plant and animal genetic resources (agro-biodiversity).[18]

Kosovo* National Water Strategy Document

The National Water Strategy is one of the main documents of water resource planning in Kosovo*. This document presents a legal obligation pursuant to the Law No.04/L-147, ON THE WATERS OF KOSOVO*, Article 31. Through this document, the Government aims to address and guide the policy, operational and investment developments in the water sector for a 20-year timeframe. The purpose of the strategy is to offer an integrated and sustainable development of the water sector by fulfilling the following needs:

- Drinking water supply,
- Water for food production,
- Irrigation of agricultural land,
- Industry,
- Sports and recreation, and
- Generation of electricity.[19]

Strategy on Air Quality 2013-2022

The policies determined in the Strategy on Air Quality, aim to develop and implement specific instruments to increase the quality of life, by providing the base to improve the air quality. To provide a framework though which the protection and reduction of air pollution in Kosovo* will be achieved, in accordance with the EU standards and principles of best practices.

The Strategy includes: the principles and criteria for determining the goals and priorities, assessment of the state of air quality, objectives and measures to protect and improve air quality by including priority measures, activities and dynamics in the implementation of these measures. As far as measures and existing instruments are concerned, the existing legislation for air protection and horizontal legislation provide a number of measures and instruments with the aim of protecting and improving the air quality[20].

Strategy on Waste Management 2013-2022

The Strategy on Waste Management 2013-2022 defines the orientations and goals in the field of waste management, in line with the legislation on waste management and the economic opportunities focusing on: Reducing the amount of waste at source as well as reducing the amount of waste to be disposed of; Development of infrastructure for the establishment of an integrated waste management system (Reduction - Reuse – Recycling); Accurate determination and inventory of hazardous waste; Management of inherited hazardous waste that is under the Government's competency, etc. The Strategy includes the water sector, mining, health, veterinary sector, spatial planning, construction and industry, etc[21].

Climate Change Strategy (CCS) 2014-2024

The Climate Change Strategy is a document summarizing the mitigation and adaptation measures that will boost the sustainable development. It is crucial for responding to and anticipating the impacts of climate change in Kosovo*.

The mission statement of CCS is **t**o reduce the risk and damage from current and future impacts of climate change in a cost-effective manner and to exploit potential benefits stemming from climate change[22].

Agriculture and Rural Development Plan (ARDP) 2014-2020

The programme for Agriculture and Rural Development (ARDP); 2014-2020 is the most important document related to agricultural policies in Kosovo* but has never been approved by either the Government or the Parliament, as foreseen by the Law on Agriculture and Rural Development. The document has not been published, but it foresaw the agri-environmental measures, launched in 2017.

The ARDP 2014-2020 strategic objectives will be achieved by implementing the priorities on rural development and measures set under IPA II and the national support addressing income measures, land use and irrigation infrastructure finance by donor initiatives and the national budget. [23]

Kosovo*'s Rural Development programme 2014 -2020 focuses on the following six priorities.

1. Fostering knowledge transfer in innovation in agriculture, forestry and rural areas.
2. Enhancing competitiveness in all types of agriculture and enhancing farm viability.
3. Promoting food chain organization and risk management in agriculture.
4. Restoring, preserving and enhancing ecosystems dependent on agriculture and forestry.
5. Promoting resource efficiency and supporting the shift towards a low carbon and climate resilient economy in the agriculture, food and forestry sectors.
6. Promoting social inclusion, poverty reduction and economic development in rural areas.

Land Consolidation Strategy 2010-2020

The aim of Strategy for Land Consolidation 2010-2020 is to increase the competitiveness of the agriculture and forestry sector, based on the ownership of sustainable land use for farmers, environmental protection, land use, rural infrastructure development, and improvement of life of rural residents. Land consolidation also envisages the rational utilization of agricultural land, the solving of property issues, land ownership, farm size increase and market competition, infrastructure development for resident population, environmental cultural heritage protection, and assistance to develop alternative agricultural activities[24].

Policy and Strategy Paper on Forestry Sector Development 2010-2020

The strategy identifies intervention areas which are considered to have great impact on forestry development. According to the strategy, these areas are: Forest management and silviculture, Forest planning and information management, Operational planning, Harvesting & transport of wood, Capacity building, Forest environment protection, Wood use - forest industry development, Private sector development, Non-wood products.

Principles to be applied **-** The forest sector in Kosovo* could contribute to social stability and improved security. The means would be to take advantage of the forests' capacity to deliver products of importance to reduce poverty and to develop the socio-economy. Forest activities may provide employment and increase the private sector's opportunities for the provision of services [25].

Strategy on Advisory Services for Agriculture and Rural Development 2012-2016

The objectives and goals of the strategy **-** The strategy aims that the network of the national advisory services assists in a fair way and as functionally as possible the entire territory of Kosovo*, in identifying the requirements for advisory services for agriculture and rural development as well as their choice among the advisers from the advisory services network.

The specific objectives of the advisory services for agriculture and rural development

- Increasing the number of farmers and other stakeholders getting advice on agriculture and rural development.
- Adaptation of the advisory services according to the needs and demands of the farmers and the other stakeholders**.**
- Promotion, implementation of national development policies and international and national programmes to support agriculture and rural development.[26]

B3.4.2
Institutional and Legal Settings

Until now, Kosovo* has gone through two important phases, and now it can be said that it has started its third phase of development in many aspects:

First Phase: Emergency and stabilization (1999-2007); national institutions, together with international ones, focused on the reconstruction and construction of elementary infrastructure destroyed by the consequences of the recent war in Kosovo* (1998-99).

Second phase: State-building, a decade of independence (2008-2018), when public investments were oriented towards the construction of new state institutions, development of infrastructure, security, education and health etc.

Third phase: from 2018 onwards, developmental period oriented towards European integration in many aspects, but also with agro-environmental standards.

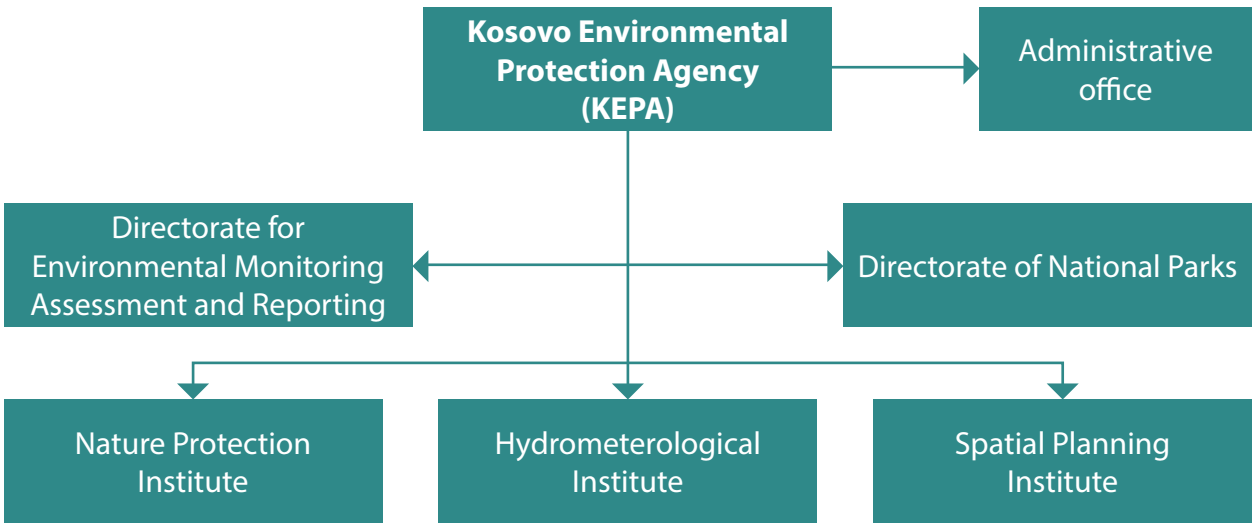
Kosovo*, the Prime Minister's Office and the two ministries have legal responsibility for drafting the legal and developmental policies related to the conservation and use of natural, agricultural and agro-environment complexes, such as the competences intertwined with each other.

The Ministry of Environment and Spatial Planning (MESP) has 9 departments, 3 institutes, 1 agency and 15 different divisions. Four departments and one institute are responsible for nature protection. MESP is responsible with regards to the creation and implementation of general management of legislation in the field of Environment, Housing and Spatial Planning and Construction and Water. MESP carries out the work of the state administration, related to: environmental protection; the system of protection and improvement of the environment; national parks, inspections in the field of environmental protection; nature protection; air protection; climate change; air and water pollution; protection of water from pollution to prevent deterioration of water quality; management of biocides, products and chemicals; waste management, etc.

Kosovo* Environmental Protection Agency (KEPA) as a key MESP environmental body engages in integrated environmental monitoring, environmental information efficient system, as well as in continuous environmental situation reporting, maintaining the quality of water, soil, air and biodiversity, promoting the use of renewable energy sources and sustainable use of natural resources in order to ensure a healthy environment for the present and future generations in harmony with the economic and social development progress.

KEPA is responsible for environment and nature monitoring, establishment and management of databases and environmental information systems. Its duty is also to provide professional opinions on management plans of nature protected areas that need approval; it proposes technical solutions to prevent and reduce pollution of environment and nature; it develops programmes and plans in the field of environmental protection; it monitors the implementation of the environmental action plan, provides scientific and other support for environment protection, biological diversity and nature, develops programmes and educational materials in order to raise the public awareness about the environment.

Figure B3.4.2.1 Organogram of KEPA



The Ministry of Agriculture, Forestry and Rural Development (MAFRD)

Is structured into: 9 departments, 2 agencies, 31 divisions and 1 institute. The Department of Rural Development Policies includes selection of measures and their publicity, coordination, evaluation, monitoring and reporting of the Rural Development Program. The Department of Agricultural Policies and Markets with Divisions includes: plant and animal production, quality standards for agricultural products, plant protection, registration of varieties of grains and potatoes, monitoring of irrigation and land use. The Department for European Integration and Policy Coordination coordinates the process of European integration, strategic planning and policy development process as well as the external support.

The Kosovo* Forest Agency (KFA) administers issues related to the regulation of forests and forest lands, administration and management of public forests and forests in the National Parks in Kosovo*, with the exception of those issues that the law specifically assigns to any other governmental authorities.

The Agency for Agricultural Development (ADA)/The Paying Agency/ performs all tasks, responsibilities and competencies provided by law and with administrative instructions. Its priority is the implementation of the programme for agriculture and rural development in accordance with the IPARD rules.

The Food and Veterinary Agency (FVA) is under the responsibility of the Prime Minister. FVA has responsibilities for public health protection, animal health and welfare and food safety. In its composition is also the Sanitary Inspectorate for field inspections and seed certification and customs control.

Advisory Services for Agriculture and Rural Development (ASARD), with specific objectives:

1. Advisory Services for Agriculture and Rural Development;
2. Increasing the number of farmers and stakeholders for counseling;
3. Adaptation of the advisory services in accordance with the farmers' and stakeholders needs and requirements;
4. Promotion and implementation of national and international development policies and programmes for support to agriculture and rural development.

Local Level – Municipalities – In accordance with the Law on Nature Protection, the Strategy and Action Plan and spatial planning documents, they are obliged to take care of the conservation of the biological and landscape diversity on their territory. The municipalities are obliged also to issue programmes for nature protection for their territory[27].

B3.4.3 Agri-environmental policy

Kosovo* is well prepared to act on these recommendations, for its key plans and strategies already incorporate environmental considerations. Kosovo*'s Environmental Strategy and National Environmental Action Plan (2011–15) were updated in 2011. The new KES (2011–21) objective is to reduce pollution, ensure sustainable use of natural resources, protect biodiversity as well as protect valuable national landscapes. The short-term priorities include implementing the EU Acquis, integrating the EU environmental structures, and mainstreaming the environmental concerns. The cross-compliance as a set of compulsory environmental protection measures has not been set and is not implemented in Kosovo* and the farmers are not obliged to implement it yet.

The sectorial strategies that incorporate environmental objectives or have implications to the environmental quality include the following:

- **Kosovo*'s Energy Strategy 2009–18**. This strategy aims to promote environmental awareness in energy activities, renewable energy use, and energy efficiency as well as to develop gas infrastructure.
- **The Industrial Strategy for Kosovo* 2010–13** provides a basis for raising the quality of the industrial policy. It envisages a greater role for the industry in contributing to GDP, including exports and investment.
- Through promotion of farming and other economic activities that are in harmony with the environment, the **Agriculture and Rural Development Strategy 2009–13** aims to sustain the rural development and improve the quality of life (including infrastructure).
- **Kosovo*'s Policy and Strategy Paper on the Forestry Sector Development 2010–20** aims to improve the capacity to deal with environmental issues related to forestry, enhance the capacity of Kosovo* institutions to implement and monitor biodiversity action plans, and establish and manage protected zones in compliance with the national goals and international agreements.

Laws and administrative frameworks regulating agri-environmental policies:

1. **The Law on Agriculture and Rural Development (Official Gazette 56/2009),** includes policies for the development of agriculture and rural development, and defines the objectives, measures and programme of agriculture and rural development policies.
2. **Law no. 03/l-025/ on Environmental Protection (Official Gazette 50/2009),** regulates the integrated system for environmental protection, the risk of environmental pollution, life and human health according to the concept of sustainable development. Rational use of resources, limiting emissions and release of environmental pollution, preventing damages and rehabilitating the damaged environment.
3. **Law no. 04/l-085 on Organic Farming (Official Gazette 28/2012),** regulates the basis for sustainable development of organic production and efficient market functioning by guaranteeing fair competition, consumer confidence and consumer interests' protection.
4. **Law no. 03/L-233 on Nature Protection (Official Gazette 85/2010)** regulates the system of protection and preservation of nature and its values, biological diversity and landscapes, in particular: protection, conservation, renewal and sustainable use of natural resources, in a state of natural equilibrium.
5. **Law no. 04 /l-147 on Water**, ensures sustainable development and use of water resources, which are necessary for public health, environmental protection and socio-economic development. Other issues also regulated by this law are: surface water, lakes, accumulations, reservoirs, natural resources, wet lands, groundwater, use and distribution of water, protection of waters, protection against harmful water activities, floods, drought, erosion, facilities and infrastructure water management, water financing, and the conditions, ways and actions by which water can be exploited or released.

6. **Law no. 02/l-26 on Agricultural Land,** this Law defines the utilization, protection, regulation and leasing of agricultural land, with the purpose of preserving and protecting the agricultural potential permanently, based on the principles of sustainable development.
7. **Law No.4 / L-191 on Livestock** - the objective of this Law is the protection, improvement and preservation of quality animal gene sources with the aim to incite farmers to increase animal production, to improve the quality of livestock products and to protect the animals' genetic variability. This Law determines the conditions and practice of livestock rearing, better animal breeding in farms, methods and technology of animal breeding, conditions for establishment and approval of breeding programs, change and preservation of animals' characteristics, preservation of genetic variability and indigenous breeds, professional and scientific services on livestock, genetic reserves, breeding enterprises, trade and marketing of breeding material, inspection and acquiring funds for those objectives.
8. **Law No.2004/21 Veterinary Law** - regulates the combating and prevention of infectious animal diseases, veterinary medical practices, the circulation of products of animal origin, veterinary control of the import, the export and transit of live animals and products of animal origin, and determines the rights and obligations of public and local government institutions, as well as of individual persons, in this field.
9. **Law No.02/L-10 on Animal Welfare** – regulates the keeping, caring, housing, breeding, transportation and other issues related to animal welfare.
10. **Law No. 02/L-53 on Hunting** – determines and regulates the sustainable management, breeding, protection, hunting and use of wild fauna as a natural wealth of general interest which enjoys special protection. The purpose of this law is protection of the integrity of the ecosystem and ecological balance, adequate protection of wild animals, ensuring their welfare and conditions for economic utilization of resources, need for safety and ethical standards of hunters.
11. **LAW NO. 02/L-85 on Fishery and Aquaculture -** regulates the management of fishing resources and activities of fishery and aquaculture exercised in the waters on the territory of Kosovo*. The provisions of this law aim at; Rational exploiting of fish in fishing waters in order to protect the biodiversity; catching and cultivating fish only according to the terms foreseen by this law and the by-laws derived from this law; designating management conditions and supervising fishing resources; designating measures for fish protection; and designating rights and obligations to legal entities or physical persons that exercise fishing and aquaculture activity.

B3.4.4 Agri-environmental measures in place

The Government of Kosovo* is a signatory to several international conventions for addressing environmental issues. Also starting in 2012, it began with the process of approximation of its legislation with the EU Community.

At the national level, it has also drafted environmental strategies and those strategies, in accordance with the official documents, national programmes and support policies, are being implemented in order to address environmental issues.

The Environmental Action Plan for Kosovo* (EAPK) and the Agricultural and Rural Development Plan (ARDP) include the general environmental developments in the agricultural sector.

The Government, through the Rural Development Budget, each year finances the implementation of the strategy through programmes and measures through which it is possible to apply for support for the protection of agro-environment.

The agricultural sector was supported through direct payments and rural development measures. Support through direct payments was made for agricultural crops, livestock heads as well as inputs, while the investments in the primary sector, but also in the processing industry

and tourism development in rural areas were supported through grants.

Selected measures for implementation in Kosovo* are grouped under the four priorities of IPA II for rural development and they are listed as following:

1. **Improvement of farm sustainability of and competitiveness***
   - Investments in physical assets of agricultural economies.
   - Investments in physical assets on processing and marketing of agricultural products.
2. **Recovery, preservation, improvement of the ecosystem[2]****
   - Agro-environmental measures and organic farming
   - Establishment and protection of forests
3. **Promotion of socio-economic inclusion[1]***
   - Farm diversification and business development
   - Preparation and implementation of Local Development Strategies -LEADER
4. **Transfer of innovations, knowledge [2]****
   - Training Improvement
   - Counseling services
   - Technical Assistance

Requirements related to measures

Supported by the project funded by European Commission "Further support to the Ministry of Agriculture, Forestry and Rural Development to strengthen the administrative structure for the implementation and monitoring of national and future EU funds", the accreditation package has been prepared but has not been accredited yet.

On 07.04.2017, No. 10/17, the Prime Minister issued a decision in the field of Agricultural Policy and Rural Development of the Instrument for Assistance before joining the European Union (IPA II)

Operational structures look as follows;

1. The Department of Rural Development Policies at the Ministry of Agriculture, Forestry and Rural Development has been appointed as a Managing Authority.
2. The Agriculture Development Agency at the Ministry of Agriculture, Forestry and Rural Development has been appointed as IPARD Agency.

To implement the ARDP, the Managing Authority, in close cooperation with the Agriculture Development Agency, prepares administrative instructions for the implementation of the measures. The Administrative Instructions for the Implementation of the Measures describe in detail:

- The objectives of the measures;
- The funding of the measures, including the budget, the support rate, the minimum and maximum sizes of all eligible costs;
- The eligibility rules: Eligible applicants, eligible investments/activities, eligible costs;
- The selection Criteria;
- The procedures for application, including administrative and admissibility control provisions, verification of investment profitability;
- The supporting documents required to prove the admissibility of applicants and investments, as well as the priorities in the selection system;
- The contracting procedures and provisions for supplementing-amendment of contracts.

Other supportive policy measures:

- **Land consolidation measures**

  Land consolidation activities have already been supported under the current ARDP 2007-2013 and there is still a need to consolidate the small farms and the fragmented agricultural production. The new strategy and the action plan (2010-2020) for land consolidation are enforced to address the great need for land consolidation, due to the fragmented structure of land separation in general, and apart from the improvement of agriculture, production can function only if better use of the production factor i.e. the agricultural land, can be achieved.

1* The first and the third priorities are being implemented by the national projects for agriculture and rural development
2** The second and fourth priorities are not being implemented or are only partially implemented

- **Measures for irrigation of agricultural land**

  The MAFRD intends to continue with the measure to support the new installation and modernization of the existing irrigation systems, to overcome the water shortages in the summer, to improve and achieve more intensive agricultural production and cultivation of fruits and vegetables instead of arable crops. On mid-term assessment, it is recommended to consider the environmental aspects when selecting irrigation projects and to focus more on modern irrigation systems that save water.[28]

Direct payments

Continuation of direct payments to farmers is planned for the upcoming period 2014-2020 in order to stabilize the farmers' income and increase the agricultural production while using better agricultural inputs. The mid-term assessment proposes draft adjustments for future direct payments e.g. the farm size threshold or the number of animals for determining suitability criteria to receive direct payments.

Tab. B3.4.4.1. Direct payment - Supported sectors by 2018

No.	Supported sectors	Unit	Price	Total amount
1	Direct payment for mercantile wheat	Ha	150	6,750,000.00
2	Direct payment for wheat seeds	Ha		150.000.00
3	Direct payment for cultivated barley	Ha	150	50,000.00
4	Direct payment for cultivated rye	Ha	150	30,000.00
5	Direct payment for cultivated maize	Ha	150	2,700,000.00
6	Direct payment for cultivated sunflowers	Ha	150	20,000.00
7	Direct payment for existing vineyards	Ha	1,000,00	2,150,000.00
8	Direct payment for wine produced	Lit	0,04	350,000.00
9	Direct payment for existing orchards	ha	400	1,250,000.00
10	Direct payment for planting fruit trees	ha	0,15	100,000.00
11	Direct payment for cultivated vegetables	ha	300	1,700,000.00
12	Direct payment for organic agriculture	ha	300 +500	100,000.00
13	Direct payment for milking cows and buffalo	head	75	4,200,000.00
14	Direct payment for sheep	head	15	1,700,000.00
15	Direct payment for goats	head	15	150,000.00
16	Direct payment for bees	head	15	2,000,000.00
17	Direct payment for milk by quality category	lit.	0,06/0.004/0.002	1,100,000.00
18	Direct payment for hens	head	0,50	300,000.00
19	Direct payment for partridges	head	0,50	25,000.00
20	Direct payment for reproduction sows	head	20	25,000.00
21	Direct payment for reported slaughtered cattle	head	50	75,000.00
22	Direct payment for aquaculture	kg	0.20	75,000.00
	Total			**25,000,000.00**

Source: programme for direct payments 2018

Prevention and reduction -- Policies of environmental pollution

Apart from supporting investment, special attention has been paid to increasing the capacities of farmers and inter-institutional cooperation with the mechanisms of the relevant government and municipal institutions. Based on the mandate to address environmental issues and the budget available under the Agriculture and Rural Development Plan since 2010, MAFRD supports investments under measures for physical assets of agricultural economies and physical assets in the processing and marketing of agricultural products.

Focus of the Policies of the Ministry of Agriculture, Forestry and Rural Development

MAFRD policies currently are focused on:

1. **Increasing the capacities of farmers**

   Increase the capacities of farmers to reduce the environmental pollution rate by improving the agri-environmental conditions in commercial farms. MAFRD has an advisory Service that also does capacity-building of farmers on agro-environmental topics through the Annual Activity Plan on Agenda.

2. **Implementation of zootechnical and zoohygienic standards in livestock farms**

   The implementation of zootechnical and zoo-hygienic standards in farm infrastructure and in stables as facilities for keeping animals is necessary in order to reduce the level of pollution in the environment. **Measure 101 -- Investments in the physical assets of agricultural economies** Agriculture and Rural Development Plan 2014-2020, provides farmers the opportunity to invest in farm development, farm capacity expansion and farm infrastructure according to farm and farm infrastructure models for zootechnical and zoohygienic standards. While respecting the standards, the beneficiary farmers are obliged to make investments in accordance with the good practices for reduction of environmental pollution. Based on this measure, the beneficiaries of the new stall grant, alongside the implementation of zootechnical and zoohiogenetic standards are automatically beneficiaries of the plectrum or septic tank.

3. **Waste treatment from the processing industry**

   Through **Measure 103 -- Investments in physical assets in the processing and marketing of agricultural products** MAFRD provides opportunities for the processing industry to invest in physical capacity building, technological lines completion, implementation of security systems and accompanying infrastructure for the implementation of hygiene and sanitation standards and treatment of industrial waste and sewage. According to the legislation in force, the food industry that deals with milk and meat processing must have a sewage treatment plant system for achieving acceptable standards for their discharge into sewerage.

   In order to monitor the treatment of animal by-products and field activities for the prevention of wild animal outbreaks in public places, the FVA has regular daily aids in control of the slaughter industry. In addition to implementation of the law, FVA is finalizing the project for the establishment of the facility for the destruction of animal by-products, a project of the European Commission co-financed by the Government of Kosovo*.

   The institutional mechanisms for the implementation of policies and legislation are the Agency for Agricultural Development and the Food and Veterinary Agency.

4. **Support for organic farming**

   Organic agriculture is an emerging segment of the agricultural sector in Kosovo* and MAFRD, together with CIHEAM, produced the first document focused on this sector: the "National Organic Action Plan of the Republic of Kosovo* 2018-2021".

   The suitable environmental condition for organic production and collection of non-wood forest production holds a great potential for organic agriculture in Kosovo*, due to its extensive traditional production in rural areas. Current production methods are characterized by low-input, exten-

sive, small-scale farming systems, often for self-subsistence, especially in rural areas. Considering that the use of pesticides and synthetic fertilizers is low, producers could easily convert to organic agriculture.

The existing regulatory framework for organic agriculture in Kosovo* includes the Law on Organic Farming 04/L-085, based on the EU regulations 834/2007 and 889/2008. The objective of the Law is to provide the basis for a sustainable development of organic agriculture, while ensuring the effective functioning of the market, guaranteeing fair competition, ensuring consumer confidence and protecting the customer's interest.

MAFRD prepared eight Administrative Instructions in order to implement the Law effectively.

The Unit for Organic Farming was established at the Department for Agriculture Policy and Markets (DAPM) within MAFRD, based on the Administrative Instruction No.01/2010. The current status of the unit is characterized by lack of personnel, reflected in fact that DAPM has only one person responsible for organic agriculture[17].

B3.4.5 Agri-environmental indicators

Kosovo* is not a party to conventions, protocols or international environmental agreements due to political obstacles, and this is an obstacle to obtaining international technical and financial assistance. Despite this fact, Kosovo* is trying to apply the EU environmental standards. Kosovo* institutions are responsible for drafting and implementing policies, in line with the EU standards for agri-environment. The Agri-environmental indicators are a tool for assessing the effects of agricultural production on the environment, and as such, they should be monitored and evaluated. Environmental policy issues in agriculture are regulated by specific Laws and Regulations to monitor the conservation and application of chemicals, pesticides, waste management, mineral fertilizers, and green areas, especially areas with higher environmental values, plant and animal genetic resource conservation respectively.

Natural Resources: Kosovo* is a small country but rich in natural resources appropriate for agricultural production. Agricultural activities are usually positive, but in special cases they have negative effects for: pollution, soil, water and air degradation as well as providing of environmental services, biodiversity, drought and release of greenhouse gases.

Environment and general concerns: In recent decades, the spectrum of change is extensive, which can be determined through the agri-environmental indicators: erosion and riverbed diversions, forest cutting and afforestation, change of use and destination of land, climate change, migration of rural population, damaged or abandoned capacities of the former food industry, as well as delayed financial support for farmers.

*Tab. B3.4.5.1. Agri-environmental indicators in Kosovo**

Domain	Sub-domain	No.	Title	*Available*	*Frequency*	*Spatial reference/ resolution*	*Responsible institutions*	*How to access the data*
Responses	Public policy	1	Agri-environmental commitments	NO	-	-	-	-
		2	Agricultural areas under Natura 2000	Yes/national methodology	Yearly	National scale	KAS	WEB - KAS
	Technology and skills	3	Agri-environmental indicator - farmers' training and environmental farm advisory services	Yes/national methodology	Yearly	National scale	MAFRD	MAFRD
	Market signals and attitudes	4	Area under organic farming (see Organic farming statistics)	NO	-	-	-	-
Driving forces	Input use	5	Mineral fertilizer consumption	Yes/national methodology	Yearly	National scale	KAS	WEB - KAS
		6	Consumption of pesticides	Yes/national methodology	Yearly	National scale	KAS	WEB - KAS
		7	Irrigation	Yes/national methodology	Yearly	National scale	KAS	WEB - KAS
		8	Energy use	Yes/national methodology	Yearly	National scale	KAS	WEB - KAS
	Land use	9	Land use change	NO	-	-	-	-
		10.1	Cropping patterns	Yes/national methodology	Yearly	National scale	MAFRD	MAFRD
		10.2	Livestock patterns	Yes/national methodology	Yearly	National scale	MAFRD	MAFRD
	Farm management	11.1	Soil cover	Yes/national methodology	Yearly	National scale	KAS	WEB - KAS
		11.2	Tillage practices	NO	-	-	-	-
		11.3	Manure storage	NO	-	-	-	-
	Trends	12	Intensification/ extensification	NO	-	-	-	-
		13	Specialisation	NO	-	-	-	-
		14	Risk of land abandonment	N/A				

Domain	Sub-domain	No.	Title	*Available*	*Frequency*	*Spatial reference/ resolution*	*Responsible institutions*	*How to access the data*
Pressures and risks	Pollution	15	Gross nitrogen balance (Archived)	NO	-	-	-	-
		16	Risk of pollution by phosphorus	NO	-	-	-	-
		17	Pesticide risk	NO	-	-	-	-
		18	Ammonia emissions	N/A	-	-	-	-
		19	Agri-environmental indicator - greenhouse gas emissions	N/A	-	-	-	-
	Resource depletion 20 Water abstraction			YES	Yearly	National scale	MESP KEPA	MESP KEPA
		21	Soil erosion	YES	Yearly	National scale	MESP KEPA	MESP KEPA
		22	Genetic diversity	NO	-	-	-	-
	Benefits	23	High Nature Value farmland	YES	N/A	N/A	EEA	EEA
		24	Renewable energy production (Archived)	Yes/national methodology	Yearly	National scale	KAS	WEB - KAS
State/ Impact	Biodiversity and habitats	25	Agri-environmental indicator - population trends of farmland birds (see Biodiversity statistics)	N/A	-	-	-	-
	Natural resources	26	Soil quality (Archived)	Yes/national methodology	Yearly	National scale	MAFRD	MAFRD
		27.1	Water quality - Nitrate pollution	N/A	-	-	-	-
		27.2	Water quality - Pesticide pollution	N/A	-	-	-	-
	Landscape	28	Landscape - state and diversity	N/A	-	-	-	-

B3.5 CONCLUSIONS AND RECOMMENDATIONS

B3.5.1 Conclusions

- Agriculture and rural development not only contribute to economic development, but also offer a solution to reduce poverty by creating employment, thereby improving the quality of life.
- Many of the laws have been recently revised and adopted by the Assembly of Kosovo* and other secondary legislation (administrative instructions, administrative orders and ministerial regulations) has been approved mainly by MESP and MAFRD but still the failure to implement the legislation fully prevails, especially in the coordination of policies and responsibilities. Also, approved laws have high theoretical levels, but their implementation is still far from practical reality.
- However, neither ministry has established all that is required to implement the laws. For example, the Law on Air Protection from Pollution has been in force since 2004, but there are still no mechanisms to collect information on the ambient concentrations of the relevant pollutants. The same situation applies to the Law on irrigation which has been in force since 2005, but there are mixed competencies between MAFRD, MESP and PAK regarding the use of water and the management of socially owned enterprises. According to the Law on Nature Conservation, some comprehensive assessments on the existence and location of sites hosting natural habitats took place, but these assessments were primarily conducted by scientific researchers. There are no ongoing projects regarding the identification of protected area natural habitats.
- Most laws will have to be amended, and financial resources need to be provided to ensure their implementation. Much EU legislation relates to the competencies of both MAFRD and MESP. The cooperation between these two ministries needs to increase in order for them to coordinate the activities with regard to EU legislation. Also, the Law on Water and the Law on Irrigation of Agricultural Land (amended on 28 July 2010) are in place, but cooperation between these two ministries is required to determine which of them will be responsible for issuing permits regarding water use and water utilities/irrigation.
- The current environmental situation in Kosovo* is favourable but at the same time, not enough attention has been given to its improvement. Based on this, the environment will pose the greatest challenge that which the Kosovo* society will face in the overall strategic goal of European integration and implementation of the standards to be met in the environmental sector. Construction work without any criteria, lack of wastewater treatment, outdated technologies, poor management of industrial and household dumps, and wild exploitation of natural resources pose major environmental problems in the country. During 2002, Kosovo* decided to seriously deal with the environmental problems by establishing relevant institutions such as the Ministry of Environment and Spatial Planning.
- Regulation 2002/05 stipulates the Establishing of MESP whereby Annex XI prescribes the duties and responsibilities in the field of environmental protection, natural heritage, water, and waste management and spatial planning.
- The Law on Environmental Protection in Kosovo* was adopted in 2003 and later based on this law, the Strategy of Kosovo* on Environment and Sustainable Development 2005-15 was adopted. Based on this strategy, the Action Plan of environment 2006-10 was prepared and approved by the Government of Kosovo*, which contained over 52 projects, more than 70% of which have been implemented.
- The Law on Agriculture and Rural Development, sponsored by MAFRD is to be adopted by parliament in order to establish the Payment Agency (Agriculture Development Agency) as foreseen under COUNCIL REGULATION (EC) No1290/2005 of 21 June 2005 on the financing of the common agricultural policy. Such an Agency would finance projects that deal with agriculture and rural development. However, at present, the establishment of the Payment Agency is in contradiction with Kosovo*'s Law on Management of Finance. In

this regard, benefits from the grants under (a) COUNCIL REGULATION No. 1782/2003 of 29 September 2003 that sets common rules for direct support schemes within the common agriculture policy, and (b) COUNCIL REGULATION No. 1698/2005 of 20 September 2005 that supports rural development through the European Agricultural Fund for Rural Development need to be reconciled with the legislation in Kosovo*.[11]

- Production and processing in the organic sector is characterized by low and insufficient level of knowledge and awareness, lack and high price of organic inputs, insufficient and inadequate infrastructure, and very limited extension of agricultural organic land area.[17]
- Lack of clear, long-term policy decisions on major issues regarding land management and land administration in MESP, MAFRD and other Ministries inside Kosovo* Government.
- There is a lack of systematic monitoring of agricultural land, and therefore the change of the use of agricultural land is very high.
- The consolidation of agricultural land is facing major problems due to ownership and other procedural and legal issues.
- Agricultural production has an enormous impact in improving the trade balance, reducing unemployment, and improving food security, environmental protection, allowing also for a higher quality of life of its citizens
- The institutions of Kosovo* are not signed parties to the Convention on Biological Diversity (CBD) and other international agreements as a result of political obstacles. Many administrative instruments have been drafted, with almost the same content, and with unclear division of powers.
- Despite the government's efforts and contributions of recent years to assist and develop agricultural production, it still faces many difficulties, some of which are inherited from the past. However, several of them are a consequence of the long-term lack of access to professional and scientific expertise, as well as of an inadequate budget.
- The environmental situation in Kosovo* is at the early stage of consolidation, implementation and monitoring of agro-environmental indicators.
- The quantity and quality of production depends on the influence of many factors (political, economic, social, professional and scientific) that are influential in the process,
- The high costs of agricultural inputs, the low price of agricultural products and market shortage have had an impact on reducing the interest of the population, especially young people, in dealing with agriculture and increasing population migration from rural areas to urban areas and even to Western Europe.
- Uncontrolled expansion of residential areas, both in rural areas and in the vicinity of towns through construction of houses, local and regional roads, warehouses, residential buildings, business premises and others have affected the loss and degradation of agricultural land surfaces.
- Production productivity in farms is rather low in most cases and this is due to: Inefficient advisory services, very fragmented parcels, with small areas, without the possibility of applying new technologies and diversifying production, insufficient engagement of professional and scientific expertise to provide optimal models for solving existing difficulties, lack of adequate infrastructure, especially in rural areas and lack of processing capacities for industrial crop products.
- The level of direct payments is quite considerable and this has had a positive impact on the farmers' continuation of agricultural production, but on the other hand the realization of these payments by the central government is done with considerable delay and in many cases the farmers are not able to pay the inputs and they cover them from their own resources and in such cases the use of agricultural inputs is not optimal.
- The size of the budget for development programmes is insufficient for all the applicants and this affects the limitation of the application of modern technologies for the production, preservation and processing of agricultural products.
- Creating conditions for rational use of agricultural land by farmers, with a balanced relationship "environment - healthy production", is a challenge we will be faced in the future, as well as the advancement of integrated and organic production.

B3.5.2 Recommendations

- The main policy documents, Agriculture Rural Development Plan (ARDP) 2007-13 and the current ARDP 2014-2020,

  the National Environmental Action Plan (NEAP) 2011-2015 and Kosovo*'s European Partnership Action Plan 2012 (KEPAP) provide a coherent framework of objectives and proposed actions and measures, but these still need to be translated into practical actions in the countryside – the so-called operations.

- Completion of the legal infrastructure and unification of the Policy on Land Protection and Administration between institutions.

  The MAFRD, the MESP and the other relevant ministries and institutions should set up a commission to work on analyzing the existing legal infrastructure and make the necessary recommendations regarding the update in the setting up of additional legal instruments.

- Set up instruments for systematic monitoring of agricultural land

  The MAFRD should prepare a strategy for the protection of agricultural land and to develop instruments for intensive land monitoring through Kosovo*'s Agriculture Institute..

- Preparation of pedological (soil) maps.

  The existing pedological map is not functional as there are no comments regarding the analysis conducted and the characteristics that the lands possess. Based on FAO WRB methodology, MAFRD should urgently take initiative for preparation of a soil map.

  With the completion of this map, MAFRD will also have the results of the water-physical, chemical and mechanical analysis of the soil, which can be used for the preparation of drafting new policies and strategies for land management, land consolidation, and land protection and administration.

- Proper application of legislation in terms of protection of agricultural land

  Even though there is a law and there are administrative instructions regarding the use of agricultural land, some of the land, especially the parcels that are bordered by regional roads, are exposed to contamination, degradation and land use change. Therefore, the cooperation among the central government institutions should be strengthened and new instruments for implementation of the legislation in force for land protection should be set up, in particular by the MAFRD and the MESP with the municipalities (municipal inspectorate).

- Strengthening of the Land Division in the MAFRD

  In order to face all the challenges, the MAFRD Land Division staff should be strengthened.

- Organizing campaigns for the protection of agri-environmental factors.

  Environmental protection campaigns should be organized both at the local and central level. These campaigns should be organized at all levels, in cooperation between NGOs, private businesses, state institutions, schools, etc.

- Prevent alienation of agriculture lands and facilities

  A part of agriculture lands and facilities after the Kosovo* war was alienated and used in inadequate way for individual interest. The government has to find a way to prevent further alienation of agricultural land and facilities and convert as much as possible of the already alienated land and facilities back to their original purpose.

- Application of Land consolidation measures

  The separation of parcels is one of the main problems of the agricultural land in Kosovo*. Apart from the MAFRD preventive measures against further separation by supporting the plots with minimal surface area by means of subsidies and grants, the MAFRD should implement more land consolidation projects. In this case the land will be protected from degradation, contamination and change of destination and the agricultural production will be increased since conditions for the application of the irrigation of the consolidated areas will be created. Join small parcels.

- Advancement of the monitoring system

- The production monitoring system needs to be enhanced and functionalized in order for Kosovo* products to be standardized and

marketed in the external market. Monitoring and certification of organic production

Although organic production has begun to gain space in agricultural production, the state bodies should undertake another initiative to monitor and certify this production and to sensitize the promotion and marketing of these types of products through various associations and organizations.

- Raising the public awareness on the importance of using renewable energy sources

  Renewable energy in Kosovo* is at a very low application stage. Although considerable efforts have been made in identifying renewable energy sources in Kosovo*, renewable energy needs to be given much greater space. In this regard, projects for installation of renewable energy and replacement of existing ones from power plants should be prepared. The government should also subsidize renewable energy projects and take the right steps to raise the awareness about the importance of production and utilization of renewable energy.

- Developing a strategy for the protection of agro biodiversity, plant and animal genetic resources respectively.

  In this regard, there is a need for greater cooperation between the scientific institutions, universities and governmental bodies responsible for developing strategies and concrete programmes for the protection of agro-biodiversity, plant and animal genetic resources.

- Waste management through selection and recycling,

  Waste recycling programmes have not yet been developed and there are still insufficient funds dedicated to these programs. It is necessary to prepare programmes for the development and upgrading of sub-product management systems in the food industry and the recycling of various products.

- Preparation of an agro-ecological zoning map.

  Division of the land surface into smaller units, which have similar sets of ecological or agricultural potential or obstacles to development, according to environmental factors. Based on this, regionalization and professionalization of plant production, according to agricultural crops should be done.

- Rehabilitation of the irrigation system, to intensify production.

A large part of the existing irrigation systems in Kosovo* have been rehabilitated by various development programs. But there is still a need for additional rehabilitation in order to increase the land area under irrigation and increase the agricultural production. Investments should also be made in the construction of new irrigation systems and extension of existing ones.

- Promotion of diversification of farm production and upgrading of processing systems.

The Ministry of Agriculture, through the ARDP 2014-2020 supports farm diversification and business development as an exceptional measure, but unfortunately the concept is not sufficiently familiar to the farmers and there is a lack of information among farmers in terms of utilizing the existing capacity for application for this measure. Therefore, for the purpose of spreading the word about this measure, they should also cooperate with the municipalities and the directorates of agriculture in order to utilize the potential resources of the farmers that are unused and the opportunity to develop rural tourism the benefit of which can be double; 1. Financial benefit from farm products and 2. Regulation and protection of environment.

LITERATURE

1 Group for Legal and Political Studies (2017): DISCUSSION PAPER "Kosovo*'s EU candidate status: a goal within reach?"http://www.epc.eu/documents/uploads/pub_7812_Kosovo-seucandidatestatus.pdf

2 European External Action Services (2016): "Kosovo and the EU" https://eeas.europa.eu/delegations/Kosovo/1387/Kosovo*-and-eu_en

3 Ajeti,E. (2016): "Development in a Fast Line - Twinning and TAIEX in Kosovo, Pristina

4 Vjetari Statistikor i Republikës së Kosovës 2017. http://ask.rks-gov.net.

5 Regjistrimit të Popullsisë Ekonomive Familjare dhe Banesave 2011. Popullsia sipas gjinisë etnicitetit dhe vendbanimit. Prishtinë, Prill 2013.fq.11.

6 Statistikat e Përgjithshme. Kosova në shifra, 2016. http://ask.rks-gov.net

7 Series3: Economic Statistics. Gross Domestic Product. Q42016.ASK, http://ask.rks-gov.net.

8 Statistikat Ekonomike Statistikat e Tregtisë së Jashtme Korrik– 2017.

9 MAFRD (2017): Green Report 2017, Pristina, Kosovo*

10 Miftari,I.Hoxha,B.Gjokaj,E.: Kosovo*: Agricultural Policy Brief (CAPB) http://app.seerural.org/wp-content/uploads/2016/11/2015-10_Country-policy-brief-Kosovo-Final.pdf

11 MAFRD, Kosovo* Agriculture and Rural Development Project (2017): "Environmental Assessment – Environmental and Social Management Framework", Pristina, Kosovo*.

12 Fetahu Sh.,Rusinovci,I., Aliu,S.,Sylani,S., Zeka,D.,Kaçiu,S.,Salihu,S., Behluli,A., Mehmeti, A.,Waldhardt,R. (2017); Mission of Gene Bank of Kosova, Collecting, conservation and regeneration of plant genetic resources. International Conference "On the Move to Sustainable Agriculture on the Balkan Peninsula" September 21-23, 2016, Prishtina, Kosovo*.

13 Kosovo* Environmental Protection Agency (KEPA) http://www.ammk-rks.net/?page=2,53

14 MBPZHR (2018): Politikat e MBPZHR në mbrojtjen e mjedisit komponenta e blegtorisë, Prishtine, Kosovo*

15 Government of Kosovo* - Office of the Prime Minister, (2016): National Development Strategy 2016-2021 (NDS), Prishtina, Kosovo*

16 MESP (2013); Kosovo* Environmental Strategy – KES (2013-2022), Prishtina, Kosovo*

17 MESP (2010); Spatial Plan of Kosovo*/Spatial Development Strategy 2010-2020+, Prishtina, Kosovo*

18 MESP (2011); Strategy and action Plan for Biodiversity 2011-2020, Prishtina, Kosovo*

19 Government of Kosovo*; Kosovo* National Water Strategy Document 2017-2036, Prishtina Kosovo*

20 MESP (2013); Strategy on Air Quality 2013-2022, Prishtina, Kosovo*

21 MESP (2013); Strategy on Waste Management 2013-2022 (Draft), Prishtina, Kosovo*

22 MESP (2014); Climate Change Strategy (CCS) 2014-2024, Prishtina, Kosovo*

23 JRC Technical Report (2016): "Analysis of the agricultural and rural development policies of the Western Balkan countries", http://publications.jrc.ec.europa.eu/repository/bitstream/JRC101320/jrc%20report%20swg-wb-final-v4.pdf

24 MAFRD (2010); **Land Consolidation Strategy 2010-2020**, Prishtina, Kosovo*

25 MAFRD, (2019): Policy and Strategy Paper on Forestry Sector Development 2010-2020, Pristina, Kosovo*

26 MAFRD, (2012): Strategy on Advisory Services for Agriculture and Rural Development 2012-2016, Prishtina, Kosovo*

27 MESP, (2015); State of Nature Report 2010-2014, Prishtina, Kosovo*

28 MAFRD, (2014); Agriculture and Rural Development Plan (ARDP) 2014-2020, Pristina Kosovo*

29 Halimi, K., Cikaqi,I.,Gjokaj, E., Avdiu, V., Pugliese, P., Cardone, G., Madžarić, S., Pasko, P., Contento, F., (2018): National Organic Action Plan of the Republic of Kosovo* 2018-2021. CIHEAM, Bari

B3.6 ANNEXES

The agro environmental indicators for Kosovo*// Annexes:

Indicator 1: Agri-environmental commitments NO

Indicator 2: Agricultural areas under Natura 2000. N/A

National methodology:

Tab. B3.6.1. Corine land cover in Kosovo*

CORINE LAND COVER (nomenclature)	2000		2006		2012	
	ha	%	ha	%	ha	%
Arable land (2.1.1.)	4,374	1.00	5,964	1.29	9,518	1.85
Vineyards (2.2.1.)	268	0.06	253	0.05	170	0.03
Fruit trees and berry plantations (2.2.2.)	180	0.04	238	0.05	367	0.07
Pastures (2.3.1.)	11,633	2.65	10,451	2.25	12,962	2.52
Complex cultivation patterns and land principally occupied by agriculture, with significant areas of natural vegetation (2.4.2., 2.4.3.)	46,326	10.55	51,193	11.04	45,049	8.74
Areas under protected areas	62,781	14.30	68,099	14.68	68,066	13.21
Total - Protected areas	439,097	100	463.887	100	515,235	100

Source: Corine Land Cover data base, Kosovo* Agency of Statistic.

Indicator 3: Farmers' training and environmental farm advisory services

National methodology:

Tab. B3.6.2. Training areas and number of participants in training, 2016

Sector	Topic	%	No. advisors	%	No. participants	%
Livestock and veterinarian	11	25.58	120	30	1387	25.15
Orchard and vineyard	4	9.30	30	7.5	411	7.45
Field crops and vegetables	5	11.63	30	7.5	318	5.77
Plant protection	6	13.95	28	7	288	5.22
Irrigation	1	2.33	20	5	222	4.02
Agro-Processing	2	4.65	37	9.25	406	7.36
Environmental protection	2	4.65	28	7	343	6.22
Dangerous jobs in agriculture for children under 18 years	2	4.65	20	5	436	7.90
Forestry	4	9.30	18	4.5	177	3.21
Beekeepers	4	9.30	36	9	933	16.91
Agro economy	2	4.65	33	8.25	595	10.79
Total	43	100.00	400	100	5516	100.00

Source: MAFRD. Kosovo* Green Report 2017. Prishtina 2017.

Indicator 4: Area under organic farming N/A

Indicator 5: Mineral fertilizer consumption

National methodology:

Tab. B3.6.3. Mineral fertilizer consumption

Year	Total utilized agricultural area (ha)	Farms that have fertilized the agricultural area (%)	% of utilized agricultural area that mineral fertilizer was applied to	% of utilized agricultural area that manure was applied to (solid form)	% of utilized agricultural area that manure was applied to (in liquid form)	Not applicable (%)
2016	415,831	74.65	57.31	22.27	N/A	N/A

Source: Agricultural Holdings Survey, 2015. Kosovo* Agency of Statistics (KAS), September, 2016. Series 2: Agriculture and Environment Statistics.

Indicator 6: Consumption of pesticides

Tab. B3.6.4. Consumption of pesticides

Year	Agricultural area (Ha)	Area traded with pesticides (Ha)	%
2015	415831	115,083	27.67

Source: KAS. Agricultural Holdings Survey, 2015

Indicator 7: Irrigation

Tab. B3.6.5. Irrigated area (ha)) in Kosovo*

Year	Area (Ha)
2008	42,226
2009	32,393
2010	31,902
2011	31,656
2012	31410
2013	27149
2014	22,888
2015	23,000

Sources: Source: KAS. Agricultural Holdings Survey, 2015

Indicator 8: Energy use

Tab. B3.6.6. Energy use in the agricultural sector (ktoe)

	Coal	Oil	Biomass	Electricity	Heat energy	TOTAL
2013	0.61	27.24	0.28	1.21	N/A	**29.34**
2014	0.61	12.29	2.37	6.97	N/A	**22.24**
2015	0.44	14.34	2.48	9.23	N/A	**26.50**
2016	0.69	14.19	0.58	7.31	N/A	**22.77**

Source: Kosovo* Agency of Statistics and the Ministry of Economic Development.

Series 3: Economic Statistics; Annual Energy Balance in Kosovo* for 2015.

Indicator 9: Land use change (N/A)

Indicator 10:

Indicator 10.1: Cropping patterns (2016)

Tab. B3.6.7. Crop production

Crop Production (total)	Areas in ha	Production in t
Cereals	134.886	562.899
Oilseeds	N/A	N/A
Sugar beet	-	-
Tobacco	N/A	N/A
Fruits	5669	54838
Grapes	*3117*	23666
Olives	-	-
Vegetables	13.599	236.884
Potatoes	3.795	98583
Other crops	176	836

Source: MAFRD. Green report, 2017.

Tab. B3.6.8. Livestock pattern (2016)

Livestock	Heads Number
Cattle	264,971
Pigs	42,309
Sheep and goats	212,040
Horses	2,353
Poultry	2.7(mil)
Other animals (Beehives)	162,355

Source: MAFRD. Green report, 2017.

Indicator 10.2: Livestock patterns

Tab. B3.6.9. Livestock breeding in (000)

	Cattle		Pigs		Sheep & goats		Poultry	
Years	Breeding	Slaughter	Breeding	Slaughter	Breeding	Slaughter	Breeding	Slaughter
Livestock balance in Kosovo*								
2013	321,313	156,062	49,198	N/A	216,577	N/A	2,244	N/A
2014	261,689	128,372	34,188	N/A	212,014	N/A	2,692	N/A
2015	258,504	115,195	44,149	N/A	224,096	N/A	2,576	N/A
2016	264,971	116,849	42,309	N/A	212,040	N/A	2,,740	N/A

Source: MAFRD. Green report, 2017

Tab. B3.6.10. Agriculture holdings by livestock size units (LSU), Kosovo*, 2014 **

Size class of LSU	Number of holdings (NH)	Livestock size units (LSU)
<15 to 20	929	15881
20 t0 30	725	17250
30 to 50	415	15341
> 50	217	23046

Source; ASK. AGRICULTURE CENSUS IN KOSOVO* 2014.

Indicator 11:
Indicator 11.1: Soil cover , National methodology: according to the Corine Land Cover data base
Indicator 11.2: Tillage practices NO
Indicator 11.3: Manure storage NO
Indicator 12: Intensification /extensification NO
Indicator 13: Specialization NO
Indicator 14: Risk of land abandonment YES
Indicator 15: Gross nitrogen balance NO
Indicator 16: Risk of pollution by phosphorus NO
Indicator 17: Pesticide risk NO
Indicator 18: Ammonia emissions N/A
Indicator 19: Greenhouse gas emissions N/A
Indicator 20: Water abstraction

Tab. B3.6.11. Annual freshwater abstraction by source and by sector (million m3)

Year	2010	2011	2012	2013	2014	2015	2016
Total fresh water (surface and groundwater)	:	275.43	275.57	256.83	245.1	264.47	:
Public water supply	139.5	146.4	138.1	134.5	131.8	137.0	143.7
Agriculture - Irrigation	42	46	50	52	67.11	67.52	64.98
Production of electricity (cooling)	13.79	12.75	12.93	13.65	12.09	14.79	15.31
Other industrial activities	5.54	5.53	5.85	5.73	4.85	4.75	5.08

Kukalaj Q., A. Nishori (2017): Overview of the Natural resource management in Kosovo*. *Natural Resource Management in Southeast Europe: Forest, Soil and Water, 2017 ISBN 978-608-4536-07-9 Published by: Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.

Indicator 21: Soil erosion/ National methodology:

Tab. B3.6.12. Categories of soil erosion

Category	Description of erosion	Area km2	%
I	Excessive	714.3	6.6
II	High	1890.2	17.6
III	Medium	3367.7	31.3
IV	Low	3680.2	34.3
V	Very low	1097.5	10.2
Total		10749.9	100

Source: Report on the state of waters in Kosovo* 2015. Kosovo* Environmental Protection Agency, 2015. Prishtina. ISBN 978-9951-638-05-0.

Indicator 22: Genetic diversity NO

Indicator 23: High Nature Value farmland

Tab. B3.6.13. High Nature Value farmland

Kosovo*	HNV farmland area derived from the EU HNV map	Agricultural land (CLC agricultural classes + HNV areas)	UAA from EUROSTAT FSS	Area share of HNV farmland	Discrepancy (CLC agricultural classes + HNV areas) / UAA
	497,705	610,960	539000	81.5	113.4

Elisabeth Schwaiger, Gebhard Banko, Umweltbundesamt Lukas Brodsky, GISAT Anne van Doorn, Alterra. High Nature Value Farmland in Europe. An estimate of the distribution patterns on the basis of CORINE Land Cover 2006 and biodiversity data. European Environment Agency. September 2012.

Indicator 24: Renewable energy production

Tab. B3.6.14. Renewable energy production in R. Kosovo* (ktoe)

	2013	2014	2015	2016
Biomass	247.65	251.07	265.23	368.5
Hydropower	12.32	12.99	11.23	18.36
Solar energy	0.3	0.33	0.36	0.39
Wind energy	0	0.03	0.03	0.06
Total	260.27	264.42	276.85	387.31

Source: Kosovo* Agency of Statistics

Tab. B3.6.15. Consumption review of all energy sources (kilotonne equivalent)[17 Kosovo*]

	2003	2004	2005	2006	2007	2008	2009
Coal	107.20	109.38	111.60	113.89	116.22	118.59	116.76
Petroleum products	409.84	357.91	442.09	451.35	415.56	486.34	503.60
Biomass	389.05	387.10	403.97	410.47	421.07	418.41	428.56
Bio fuels						0.24	0.11
Electricity	240.01	298.95	342.42	345.01	336.36	336.52	368.32
Solar- energy	0.22	0.23	0.25	0.27	0.29	0.31	0.322
Heating	7.87	7.85	8.77	9.05	8.00	8.68	8.86
Total	1 154.18	1 161.43	1 309.10	1 330.04	1 297.50	1 369.09	1 426.53

KOSOVO* ENVIRONMENTAL STRATEGY (KES) and NATIONAL ENVIRONMENTAL ACTION PLAN -NEAP; (2011- 2015). Revising and Updating the KES (2011-2015). Revising and Updating the KES (2011-2015).

Indicator 25: Population trends of farmland birds N/A.

Indicator 26: Soil quality N/A

Tab. B3.6.16. Soil Quality

Ord.	Soil Quality	Percentage
1	Poor quality	56%
2	Average quality	29%
3	Good quality	15%
TOTAL		100%

MAFRD- Soil Division

Indicator 27.1: Water quality – N/A

Indicator 27.2: Water quality - Pesticide pollution N/A

Indicator 28: Landscape - state and diversity NO

Climatic data:

Tab. B3.6.17. Monthly and annual means of precipitation (mm), for period (2001-2011) in Prishtina

	Months												
years	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Σ
2001	76.8	41.1	15.1	127.5	48.4	49.1	42.2	33.9	91.0	19.5	24.8	55.3	624.7
2002	5.5	15.8	50.3	51.4	97.8	37.1	88.6	184.3	137.4	69.2	47.0	65.6	850.0
2003	113.4	13.5	0.9	42.3	41.5	20.3	23.7	32.3	54.0	119.9	49.6	39.5	550.9
2004	72.8	52.9	55.2	21.7	44.2	46.3	37.7	56.3	53.8	34.6	110.1	33.3	618.9
2005	30.7	34.7	51.0	54.1	98.2	55.4	55.6	76.8	21.1	35.9	41.7	87.6	642.8
2006	35.6	48.4	69.5	75.5	42.5	55.5	34.2	90.4	29.7	43.1	27.3	32.1	583.8
2007	49.6	19.7	53.3	25.2	72.0	21.2	6.1	24.2	56.8	110.4	151.9	30.2	620.6
2008	19.0	4.5	93.5	16.4	64.9	113.4	68.6	20.4	44.0	44.2	46.9	105.8	641.6
2009	58.8	44.5	76.0	26.7	58.6	90.4	29.7	46.8	14.1	89.6	72.5	79.6	687.3
2010	70.7	86.0	50.1	78.5	77.2	67.8	14.9	27.6	31.0	84.7	95.6	111.1	795.2
2011	20.3	20.3	26.1	33.8	66.0	23.9	54.4	3.1	34.1	48.1	4.5	72.3	406.9

Source: HIK, Hydrometeorological Institute of Kosovo*.

Tab. B3.6.18. Monthly and annual means of temperature (°C) for the period (2001-2011)

	Months												
Years	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	x
2001	2.7	2.8	10.3	9.3	16.5	18.2	21.9	22.6	8.1	13.2	4.4	-5.7	10.4
2002	-2.6	5.1	7.4	9.8	15.9	20.1	21.9	20.4	15.1	11.9	7.2	1.5	11.1
2003	0.5	-3	4.6	8.8	19	22.1	22.4	23.8	15.1	10.6	6.9	0.6	11.0
2004	-1	2.6	6.3	11.8	13.1	19.3	22.5	20.7	17.1	14.2	5.3	1.6	11.1
2005	0	-2.6	5	10.1	15.8	17.4	21.1	19.6	16.8	11	4.2	1.8	10.4
2006	-3.5	-0.9	5.1	11.7	15.2	18.8	21.5	20.2	16.8	12.4	5.3	7.2	10.8
2007	3.9	4.8	8.2	12	16.2	21	24	22.9	14.8	10.5	2.4	-1	11.6
2008	0	3.4	7	11.3	15.3	20	21.1	22.5	15.3	12.5	7.3	3.2	11.6
2009	-0.6	1.1	5.3	12.9	16.8	19.1	21.6	22.1	17.1	10.7	7.7	3.6	11.5
2010	0.5	3	6.6	11.5	16	19.5	21.7	23	17	9.5	10.4	2.1	11.7
2011	-0.3	0.2	6.4	11.1	15.1	19.6	22.3	22.7	20.2	9.9	3.4	1.6	11.0

Source: HIK, Hydrometeorological Institute of Kosovo*.

Chapter B4

AGRI-ENVIRONMENTAL POLICY IN MACEDONIA

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B4.1 INTRODUCTION

The Stabilization and Association Agreement between the Former Yugoslav Republic of Macedonia and the EU entered into force in April 2004. The European Council granted the status of a candidate country to the Former Yugoslav Republic of Macedonia in December 2005. The first time the Commission gave a recommendation to the Council to open the accession negotiations with the country was in 2009. In 2015, the Commission stated that it was prepared to extend its recommendation, conditional on the continued implementation of the Pržino Agreement, and substantial progress in the implementation of the 'Urgent Reform Priorities'.

In the agricultural sector, for the period of 2010-2016, the main efforts in the process of EU approximation have been paid in the areas of:

- Capacity building of the Ministry through creation of control systems, like Land Parcel Identification System (as a part of IACS) and Farm Accountancy Data Network (FADN). In 2010, the basis for a Land Parcel Identification System (LPIS) was established, with aerial acquisition and initial digitalization of physical blocks. Simultaneously with the start of the FADN pilot activities, the National committee for FADN was established, as along with the alignment with the acquis. The farm register, with a supporting automated IT system, become fully functional and was used in the supervision of the national support schemes in 2011. The LPIS is in an advanced stage of development. In 2012, the legal basis for the LPIS was established and the system is in operation. The real estate register for agricultural land is complete. In 2014 the LPIS was further developed and the digitalization of agricultural parcels completed.
- Revision and amendments of the legal framework and adoption of strategic documents and programmes. In 2010 a revised Law on Agriculture and Rural Development was enacted that regulates the basic aspects of the agricultural support policy, including direct payments, market support measures and rural development. The implementing legislation was enacted in 2011, in the fields of the agricultural and rural development support policy. The implementing legislation covering the regulation of marketing standards, consumer labeling, and the establishment of quality schemes was adopted. A "*National Strategy for Consolidation of Land Parcels*", including an operational plan, was adopted following public debate and consultation. A Government Action Plan was adopted to improve the management and control of IPA-RD and support greater absorption of funds. In 2013, the National Support programme for Agricultural and Rural Development for the period 2013–2017 was adopted. Implementing legislation related to the agricultural and rural development support policy and the quality of agricultural products was enacted. In the area of rural development, implementing legislation on local action groups and on local strategies for development of rural areas and on cross-compliance was adopted, as was a Law on Agricultural Cooperatives. In December 2013, the 2013-2020 National Plan for Organic Production was adopted. In 2015, the new Strategy for Agriculture and Rural Development for 2014-2020 was adopted, which provides the framework needed to tackle the key constraints on the sector's development. Some progress has been made on general cross-cutting issues with the strengthening of institutional capacity.
- Implementation of the IPA-RD Program: in December 2009 the IPA-RD programme under component V started. In 2011, the IPA-RD programme supported three measures *"Investments in Agriculture Holdings"*, *"Processing and Marketing"* and *"Diversification in the Rural Economy"* under component V. The new 2014-2020 IPA-RD programme was adopted in January 2015.

The Republic of Macedonia is a landlocked country with a total area of 2,571,300 ha. According to the latest assessment of the population (2016), the Republic of Macedonia has 2,073,702 inhabitants, according to the structure by gender, 50.1% are men and 49.9% are women. The density of population is 81 inhabitants per 1 km^2. The most densely populated area is Skopje, while the least populated region is the Vardar Region

The total GDP of the country in 2016 was estimated at 9723 mil. Euro, (4691 Euro/per capita), with an annual growth rate of 2.9%. In the past 10 years the highest growth rate was in 2007 (6.5%) while the lowest one of only 0.5% was recorded in 2012. The share of agricultural land, out of the total country area, (SSO, 2016) is 1,267,000 ha, with cultivated land which occupies

516,000 ha and pastures with total area of 750,000 ha. The cultivated land is subdivided in: arable land and gardens which occupy 417,000 ha, permanent crops that occupy 40,000 ha and meadows with 59,000 ha. Out of the total area of 417 thousand ha of arable land and gardens, almost 135,000 ha in 2016 were left uncultivated. There are no data on the abandoned land. Major field crops are cereals (wheat, barley and maize), which occupy more than 165,000 ha over total sown area of 276,681 ha (59.8%), followed by gardens with 44,154 ha (15.96%) and forage crops with more than 33,000 ha (12.04%). In the livestock production sector there are more than 1.2 mil head units and more than 1.87 mil of poultry, and 81,476 beehives. The total number of cattle is 254,768 heads, where the categories of milk cows and heifers in calf are dominant and are estimated at being 156,699 heads in total, with total annual production of 417,387 l of milk. The most dominant are sheep with a number of 723,295 and total annual production of 529,134 l of milk.

The system of national planning and implementation of the national agricultural policy is regulated with a set of legal and strategic documents consisting of: the Law on Agriculture and Rural Development, the National Strategy for Agriculture and Rural Development, the National programme for Agricultural and Rural Development, and annual programmes for financial support of agriculture and rural development.

The **National Agricultural and Rural Development Strategy - NARDS (2014-2020)** identifies the general and specific objectives for the national rural development policy which are in line with the IPA II priorities, such as: *improve farm sustainability and competitiveness of all types of agriculture and food processing, agro environmental objectives for restoring, preserving and enhancing ecosystems dependent on agriculture and forestry*, *improvement of socio-economic development in rural areas and human potential.*

The NARDS outlines the 6 specific goals for agricultural and rural development arising from the general strategic goal for: *increased competitiveness of agricultural production and food processing industry, rural development and sustainable use of natural resources*. The strategy defines the detailed steps towards achievement of the specific goals, gives guidelines for the legal grounds (measures and provisions from the existing legal framework) that will be used to implement the strategy, indicates the steps towards operational planning and implementation of the strategy, like elaboration of a National programme for Agriculture and Rural Development and annual programmes for financial support. The strategy also indicates the financial sources for implementation of the strategy. In general, there are two main sources for financing: *the national budget and EU founds*. For the purpose of achievement of certain targets of the Strategy, financial support from donor organisations is considered as well. The most relevant specific goals of the strategy related to rural development policy are: specific goal 3 of the Strategy, which defines the specific targets towards achieving improved life conditions and economic activities in rural areas, like: establishment of rural communities, improvement of the urban infrastructure, investment in irrigation systems as a precondition for intensive and modern agriculture, improvement of the social security of the population in rural areas, and specific goal 6 "sustainable management of natural resources and mitigation of the negative impact of climate change".

In 2010 the **National Agri-Environmental programme (NAEP) for the period 2011-2013** was elaborated. The overall objective of the NAEP was in a line with the IPA regulation (EC No 718/2007) where the aim of giving assistance to agri-environmental Projects is *"to develop agricultural practices which are consistent with the preservation and protection of the environment and the countryside, at both the administrative and farm levels"*. The programme defines five AE schemes: traditional agriculture, organic farming, traditional pasture management, landscape management and soil and water protection), which encompasses several Agri environmental measures (AEM), all clearly linked to the 8 specific objectives outlined in the Program.

The **IPA programme for Rural Development – IPA-RD (2014-2020)**, identifies 11 measures that will be implemented in order to achieve the 4 priorities. The programme gives a detailed explanation of the measures, timeframe of their implementation and the criteria for selection and the administrative procedure for application for IPA-RD funds.

In terms of agri-environmental issues, the most relevant measures identified with IPA-RD are: a) agri-environmental measures and organic farming and b) forest protection (Goal 2) and c) improvement of training and advisory service (Goal 4), and d) improvement and development of rural infrastructure (Goal 3).

The measures within the **National programme for Agriculture and Rural Development - NPARD (2018-2022),** especially those referring to rural development, are in line with the general strategic objective of the NARDS "*further improvement of the competitiveness of the agricultural sector at the open and volatile market and maintaining the development of rural areas with optimal use of natural resources"*, and specific goal 6 of the Strategy --"*sustainable management of the natural resources and mitigation of the negative effects of Climate Change*", and the politics outlined in the Law of Agriculture and Rural development. The vast part of the financial support (74%) until 2022 will be distributed through the mechanism of direct payments. With regards to agri-environmental measures, in addition to the measure for *organic farming* and the 15% additional payments for the *agricultural production in the Areas with Natural Constraints*, starting from 2018 the measure for *biodiversity support* will be included in the scheme of agri-environmental measures. The producers can apply for financial support according this Program, if they fulfill the minimum requirements of cross-compliance. In general, this programme supports 4 priority areas: *1) increasing the competitiveness of the agricultural and forestry sector, 2) protection and improvement of the environment and rural areas, 3) improvement of the quality of life in rural areas, 4) promotion of local development in rural areas*. Bearing in mind that the capital grants for modernization and approximation of the agricultural holdings and processing industry to EU standards, as well the support for diversification of the economic activities in rural areas are supported within the IPAR-RD program, the accent for support within the national financial policy is on measures for capital investments in rural infrastructure, with focus on water economy, road infrastructure, and social and market infrastructure. After the process of accreditation, the measures designed to support the rural infrastructure development will be financed through the IPA-RD program. The measures of this programme for rural development are supported through 3 financial mechanisms: *a) non-refundable support for capital investments, b) financial support for: training, information for agricultural produces and advisory services and c) direct payments for rural development, which is in fact a compensation payment to support the income loss generated from the underutilization of the agricultural production potential, due to the implementation of environmentally friendly agricultural practices.*

In terms of the agri-environmental challenges, major pressure can be identified on natural resources degradation. The small parcel size is a serious obstacle to the implementation of agri-environmental or adaptation measures, there is intensive soil sealing as a result of urbanization, unsustainable use of agrochemicals (fertilizers and pesticides), inappropriate use of irrigation water as a result of inefficient irrigation schemes and on farm irrigation equipment, continuous degradation of soil with rapid decline of soil organic matter and soil salinization and soil erosion due to improper soil management. The primary producers in rural areas possess low adaptation capacity due to financial and know how limitations. The intensive migration of the young rural population, the low access to services and the social exclusion are another set of challenges and constraints. The National Strategy for Agriculture and Rural Development foresees that the Macedonian model for sustainable agriculture will care for environmental and biodiversity protection. The agricultural holdings should implement the concept of "green" agriculture, and the adoption and implementation of the agri-environmental approach will be supported. Protecting and improving the physical, chemical and biological soil conditions, reducing the environmental problems that are associated with the impact of agricultural activities on water quality and the efficient use of water, should be addressed by implementing the requirements for cross-compliance. The minimum requirements in the implementation of the agricultural production should be widely accepted. In the upcoming period, the implementation of the Nitrate Directive provisions, adapted to the Macedonian conditions, will start in practice.

B4.2 AGRICULTURE IN MACEDONIA

Table B4.2.1. Key agricultural indicators

	2010	2015	2016
Share of Agricultural land in total land - ha	1,121,000	1,264,000	1,267,000
Share of Cultivated land in agricultural land - ha	509,000	513,000	516,000
Share of Permanent Crops in agricultural land - ha	38,000	39,000	40,000
Share of Agricultural GDP in total GDP %	10.1	9.7*	
Share of Agricultural Labor	121,521	126,126	120,303
Share of Agricultural Export in total Export %	6.9	5.0	5.3
Share of Agricultural Import in total Import %	2.3	2.4	2.4

*GDP at current prices

Agricultural land is almost 50% of the country territory (1.267 mil. ha). Out of it, the share of cultivated land which is suitable for agricultural production is only 516.000 ha, while the rest of the agricultural area is under pastures (about 750,000 ha). Only 7.7% of the total cultivated land (40,000 ha) is under permanent corps (orchards and vineyards) meaning that intensive agriculture is with low share of the crop production. The share of the agricultural production in country's GDP is significantly high compared to the developed countries and in2015 it participated in the GDP with 9.7% (there are no recent data for 2016 and 2017). The share of agricultural production in the total import and export is also very low, 5.3 and 2.4%, respectively. On the other hand, with more than 120,000 employees in the sector, hold a significant part of the total working population. The agricultural sector is organized into 178,125 agricultural holdings.

Table B4.2.2. Land Use

	2016 (ha) (or latest data available)	2016 in % of total land
Land Total	**2,571,300**	**100.00**
1. Forest (forest land not included)	***1,001,665***	***38.96***
2. Agricultural land	***1,267,000***	***49.28***
2.1 Cultivated land	***516,000***	***20.07***
Arable land & gardens	417,000	16.22
Permanent crops (fruit, grapes, olives)	40,000	1.56
Meadows	59,000	2.29
2.2 Pastures	***750,000***	***29.17***
Wooded pastures	/	/
Agroforestry	/	/
Fallow (as a part of arable land & gardens)	135,000	5.25
Abandoned land	/	/

As mentioned before, the structure of agricultural land, or more specificly, the structure of cultivated land is biased towards the category of arable land and gardens with almost 420 thousand ha or 20.07% of the total country area and 80.81% of the category cultivated land. Almost half of the area within arable land and gardens is sown with cereals (165,459 ha), while the rest of the area is cultivated with: **tobacco** with 16,379 ha mostly in the central and south-eastern part of the country, **orchards** – 12,489 ha, scattered over several regions and sub regions, but mostly in the Prespa valley, Vardar Region- Gevgelija, Bogdanci; Southern region – Strumica, Radovish; and Eastern Region - Berovo, Delcevo and Vinica, **vineyards** – 23,192 ha in the Vardar region, **vegetables** – 44,154 are mostly located in Southern region and in the southern part of the Vardar region – Gevgelija, Bogdanci and Valandovo and **forage crops** which cover significant – 33,318 ha mostly in regions with more active livestock production, like the Pelagonija Valley. If we sum up all the areas of the above sub-categories of land use within the category of arable land and gardens (total of 417,000 ha excl. orchards and vineyards) we will end up with a total of 286,584 ha which is a difference of about 130,416 which corresponds to the area designated as fallow. There are no data regarding the abandoned areas in the country. This is an important missing data, having in mind that production potential of abandoned land declines over time and the fact that in the past

10-15 years the process of migration towards the bigger urban centers and out of the country is very intensive, which most probably leads to the abandonment of significant areas of quality and productive agricultural land. According to the interviewed MAFWE officials, the Ministry does not have a system for monitoring and registering the abandoned land.

Livestock production has a share of one third of the agricultural contribution to GDP. Farms have an average of 6 heads - equivalent to 500 kg of live weight which is one of the key factors for low productivity and profitability of family farms. Cattle production uses forage crops, meadows and pastures, as well as lot of by-products from the sugar, oilseed, starch and beer industries. The total number of cattle in the past 16 years has been variable, with a decreasing trend (254,768 in 2016), but at the same time farm size has increased. The structure of dairy farms is unfavorable where small farms are predominant with limited opportunities for one's own production of animal feed. The total production of cow milk has increased in the last 10 years, while the total beef production has decreased decreasing. Sheep production has potential for development due to the specific climate conditions, hilly and mountainous landscapes and tradition. The main sheep products are dairy products and lambs. Sheep milk is sold on the national market, and it is a raw material for production of various cheeses and other dairy products. Although the level of sheep production is fairly low, sheep production is economically significant due to the lamb meat export. In the last decade, the total number of sheep was constantly declining, going down to 723,295 in 2016. The average sheep milk per milked sheep is constantly growing, while the total lamb/goat meat production is moderate. The goat population of about 101,669 (2016) is kept on more than 5,000 goat farms. In recent years, goat milk production is declining. Pig production is represented by 202,758 (2016) heads, although this number is fluctuating constantly due to market conditions and feed price. Pork production has been growing, as a result of the improved technology, the increase in the AI of hogs, the use of genetically superior heads and the proper selection applied. Poultry with a population size of 1,865,769 (2016) is oriented towards two basic products – eggs and broilers. Egg production is intensive and more developed, while the attempts to develop broiler production have been failing for a longer period. Individual farms have increased their activities in this sector. The State statistical office (2016) reported 18,784 heads of horses and donkeys in 2015. The majority of them are used as a power source in agriculture and forestry, and the rest are used for sport and recreation purposes (riding).

Table B4.2.3. Farm Structure,

Number of agricultural holdings by size classes of UAA (SSO Structure and typology of agricultural holdings/2016)

	Source/year (latest available)	
	Number of holdings	Percentage of holdings
Total	178,125	100.00
Up to 3 ha of UAA	156,130	87.65
Between 3 ha and 5 ha	13,611	7.64
Between 5 ha and 10 ha	5,767	3.24
Between 10 ha and 100 ha	2,616	1.47
Above 100 ha UAA	no data	no data

***UAA – Utilized Agricultural Area**

Out of the total number of 178,125 households, 87.65% are up to 3 ha of UAA, with an average parcel size of 0.3-0.5 ha. Almost 43% of all family farms are under 0.5 ha. The average size of family farms is 1.37 ha divided into 7-8 parcels (Agricultural census-2007).

Table B4.2.4. Agricultural production

Crop Production (total)	Areas in ha	Production in t
Cereals (wheat, barley rye, oats, maize, rice)	165,459	637,701
Oilseeds (sunflower, poppy seed)	4,082	6,356
Sugar beet	/	/
Tobacco	16,379	25,443
Fruit	12,489	177,630
Olives	/	/
Vegetables	44,154	748,349
Potatoes	13,279	197,138
Forage crops	33,318	338,017
Vineyards	23,192	333,319
Other crops		
Livestock (total)	**Heads Number**	**Number of farms**
Cattle	254,768	38,131
Pigs	202,758	45,265
Sheep	723,295	18,307
Goats	101,669	5,405
Horses	18,784	
Poultry	1,865,769	63,503
Beehives	81,476	4,916
Rabbits	23,248	2,828

B4.3 ENVIRONMENT AND ENVIRONMENTAL POLICY IN MACEDONIA

Article 8 of the Constitution of the Republic of Macedonia stipulates the fundamental values of the constitutional order of the Republic of Macedonia. This article stipulates proper urban and rural planning to promote a congenial human environment, as well as ecological protection and development among the fundamental constitutional values. Article 43 sets out the provision that everyone has the right to a healthy environment to live in. Furthermore, everyone is obliged to promote and protect the environment and the State provides conditions for the exercise of the right of citizens to a healthy environment. Moreover, Amendment XVII to the Constitution ensures that the citizens directly and through representatives participate in the decision-making on issues of local relevance particularly in the field of environmental protection. This right is stipulated through the units of local self-government.

The Constitution gives high priority to the healthy environment, and the Government, through the Ministry of Environment and Physical Planning (MoEPP), performs environmental tasks related to the legal harmonization process; the preparation of national strategies and action plans; inspection and enforcement, including intervention if needed, against bigger polluters; and nationwide monitoring, information systems and cadasters. MoEPP sets out the overall framework for policies and legislation, sometimes, however, giving the local self-government units (LSGUs) a certain amount of leeway with regard to the implementation while ensuring due consideration of specific local conditions. Moreover, international coordination is managed at the national level both in relation to the EU and the international conventions and in relation to the assistance provided through the international or bilateral donor community. The areas that the MoEPP is responsible for are: Waste, Soil, Air, Nature, Water, Climate Change, Noise, Genetically Modified Organisms.

Apart from the constitutional provisions for environmental, key laws that deal with the issue and the promotion and protection of environment in the Republic of Macedonia are:

The Law on Environment ("Official Gazette of RM" no. 53/05, 81/05, 24/07, 159/08, 83/09, 48/10,124/10, 51/11, 123/12, 93/2013, 42/2014, 44/2015, 129/2015, 192/2015, 39/2016). The Law on Environment represents a framework from which all the other laws that regulate the environment protection sphere are generated. This Law lays down the basic principles on the procedures for environment management and are common for all the other laws that regulate diverse areas in the sphere of environment. Amongst other provisions stipulated by this Law, the following should be emphasized: *i*) the general provision on prohibition of construction or reconstruction of installations, prior to obtaining a permit, and opinion on the compliance with the norms and standards, in accordance with the system for protection and improvement of the environment and *ii*) obligation for protection of the environment and ecologically clean areas. These provisions promote that each legal entity and natural person carrying out a project or activity should undertake measures and activities for protection and improvement of the environment and restoration of the environment into a satisfactory condition, in a manner determined by the decision granting the approval to the project or activity implementation. The issue on **environmental impact assessment is regulated** in Chapter 11, and is fully in line with the EU Legislation.

The Law on Nature Protection ("Official Gazette of RM" no. 67/2004, 14/2006, 84/2007, 35/2010, 47/2011, 148/2011, 59/2012, 13/2013, 163/2013, 41/2014, 146/2015, 39/2016 and 63/2016) this is the basic law in the area of nature protection and on all issues which regulate nature protection in the Republic of Macedonia. Most of the environmental impact assessment procedures and restrictions can be found in this law. The law regulates nature protection by protecting the biological and landscape diversity and protection of natural heritage within and outside of protected areas, along with protection of natural rarities, and use of natural resources for economic purposes. Apart from the provisions of this Law, the provisions of special laws shall also apply. Nature protection is a public interest activity.

Scope of protection: The protection of **biodiversity** is achieved by establishing and implementing a system of measures and activities for protection of wild species, **including their genetic material, habitats and ecosystems**, in order to ensure sustainable use of the components of biodiversity and maintenance of natural balance. The protection of **landscape diversity** is accomplished by establishing and implementing a system of

measures and activities for the conservation and maintenance of the characteristic values of the landscape resulting from its natural configuration and/or the type of human activity. **Natural heritage** protection is accomplished by establishing a system that lays down measures, procedures and methods for acquiring the status of natural heritage and the implementation of its protection. Protection of **natural rarities** is accomplished by establishing a system that lays down measures, procedures and methods for declaring a natural rarity and implementing its protection.

The Law on Waters ("Official Gazette of RM" no. 87/08, 6/09, 161/09, 83/10, 51/11, 44/12, 23/13, 163/13, 52/16). This law regulates issues relating to surface water, including permanent streams or rivers in which water flows occasionally, lakes, reservoirs and springs, groundwater, coastal land and wetlands and their management, including distribution of water protection and conservation of water and protection from the damaging effects of water; water facilities and services; organisational structure and financing of water management, and terms, conditions and procedures under which they can be used or discharged. The Law promotes water management according to the river basement area and international river basin areas in compliance with the EU Water Framework Directive (WFD). Also, the Law stipulates provisions from the EU Nitrate directive trough basic measures for protection of waters against pollution caused by nitrates from agricultural sources and establishing protection zones that are sensitive to nitrates (Chapter 3.4.). Moreover, the Law sets out the general planning documents (National Water strategy from 2010), Water Resources Management Basis of the Republic of Macedonia (still not established) and the River Basin Management Plans (there is slow movement toward development of the water basin management plans).

Moreover, MoEPP is the institution in charge of several other issues that can be related with the agri-environment, such as:

- The Law on Waste Management (Official Gazette of RM no. 68/04);
- The Law on Management of Packaging and Packaging Waste (Official Gazette of RM no. 161/09);
- Law on Genetically Modified Organisms (Official Gazette of RM no. 35/08, 163/13).

However, some of the provisions related to the cultural heritage are not under the MoEPP, but under the Ministry of Culture, such as the **Law on Protection of Cultural Heritage** (Official Gazette No. 2/04, 115/07, 18/11, 148/11, 23/13, 137/13, 164/13, 38/14, 44/14); Regulation on the National Registry of Cultural Heritage (Official Gazette No. 25/05); According to Article 6 of this Law, the protection of cultural heritage is accomplished by compulsory inclusion in spatial and urban plans and plans and programmes that protect the **environment and nature**, as well as its treatment as a factor of sustainable economic and social development, especially in the development of cultural tourism, housing, specific professions and education. Moreover, some of the landscapes can be under the provisions of this law related to Cultural Landscapes as separate parts of the landscape, which are highlighted as areas of specific interaction between humans and nature.

Apart from the Water strategy, MoEPP is the responsible institution that prepared the Biodiversity Strategy and Action Plan (2018), the National Strategy for Sustainable Development (2008), and the National Strategy for Clean Development Mechanism of Macedonia for the first commitment period of the Kyoto Protocol, 2008-2012 that can be related to the agri-environment.

Finally, MoEPP is the body responsible for many international conventions and protocols. We emphasize only these of high importance to agri-environmental issues:

- United Nations Convention on Biological Diversity - UNCBD (1997);
- United Nation Convention to Combat Desertification – UNCCD (2002);
- United Nation Framework Convention on Climate Change - UNFCCC (1997);
- Kyoto Protocol of the UNFCCC (2004);
- Convention on Wetlands (Ramsar convention) (1977 – inherited from Former Yugoslavia);
- UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters - Aarhus Convention (1999).

The environmental reporting through indicators is an ambitious venture – to produce a report, a reflection of the state of the environment presented by as many as possible quantitative and qualitative data obtained through scientifically based measurements and analysis that indicate sources, causes, consequences and

trends of specific conditions. The preparation of indicators is fulfillment of one of the obligations under the Law on Environment and establishes the grounds necessary for proper decision-making in the process of environmental management. This ensures the expected contribution to the sustainable development of our country. The MoEPP is the institution responsible for Environmental indicators.

However, there are some noticeable problems in the environmental policy in the country. The European Commission Staff Working Document "The former Yugoslav republic of Macedonia 2016 Report" {COM(2016) 715 final} in Chapter 27: Environment and Climate Change states that the country has some level of preparation in this area. Although there has been some progress in the alignment of policies and legislation to the acquis, more efforts are needed on water quality, industrial pollution and risk management, chemicals and climate change. Moreover, implementation is very limited particularly, on air quality and nature protection.

B4.4 AGRI-ENVIRONMENTAL STATE IN MACEDONIA

The issues related to agri-environment have been introduced into the governmental policy in the past 10-15 years. Most of those policies were introduced into the national legislation and programmes. The agri-environmental measures where it was easy to identify clear socio-economic benefits were primarily in the focus of the government policy. The rest of the agri-environmental measures are generally integrated within strategic documents, mainly due to the harmonization of the national legislation towards EU one.

B4.4.1 Agri-environment in the national strategic and programme documents

The Government within its "**Program for Work of the Government" (2017-2020**) foresees to support the implementation of a set of measures to achieving its main goal in the agricultural sector: ***increasing the areas under agricultural production, the yield and its quality***. In particular, the Government intends to support measures related to agricultural land, like agri-environmental zoning, land consolidation and investment in hydro-meliorative systems.

The National Strategy for Sustainable Development (NSSD) 2009-2030 is an overall umbrella document prepared by the Ministry of Environment and Physical Planning (MoEPP). The NSSD provides an integral planning approach, which offers the overall umbrella for all other policies and strategies in various fields, while respecting the already set strategic directions in the different sectors.

The national strategy for Environment and Climate Change 2014-2020 deals with all biodiversity including agri-biodiversity. The Strategy identifies seventeen main threats on biodiversity in the country, avoiding the arbitrary approach and expert judgment, by implementing standardized international terminology and methodology as a base for elaboration of an effective Action Plan. However, in the document agriculture was addressed more as related to biodiversity and there was less focus on agri-biodiversity protection. However, in certain parts it is pointed out that there is support for the farmers that use genetic resources in agriculture and support in applying good agricultural practice and introduction of agri-environmental measures. Also it is noted that the "in situ" and "ex situ" protection of the genetic resources of indigenous cultivars and local breeds should be improved.

The **National Strategy for Agriculture and Rural Development for the period 2014-2020,** in addition to the general objective for increased competitiveness of the agricultural sector, development of rural areas and sustainable use of the natural resources, outlines 6 specific goals for the achievement of its general objective. Specific goal 6, refers to the *"sustainable use of the natural resources and mitigation of the negative impact of climate change on agriculture"* and defines several key goals among which "wider implementation of the agri-environmental approach in Macedonian agricultural production", "biodiversity-protection of the indigenous species and crops and adaptation of the agricultural sector to climate change" are the most important in relation to agri-environmental issues. With reference to the wider implementation of the agri-environmental approach, the Strategy outlines the obligation of fulfillment of the predefined requirements related to the implementation of standards and procedures which are part of the system of cross compliance.

The introduction of such requirements is to

stimulate the implementation of the necessary agri-technical measures in agricultural production that should result in achieving improved performance, higher quality products, protecting the environment and ensuring the optimal use of natural resources and energy. The minimum requirements for good agricultural practice and environmental protection (cross compliance) arise from the actual agricultural legal framework in the area of agriculture. In Result 9 of the Strategy, it is foreseen that by 2020, the requirements for cross compliance shall be applicable to 75% of the applicants for financial support; at least 3 agri-environmental measures on rural development programmes should be introduced and applied and there should be at least 3 times higher annual payments for agri-environmental measures than in 2013; active measures for adaptation to climate change should be incorporated into the programmes for financial support and continuous monitoring of climate change. The implementation of this Strategy is planned to be realized through a five-year national programme and annual programmes for financial support. Most of the financial support is plannned to be provided through the state budget and additional support will be directed through IPARD II. A smaller part can be obtained from foreign donations and local government budgets. The total budget for the support of the sector and rural development and the utilization of IPARD funds are expected to increase from 139 in 2013 to 175 million EUR in 2020. The financing through IPARD has been implemented from 2017 on, as part of the Agro-Ecological Program. Currently, a new 5 years' national budget plan for direct payments is under preparation.

Another document which identifies the national rural development support policy is the **IPA programme** for Rural Development. The overall strategy of the IPA-RD relies on linkage with the IPA II assistance (programmes for agriculture and rural development), on needs for intervention identified with the SWOT analysis of the programme and the identified five goals and corresponding measures for their achievement, the implementation of which will be supported. IPA II goals coincide with the main strategic goals and objectives of NARDS 2014-2020 (section 6.1.1 of this program) such as: a) improving the sustainability of farms and the competitiveness of all types of agriculture and food processing, b) agri-environmental objectives for restoring, preserving and enhancing ecosystems dependent on agriculture and forestry, c) improvement of the socio-economic development in rural areas and human potential.

The **National programme for Agriculture and Rural Development** reaffirms the strategic goals of the NSARR for sustainable management of natural resources and mitigation of the negative impact of climate change (Goal 6), through implementation of cross compliance as a prerequisite for financial support, and implementing of additional 3 agri-environmental measures by 2020 as part of the IPA-RD program, including measures for protection of the biodiversity of the indigenous races and species and organic farming. The programme foresees measures for support of investments for efficient waste management and use of renewable energy sources in agriculture. In a line with the Third National CC Action Plan, active measures are planned to be implemented to mitigate the negative effects of climate change.

The **Annual programme for Financial Support of the Rural Development (2018)** foresees support to two groups of measures for rural development: measures for financial support of rural development and measures for technical support. The majority of support within the first group of measures is for infrastructure capital investments. Within this group of measures, the programme foresees support for ***6 agri-environmental measures or measures related to agri-environment*** within ***priority 2***, like: *support for agricultural production in Areas with Natural Constrains (ANC), support for protection of rural landscapes and their traditional characteristics, support of agriculture for protection of and improvement of the environment and other 3 measures for protection of agri-biodiversity with a total budget of approx.* (105 mil MKD, or 1.7 mil EUR).

The programme for Animal Genetic Resources (AnGR) Protection (2011-2017), has been realized for the purpose of protection of animal genetic resources with an amount of up to nearly 100,000 EUR last year. A new 7-year programme is being prepared.

The National Plan for Organic Production (2013-2020) foresees support of primary agriculture production, targeting a 4% increase of organic production in crops and livestock. It also aims to intervene in the processing industry, trade, control, certification, education, science, policy and legislation.

The **National Strategy for Biodiversity with Action Plan (2004)** gives a brief overview of the current situation of the biodiversity of

the country with a special chapter devoted to agrobiodiversity. The Strategy analyses the sources of the main threats and constraints related to biodiversity, and the sectors influencing the current situation. The main objective identified in the Strategy is: *to protect biodiversity and ensure its sustainable use for the welfare of the people, taking into account the unique natural values and rich traditions of the Republic of Macedonia. In addition, the Strategy outlines 12 basic goals and 12 strategic principles. In terms of agri-environment, the Strategy, within its Strategic principle for sustainable use, foresees a measure for Improvement of the methods for sustainable use of the agrobiodiversity. Within this measure, the strategy foresees action for* ***support of agri-environmental programmes*** *through a) stimulation and development of organic farming, cultivation and production of autochthonic medical and aromatic plants, and establishment of demonstrational farms for traditional farming.*

The **Draft Strategy for Biodiversity with Action Plan (2014)** identifies 19 national goal which are grouped into 4 strategic goals, Within National goal 3 "*introduction of positive incentives for conservation and sustainable use of biological diversity under the Convention and the obligations of the EU, and identifying and correcting incentives that are harmful to the affected components of biological diversity", the Strategy foresees a set of actions which can be considered as support to agri-environment, such as: a) incentives, including payment for ecosystem services, poverty reduction through sustainable use of biodiversity, b) promotion and support incentives for biodiversity conservation, c) promotion of measures and practices for preserving and improving the environmental values of rural areas, d) support for farmers who maintain indigenous species and crops, e) support for implementation of GAP and introducing agri-environmental measures, e) support for agricultural activity in ANC.*

B4.4.2 Institutional and Legal Settings

The **Ministry of Environment and Physical Planning** (MoEPP) is responsible for environment protection including water, soil, biodiversity (in a broad sense) and climate change in the Republic of Macedonia. It is responsible for the obligations taken from the conventions such as: the Convention on Biological Diversity, the Cartagena Protocol on Biosafety to the Convention on Biological Diversity, the Convention Concerning the Protection of the World Cultural and Natural Heritage, the Convention on International Trade in Endangered Species of Wild Fauna and Flora, the European Landscape Convention, the United Nations Framework Convention on Climate Change, the Kyoto Protocol to the United Nations Framework Convention on Climate Change; the United Nations Convention to Combat Desertification in Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, the International Convention on Plants Protection, the International Treaty on Plant Genetic Resources for Food and Agriculture (signed, but not ratified yet). The structural organisation of the ministry is within departments. Climate change is dealt with within the Department of Environment but also the Unit on Soil. The Department on Water is a separate one. Within the Dep. of Nature there are units for protection of natural heritage and biodiversity. All the activities of the Ministry are regulated with numerous Laws but those related to agri-environment measures are the laws on: water, nature protection, waste management, quality of ambient air and chemicals. In particular, many of the aspects of environment protection require implementation of agri-environmental measures, including the mitigation of climate change measures, while the issues related to agrobiodiversity protection and climate change adaptation are completely under the Ministry of Agriculture Forestry and Water Economy.

The Ministry of Agriculture Forestry and Water Economy (MAFWE) is directly responsible for the implementation of agri-environmental measures. This institution has a complex structure with 19 sectors and 62 divisions, whereby the sectors associated directly to agri-environment are: the Sector for Agriculture; the Sector of Grapevine, Wine and Fruit Production; the Sector for Analysis of Agricultural Policy; the Sector for Marketing and Quality of Agricultural Products and the Sector for Rural Development. There are also other affiliated institutions related to agri-environmental measures as: the Phyto-sanitary Directorate, the Directorate for Seed and Seedlings (DSS), the Agency for Food and the Veterinary and State Inspectorates for Agriculture. MAFWE is responsible for hunting, fishing and management; sustainable preservation of forests, pastures, water and land used in agriculture, and agrobiodiversity protection. The legal framework is set by the following laws: the Law of Agriculture and Rural Development, the Law on Quality of Agricultural Products, , the Law on Plant Health, the Law on seeds and seedlings, the Law on breeders

rights, the Law on Livestock Production, the Law on Pastures, the Law on Organic Agricultural Production, the Law on Quality of Agricultural Products, the Law on Agricultural Land, the Law on the State Agricultural Inspectorate, the Law on Products in Plant Protection, the Law on Fertilizers, the Law on Water Communities and the Law on Water Economy. Some of them are very general and not specifically related to agri-environmental measures, but other contain specialized chapters on them.

Some of the agri-environmental issues are regulated, others need substantial improvements and there are issues that are not regulated at all. The best example of a well regulated and effectively implemented measure in practice is the protection of animal genetic resources (AnGR). The protection is regulated by the Law on Livestock Production whereby Chapter IV of this law is dedicated to AnGR protection. According to that Law, MAFWE has the duty to take care of the animal genetic resources protection through a 7-year programme (2011-2017) which acts towards: protecting all autochthonous breeds and strains of livestock that are kept in the Republic of Macedonia, with particular care for the local breeds kept in their regions of origin; protecting breeds out of (ex-situ) and in (in–situ) the regions of origin; establishing and operation of gene banks for livestock; fulfilling international obligations related to AnGR; conducting trainings for AnGR protection; rising the public awareness for AnGR protection; linking AnGR protection with other related programmes in agriculture. In addition, few regulatory acts (by-laws) were also been adopted and the AnGR programme has been committed to recognizing, monitoring and recording local breeds. On the other hand, the plant genetic resources protection is not well regulated. Namely, while the Law on Agriculture and Rural Development provides the general setup for agri-biodiversity protection, further regulation for implementation of conservation and sustainable utilization of PGR is regulated with the Law on Seed and Seedlings, which deals with seed and seedlings production and trade. It also defines the gene bank as an institution that maintains and stores seed and seedlings of divergent populations and autochthonous species in order to protect biodiversity and stores referent samples of seed and seedlings of agricultural plants. Furthermore, the Directorate for Seed and Seedlings, as the institution implementing the Law on Seed and Seedlings, has a very limited budget and funding granted to gene banks and discontinuous over the years. In the last two years no funding was granted at all. According to the EU Regulation 870/2004, a Committee for Protection of Autochthonous Species has been established by the Directorate for Seed and Seedlings. This Committee was not operational as it was unfeasible to obtain any budget. Starting from the incorrect definitions of PGR and the gene bank that are not in accordance with the definitions used in the Law on Agriculture and Rural Development, a major problem is the misinterpretation of the purpose of the referent collection and gene bank in the Law on Seed and Seedlings. The obstacle regarding the definition of the national gene bank for PGR was only recently overcome by adopting changes to the Law in May 2018. The process of local variety collection, examination and protection is regulated within the changes. The changes will enhance the implementation of the PGR protection measures foreseen in the strategic documents and legislation as well as Annual programme for Financial Support of the Rural Development for 2018.

The by-law -- Rulebook on the List of Special Minimal Conditions for Good Agricultural Practices and Environment Protection, (Official Gazette 178/2015) defines the criteria that farmers should apply in good agricultural practices for soil, water and plant protection and animal production and environment protection. The criteria are defined solely for environment, plant, livestock and human protection, but not for agrobiodiversity protection and climate change adaptation. The agrobiodiversity protection is a part of the guide for good agricultural practices that recommends integral measures for PGR.

B4.4.3 Agri-environmental Policy

The Law on Agriculture defines and gives a legal ground for the implementation of the 5 main goals of the national agricultural policy, some which are: sustainable development of rural areas and optimal use of natural resources while respecting the principles of protection of nature and the environment. This Law defines all the organisational forms implementing the rural policy, such as: the Council for Agriculture and Rural Development, the Inter-ministerial Group for Rural Development and the National Rural Network as a platform for establishing partnerships among the key stakeholders from the rural areas in the process of planning, monitoring and implementing the National programme for Rural Development. With regards to the rural development policy, this Law contains detailed provisions and criteria

for realization and implementation of the main priorities of rural development, such as*: a) increasing the competitiveness of the agricultural sector, b) protection and improvement of the environment and rural areas, c) improving the quality of life in rural areas and encouraging diversification of economic activities to increase employment opportunities in rural areas and d) encouraging local development of rural areas.*

The financial support for achieving the rural development priorities is defined in Article 92 of the Law and is distributed as: *a) non-refundable financial support for investments b) financial aid, and c) direct payments to rural development*. The non-refundable financial support can be used for non-material investments in line with the national programme for Agriculture and Rural Development, the direct payments are used to support the income generated from agriculture as compensation for losses incurred due to utilization of production potential for the application of agricultural production practices to protect the environment or due to increased costs for the application of higher standards of environment protection.

The National Strategy for Agriculture and Rural Development is a strategic document which defines the general and specific objectives of rural development, and more specifically the agri-environmental policy. The measures and actions outlined in NARDS or its Operational Plan are implemented through a five-year National programme for Development of Agriculture and Rural Development, a programme for pre-accession funds from the fifth component of Agriculture and Rural Development - IPARD and Annual Programmes for financial support to agriculture and financial support for rural development. The National Strategy for Agriculture and Rural Development foresees implementation of a new agri-environmental measure, with a main goal to provide further contribution to the sustainable management of natural resources and mitigation of the negative impact of climate change. The new agri-environmental measure is planned to be implemented as a "pilot" measures which will be considered a step forward to the required minimum standards for protection and improvement of the environment and natural resources. The applicants should commit themselves in the implementation of the measures on a voluntary base and to respect the agri-environmental commitment which will be more restrictive than the mandatory standards of cross-compliance. The financial support for the new agri-environmental measures, similarly to that for organic production and biodiversity, is planned to be provided through Measure 2.1 - Agri-environmental measures and organic farming IPA-RD 2014-2020. The new agri-environmental measures planned to be implemented with this Strategy are: preservation of traditional species of vine, protection of water and soil with sustainable methods and agricultural activities (establishment of cover crops in the orchards in Resen and protection of water and soil with crop rotation in Pelagonija). In the second phase of implementation of the Strategy, within the system of minimum requirements for cross compliance, some additional activities will be incorporated for support of the implementation of Natura 2000.

The IPA-RD programme with the Need 2.1 foresees "to engage farmers to introduce management practices for protection of soil and water and organic farming in order to stop the decline of biodiversity, to diminish the negative impacts from abandoning of agricultural land, propose a set of measures like: a) investments in physical assets of the agricultural holdings, b) agri-environmental measures and organic farming c) improvement of training and d) advisory services. The IPA-RD measures are financed form three main financial sources: the national Budget, IPA-RD funds and donor organisation sources. Due to the technical constraints, the programme foresees delays in the implementation of 6 measures. ***Agri-environmental, climate and organic farming measure*** was planned to start in 2016/2017 after the finalization of the criteria and methodology of payments and putting the LPIS in operation. The implementation of the other five measures is delayed mainly due to the insufficient capacities of the implementing agencies (IPA-RD Agency) and methodologies for implementation and selection of the potential users of funds. As for the measures related to the *Improved Training* and *Advisory Service*, their implementation was planned to start after setting clear rules for selection of trainers, approval of the training modules and training programmes, and defining an effective advisory system.

The armers applying for funding from the programmes for financial support in agriculture and rural development should comply with the obligations under cross-compliance. Starting from 2013 onwards, all applicants for financial support, when submitting a claim, need to be familiar with the conditions prescribed in the list of specific minimum requirements for good agricultural practices and environmental protection published in the Rulebook and

conform that they are complied with and enforced. As support to the farmers, the Ministry of Agriculture, Forestry and Water Economy (MAFWE), prepared the Brochure on Cross-compliance, containing the necessary information on the minimum requirements that should be accomplished in order to become eligible for financial support. The MAFWE also has published a Rulebook with the list of minimum requirements (Official Gazette of R. M. No. 43, 2013) which contains the List of Special Minimum Requirements for Good Agricultural Practices and Environment.

B4.4.4 Agri-environmental measures in place

There are no agri-environmental measures in place at present, although, according NSARD, these are planned to be implemented in the period up to 2020. So far, we cannot discuss any agri-environmental measures supported and accredited by IPARD.

However, we can discuss the measures that can be considered as agri-environmental measures and/or "environmental friendly measures", supported by national programmes for support of agriculture. There are two national systems (budget lines) to support such measures:

1. The programme for Financial Support of Agriculture - Direct Payments (we used the programme for 2018)
2. The programme for Financial Support of Rural Development (we used the programme for 2018)

The national programme for Financial Support of Agriculture – Direct Payments, and the National programme for Financial Support of Rural Development contain several agri-environmental measures as well as "environmentally friendly" measures. These measures are related to:

Soil protection

We identified 2 measures related to soil protection. Both are noted as direct payments in Article 2 paragraph 2 of the Regulation on the Criteria for Direct Payments (RCDP) for measures that can be potentially of interest for soil protection:

- Analyses of the physical and chemical properties of the soil (the same measure includes analyses of organic products). The payment is 70% of the cost of the analyses up to a maximum of 150 EUR per farm. The total amount is about 16,260 EUR (Article V of the programme for Financial Support of Agriculture)
- Direct payments for areas under green manuring and fallowing included in crop rotations. The payment is about 58 EUR per hectare (Article 2 paragraph 2 of the Regulation on the Criteria for Direct Payments (RCDP)

Even though the measures are in place, some additional requirements should be added to make the measures more useful. Soil analyses should be stored in a database and used for more advanced analyses and monitoring. For green manuring and fallowing included in crop rotation and with no existing support for crop rotation, it is not clear how that crop rotation could be in place.

Honey bees

Honey bees are beneficiary for the environment and there are two measures for support of honey bee production (measures 2.18 and 2.19 in Article III of the programme for Financial Support of Agriculture):

- Direct payment for overwintered hives (10-14 EUR, depending on number of hives) per hive and
- Additional payment for hives included in the production of queens (16 EUR per hive included in the control system and work on the breeding programme for queen selection)

Areas with Natural Constrains (ANC)

The ANC in the country are defined only by elevation considered as a constraint and thus all areas above 700 meters above sea level are considered as ANC. The direct payments for AC are regulated in the RCDP, Article 2, Paragraph 4, point 1. Eligible for this measure are the users of sub measures 1.1., 1.2, 1.3., 1.4., 1.5., 1.7., 1.9., 1.10. and 1.12., noted in Article 2 paragraph 2, and sub measures 2.1., 2.4., 2.6., 2.7., 2.9., 2.11., 2.13., 2.14., 2.15., 2.16., 2.17. and 2.18 from Article 2, paragraph 3 of the RCDP.

The operators that conduct their agricultural activities on the parcels registered in the Land Parcel Information System with elevation above 700 m are eligible for increase of the direct payments by 15 %.

Most of the operators are eligible for direct payments by unit area. However, operators

eligible for sub measures 1.7. and 1.10. will be paid by unit of product.

Moreover, there is additional eligibility in assessing the ANC for sub measures 2.1., 2.4., 2.6., 2.7., 2.9., 2.11., 2.13., 2.14., 2.15., 2.16., 2.17. and 2.18.. These operators will be paid as ANC if they are located in inhabited areas with less than 100 inhabitants.

However, the ANC (previously LFA) is part of the programme for Financial Support of the Rural Development:

Code	Measure	Amount in EUR*
211	Help for conducting agricultural activities in less favorable areas for agricultural activities	991,870

* The conversion from MKD to EUR was done by using the exchange rate of 61.5MKD per 1

Agrobiodiversity

The measures for agrobiodiversity protection were mostly effective in AnGR protection. There are two budget lines for it, e.g. direct payments and support. Under the direct measures, apart from the payments per live animal (head) there is additional support for local breeds as:

- Busha cattle - 25 EUR in addition to the basic 45 € per registered head;
- local sheep and goat breeds -- 8 EUR additional payment for registered sheep (per head) on top of the basic 16 EUR per head (supported breeds of sheep: Ovchepolka, Sharplaninska, Karakachanka, supported goats: Balkan goat)
- the water buffalo is endangered and hence in addition to the basic support of 46 EUR, additional 40 EUR per head per head are available.
- The Shepherd dog Sharplaninec -- 50 EUR (only for registered sheep and goat breeders, maximum of 7 dogs per farm)

These top-up payments are regulated with RCDP (Article 2, paragraph 4, items 8-12). Within the support for livestock production about 100,000 EUR annually (at least in the last two years) were allocated for commitment to the programme for AnGR protection.

Moreover, the measures for agrobiodiversity protection are in the programme for Financial Support of Rural Development, measure 214 with three sub-measures related to agrobiodiversity:

Code	Measure	Amount in EUR*
214	Activities for establishment of monitoring and analysis of the state of the autochthonic livestock breeds and protection and supply of the compulsory reserves of the autochthonic livestock breeds	97,560
214	Activities for establishment of monitoring and analysis of the state of the autochthonic livestock breeds and protection and supply of the compulsory reserves of the autochthonic livestock breeds	97,560
214	protection of the genetic diversity of the (cattle: Basha; sheep: Ovchepolka, Sharplaninska, Karakachanka; goat: Balkanska Koza, dog: shepherd dog Sharplaninec, water buffalo: Domestic water buffalo)	32,520

* The conversion from MKD to EUR was done by using the exchange rate of 61.5MKD per 1 EUR

According to the interview we had with the representatives of MAFWE, these measures are introduced in the direct payment scheme in order to increase the number of animals to a number that will be feasible for accrediting the agri-environmental measure on AnGR. When the measure started, the total number of sheep was 1500, at present it is 4500-5000 and the minimal number feasible for accreditation of the measure would be about 7000.

Organic production

Although the global effects of organic production may be not environmentally friendly, certainly the local effects are positive, thus we included organic production as an environmentally friendly measure.

Organic production is supported with direct payments for regular production and top-up payments as follows:

- Increase of the direct payments by 30 % for sub-measures 1.3., 1.4., 1.8., 1.15., 1.16., 1.17. and 1.18 noted in Article 2, paragraph 2 of the Regulation on the Criteria for Direct Payments (RCDP)
- Increase of the direct payments by 50 % for sub-measures 1.1., noted in Article 2 paragraph 2, and sub-measures 2.1., 2.4., 2.7., 2.9., 2.11., 2.13., 2.14., 2.15., 2.16. and 2.18 from Article 2, paragraph 3 of the RCDP
- Increase of the direct payments by 70% for sub-measures 1.9., 1.10., 1.11., 1.12. и 1.13. noted in Article 2 paragraph 2, and sub-measures 2.1., 2.4., 2.7., 2.9., 2.11., 2.13., 2.14., 2.15., 2.16. and 2.18 from Article 2, paragraph 3 of the RCDP

- Increase of the direct payments by 100% for sub-measures 1.5. and 1.6. noted in Article 2, paragraph 2, and sub-measures 2.1., 2.4., 2.7., 2.9., 2.11., 2.13., 2.14., 2.15., 2.16. and 2.18 from Article 2, paragraph 3 of the RCDP

Moreover, RCDP (Article 2, paragraph 4), provides direct payment support for: processing of organic products and organic products in transition (item 4); trade or export of organic products (point 5); control and certification of organic products (point 6) and for the analysis of soil fertility, soil properties or analyses of the heavy metals, pesticide residues and other contaminants in the soil and in the organic products.

Moreover, organic production is part of the programme for Financial Support of the Rural Development:

Code	Measure	Amount in EUR*
215	Organic production	1,317,070

* The conversion from MKD to EUR was done by using the exchange rate of 61.5MKD per 1 EUR

Furthermore, the programme for financial support of rural development regulates the support of some other measures that can be considered "environmentally friendly":

Code	Measure	Amount in EUR*
111	Training and information for agricultural producers	1,630
114	Advisory service in agriculture	1,630
121	Purchasing of drip irrigation systems, including deep wells	325,200
213	Support for preserving rural areas and their traditional values	260,160
214	Support for agricultural production for protection and improvement of the environment	227,640
323	Protection and improvement of the traditional values in the rural areas	2,113,820

* The conversion from MKD to EUR was done by using the exchange rate of 61.5MKD per 1 EUR

Some of these measures are budgeted so low, that it is very hard to say that some activities can be supported with that budget. However, these measures do have potential for increasing the knowledge and know-how in the agricultural sector, for water saving, reduction of transport of agrochemicals in the environment and for protection and support of the environment. Finally, there are measures that will improve the situation in rural areas by preserving them and protecting and improving their traditional values.

Finally, the programme for Financial Support of Rural Development defines the measures for technical support of agriculture and rural development and several measures among them are very good for increasing the level of know-how, supporting research and experimental farms for development of new or upgrading the existing technologies and serve as a source for technology transfer in agri-environment.

Those measures are defined as follows:

Number	Measure	Amount in €*
1.4	Preparation and publishing educational, informative, scientific, advertising and expert materials, publications and materials, publications and periodicals	8,130
1.5	Conducting research, preparation of analyses, project proposals, studies and strategic documents in the field of agriculture and rural development	32,520
1.6	Investment in establishing and conducting scientific and demonstrative examples	97,560
1.7	Establishing and conducting research to cover the cost of the research activities	97,560

*The conversion from MKD to EUR was done by using the exchange rate of 61.5MKD per 1 EUR

The experiences with the existing above-mentioned measures in the programmes for financial support of agriculture and rural development, their evaluation, possible updating and improvement can serve as excellent start for development and accreditation of the agri-environmental measures in IPARD.

Moreover, Macedonia has established cross-compliance measures in the form of "Rulebook on minimum requirements for good agricultural practice and environmental protection" (Official Gazette of RM, no. 176/2015). Also, MAFWE prepared the Manual on Cross-compliance for fulfilling the minimum requirements for good agricultural practices and environment protection in 2015. This regulation contains the number of compulsory measures that agricultural producers are obliged to follow in terms of soil protection, water protection, crop protection, livestock production, etc. The manual contains the methods of bookkeeping for evidence and controlling purposes.

The cross-compliance is obligatory for all farmers (users of the subsidies) and the penalties are also regulated. If farmers do not follow these regulations the first year (the first time) the reduction of the direct payments will be 3%. In the second year, the reduction will be 3 times

higher (9%), and in the third year it will be 27%. If the farmers do the same mistake for the 4 time, it will be considered as non-compliance by intention and the farmer will be excluded from the direct payment scheme.

Unfortunately, at present, the cross-compliance is obligatory only for big farms and it is not clear when it will be obligatory for all farmers.

B4.4.5 Agri-environmental indicators

The Agri-Environmental Indicators (AEI) in EU were set up through a Commission Communication COM (2006) 508 final, and total of 28 indicators were established. These indicators were set in order to monitor the integration of environmental concerns into the Common agricultural policy (CAP). These indicators serve to: provide information on the farmed environment; track the impact of agriculture on the environment; assess the impact of agricultural and environmental policies on environmental management of farms; inform agricultural and environmental policy decisions; illustrate agri-environmental relationships to the broader public.

However, not all of EU established AEI are available in the country. In order to present the state and availability of these EU indicators in Macedonia we prepared a table presentation on all EU indicators. The table provides the indicators, their availability and the links to the indicator data. Moreover, some of the indicators can also be obtained from external sources. Possible sources are EUSTAT, OECD and FAOSTAT. We did not use external sources, because indicators should be prepared in the country.

Our analyses show that the AEI is not addressed as a separate issue in any of the documents or databases in Republic of Macedonia. However, in 2008, the Government of the Republic of Macedonia adopted the Environmental Indicators of the Republic of Macedonia prepared by the Macedonian Environmental Information Centre. In this way, indicators specific to the national context were identified. A total of 40 indicators in 12 chapters were adopted. Some of these indicators overlap with AEI. The MoEPP reports on the indicators using the framework (Driving forces, Pressures, States and Responses). These indicators address air pollution, biodiversity, climate change, soil, water, agriculture, energy, transport, health, tourism and environmental protection expenditures. Of importance for agri-environmental issues also are: 4 indicators on biodiversity, (one response, 2 state and one indicator that considers the state and impact), 5 indicators on climate change (all of them pressures), 4 indicators on soil (2 pressures and 2 states), 7 indicators on water (1 pressure, 4 state, 1 response and 1 driving force) and 4 indicators on agriculture (2 driving forces, one pressure and 1 response).

We can conclude that out of the 28 AEI, 16 are not available in the country, one needs serious revision, 4 are with limited availability (presented in graphic form or incomplete or cannot be updated). In addition, 2 more indicators should be calculated and the data for those calculations is available.

Serious work on the Agri-environmental indicators is required, particularly by the institutions responsible for agriculture. Most of the available indicators come from the MoEPP or Statistical Office of the Republic of Macedonia. Actually, no data comes from the Ministry of Agriculture, Forestry and Water Economy (MAFWE). The MAFWE should intensify their commitment towards the agri-environment and the introduction of agri-environmental measures by preparing the missing agri-environmental indicators, particularly the ones that are based on data already available within MAFWE.

The description of the status of AEI is explained in Table B4.4.5.1.

Table B4.4.5.1 Status of AEI

Domain	Sub-domain	No.	Title and data availability in the country	Availability	Source
Responses	Public policy	1	Agri-environmental commitment	No data available	Possible source Payment Agency of Republic of Macedonia
		2	Agricultural areas under Natura 2000	Natura 2000 sites still not proclaimed. Data on protected areas available	http://natura2000.gov.mk/en/agriculture-tourism-fishing-hunting/ http://www.moepp.gov.mk/?page_id=4920&lang=en
	Technology and skills	3	Agri-environmental indicator - farmers' training and environmental farm advisory services	Available from Farm Structure Survey	Data available for education of the engaged persons in individual farms and agricultural enterprises Link to MAKSTAT database on level of education in agricultural sector for 2013
	Market signals and attitudes	4	Area under organic farming	MoEPP Environmental Indicator MK-NI 026: Area under organic farming MAKSTAT database	http://www.moepp.gov.mk/?page_id=3036&lang=en Link to MAKSTAT database for organic crop production Link to MAKSTAT database for organic livestock production
Driving forces	Input use	5	Mineral fertilizer consumption	MoEPP Environmental Indicator MK-NI 08: Mineral fertilizer consumption	http://www.moepp.gov.mk/?page_id=2998&lang=en
		6	Consumption of pesticides	MoEPP Environmental Indicator MK-NI 08: Mineral fertilizer consumption	http://www.moepp.gov.mk/?page_id=3018&lang=en
		7	Irrigation	Available, Need revision	http://www.moepp.gov.mk/?page_id=4419&lang=en Link to MAKSTAT database FSS on Irrigation
		8	Energy use	MoEPP Environmental Indicator MK-NI 027: Final energy consumption by sector	http://www.moepp.gov.mk/?page_id=4453&lang=en
	Land use	9	Land use change	MoEPP Environmental Indicator MK-NI 014: Land Take	http://www.moepp.gov.mk/?page_id=2885&lang=en Land use reported annually in Statistical Yearbook and Land Use Changes can be calculated
		10.1	Cropping patterns	Available, need to be calculated	Land use reported annually in Statistical Yearbook and the share of the utilized agricultural area (UAA) occupied by the main agricultural land uses (arable land, permanent grassland and land under permanent crops) can be calculated. Also available from FSS on MAKSTAT database for 2013
		10.2	Livestock patterns	Available, need to be calculated	Livestock number reported annually in Statistical Yearbook and the share of major livestock types (cattle, horses, sheep, goats, pigs and poultry) in total livestock population expressed in livestock units (LSU); can be calculated. Also available from MAKSTAT database for 2013 based on Farm Structure Survey data.
	Farm management	11.1	Soil cover	Not available, cannot be calculated based on existing data	The share of the year when the arable area is covered by plants or plant residues cannot be calculated. The share of the area covered by winter crops (with some errors due to small share of spring wheat, spring barley and spring rapeseed) is possible to be calculated.
		11.2	Tillage practices	Data not available	Share of arable areas under conventional, conservation and zero tillage. The data on agricultural machinery do not present the machines for drilling. Probably 100% conventional
		11.3	Manure storage	Data not available	The share of holdings with livestock which have manure storage facilities in total holdings with livestock and share of holdings with different manure storage facilities cannot be calculated, no data presented.
	Trends	12	Intensification/ extensification	Data not available	Data on intensification (Trend in the shares of UAA managed by low, medium and high intensity farm) is not available in the country.
		13	Specialization	Data not available	Data on an agricultural holding specialized in some direction (when a particular activity provides at least two thirds of the production or the business size of an agricultural holding) is not available.
		14	Risk of land abandonment	Data not available	The risk of farmland abandonment indicator is estimated through statistical analysis of key drivers combined into a composite index indicator, and no institution in the country provides such data

Domain	Sub-domain	No.	Title and data availability in the country	Availability	Source
Pressures and risks	Pollution	15	Gross nitrogen balance	Limited availability MoEPP Environmental Indicator MK-NI 025: Gross nitrogen Balance	http://www.moepp.gov.mk/?page_id=2937&lang=en The indicator is presented only in graphical form for the period 2000-2004. Based on an interview with MoEPP it will not be updated because of lack of data on nitrogen fertilizer and manure use.
		16	Risk of pollution by phosphorus	Data not available	No institution in the country provides this data and there is no possibility to have it in near future due to source data shortage
		17	Pesticide risk	Data not available	No institution in the country provides this data and there is no possibility to have it in near future due to source data shortage
		18	Ammonia emissions	MoEPP Environmental Indicator MK-NI 050: Emission of ammonia (NH3)	http://www.moepp.gov.mk/?page_id=5502&lang=en
		19	Agri-environmental indicator - greenhouse gas emissions	MoEPP Environmental Indicator MK-NI 010: Greenhouse Gas Emission (Needs improvement)	http://www.moepp.gov.mk/?page_id=3700&lang=en Data also available from The Biennial Update Reports to the UNFCC prepared by MoEPP. No data available for livestock farms manure treatment.
	Resource depletion	20	Water abstraction	Limited availability MoEPP Environmental Indicator MK-NI 018: Use of freshwater resources	http://www.moepp.gov.mk/?page_id=4955&lang=en Data presented in graphic form for period 1990-2014
		21	Soil erosion	Limited availability MoEPP Environmental Indicator MK-NI 053: Soil Erosion	http://www.moepp.gov.mk/?page_id=5740&lang=en Data based on the Erosion map, produced in a period of more than 20 years and completed in the early nineties. The map was never updated, so the indicator is static.
		22	Genetic diversity	Data not available/partly	Annual reports for AnGR are available in the MAWFE. Indicator should be designed.
	Benefits	23	High Nature Value farmland	Data not available	
		24	Renewable energy production	Data not available	The share of primary energy production of renewable energy from agriculture and forestry to total energy production. The FSS provide data on the number of holdings producing renewable energy, but data cannot be used to get indicator as described in EUROSTAT.
State/Impact	Biodiversity and habitats	25	Agri-environmental indicator - population trends of farmland birds	Data not available	
	Natural resources	26	Soil quality	Data not available	
		27.1	Water quality - Nitrate pollution	Limited availability MoEPP Environmental Indicator MK-NI 020: Nutrients in freshwater	http://www.moepp.gov.mk/?page_id=2785&lang=en The only available is a graphic presentation of the Nitrates for 3 major rivers (Vardar, Bregalnica, Crna Reka) for the period 2000-2015. The State Administration for Hydrometeorological Affairs is responsible for the monitoring of water quality. Data is available upon payment. The data presented by MoEPP show very low concentration of NO3 (less than 3.5 mg/l) and rivers are probably not a topic of concern. The ground water monitoring is not operative.
		27.2	Water quality - Pesticide pollution	Data not available	The State Administration for Hydrometeorological Affairs is responsible for monitoring of water quality, but do not monitor the pesticides in rivers. Groundwater monitoring is not in operation.
	Landscape	28	Landscape - state and diversity	Data not available	

B4.5 CONCLUSIONS AND RECOMMENDATIONS

B4.5.1 Conclusions

1) The Agri-environmental policy in the country is addressed in several programmes, strategic and legal documents of the Government and the corresponding Ministries, such as the Ministry of Environment and Physical Planning and the Ministry of Agriculture, Forestry and Water Economy. The main focus of the Ministry of Environment and Physical Planning is on the general policy for environment and nature protection and the obligations taken from the UN conventions. Some of those issues are related to operators in agriculture, particularly with regards to the obligations against pollution of water, soil and air.

2) There are no accredited agri-environmental measures in the frame of IPARD at present. However, the foreseen agri-environmental measures are in line with the general and specific objectives outlined in the strategic documents (NARDS) and the IPA programme for Rural Development. The implementation of the foreseen agri-environmental measures is regulated with the provisions and the MAFWE legal documents and operational documents, such as: the five-year programme for Agricultural and Rural Development; the annual programmes for financial support of rural development; etc.

3) The Rulebook on the list of minimal requirements for good agricultural practices and environment protection was adopted in October 2015. About the same period MAFWE also adopted the Manual on the implementation of minimum requirements of good agricultural practices and environmental protection, which has to be fulfilled by the farmers in order for them to use financial support. The obligatory cross-compliance requirements were set up with this. However, the cross-compliance measures are obligatory only for big farms.

4) In terms of agri-environmental issues, the most relevant measures identified with the IPA-RD are: a) agri-environmental measures and organic farming and b) forest protection (Goal 2 "protection and improvement of the ecosystems dependent of agriculture and forestry) and measures: improvement of the training and advisory service (Goal 4), and the measure: improvement and development of rural infrastructure (Goal 3). However, recently there were some attempts for elaboration of the agri-environmental measures and these can serve as good material in order to speed up the process of preparation and accreditation of the measures.

5) The NPARD foresees the implementation of 3 new agri-environmental measures including biodiversity protection and indigenous species and organic farming. In addition, investment measures are planned to be extended towards efficient waste management and use of renewable energy sources in agriculture.

6) The present Annual programme for financial support of the rural development provides support for several agri-environmental measures, or measures related to agri-environment within priority 2, such as: support for agricultural production in ANC, support for protection of rural landscapes and their traditional characteristics, support of agriculture for protection and improvement of the environment, organic production, etc. Also there are 3 measures for protection of agri-biodiversity. The programme for AnGR protection implements measures for protection of animal genetic resources, while the obstacles in the regulation of PGR protection were recently overcome. Finally, some measures for technical support of agriculture and rural development on education, training, publications, experimental farms, research, etc. that can be of benefit for the agri-environment are foreseen in the Annual Program. The experience with the implementation of these measures will be of benefit for the defining, elaboration and accreditation of AEM.

7) Not all 28 indicators measuring agri-environmental implementation are in place in the Republic of Macedonia. The indicators for the state of the environment are in place and maintained by the Agency for Financial Support of Agriculture and Rural Development (AFSARD) and the Agricultural Inspectorate. However, some of the national indicators on the state of the environment that are in use by MoEPP are related to the agri-environment. All of the AEI require special and targeted data, but the main source of data is still the MAKSTAT data base. In very few cases the MAKSTAT data is sufficient, but it is insufficient for direct implementation

for the most of the indicators, and also, a lot of data is unavailable. Hence most of the indicators do not fully reflect the current status.

8) Additional effort is needed in order to improve data availability and systematic approach in indicator reporting. For example, Livestock Patterns need to be calculated by cross-cutting several sources. As a conclusion, out of 28 AEI, 16 are not available in the country, one needs serious revision, 5 are with limited availability (presented in graphic form or not complete or cannot be updated). Additionally, 4 indicators should be calculated and the data for calculation is available or partially available.

9) The MoEPP is responsible for environment protection, including protection of water, soil, biodiversity (in a broad sense) and climate change in the Republic of Macedonia. Climate Change is under the Department of Environment as well as under the Unit on Soil. The Department on Water is a separate one. Within the Department of Nature there are Units for protection of natural heritage and biodiversity.

10) However, the MAFWE is directly responsible for the implementation of the agri-environmental measures. MAFWE has a very complex structure and consists of 19 sectors and 62 divisions, with the following sectors being associated directly with agri-environment: Sector for Agriculture; Sector for Grapevine, Wine and Fruit Production; Sector for Analyzis of the Agricultural Policy; Sector for Marketing and Quality of Agricultural Products and Sector for Rural Development. There are also other affiliated institutions related to agri-environmental measures as: the Phyto-sanitary Directorate, the Directorate for Seed and Seedlings (DSS), the Food and Veterinary Agency and the State Inspectorate for Agriculture. In addition, there are agencies related to the implementation of the agro environmental measures, such as: the Agency for Financial Support of Agriculture and Rural Development (AFSARD) and the Food and Veterinary Agency. These institutions are struggling with poor assessment of the agricultural goals and institutional lack of capacity..

11) Although the agri-environmental measures are part of the national strategic documents and current legislation, their implementation is rather limited. Mostly measures that can provide benefit to the socio-economic development of rural areas are in place. In order to successfully enhance the agri-environmental measures, several needs are emphasized. Namely, most of the information required by the stakeholders is not transparent enough which makes it difficult to understand. In addition, the access to information is often complicated and frequently confusing. Farmers that have better access to information can benefit of the implementation of the agri-environmental measures, while others have difficulties with it. Equal availability for all stakeholders is jeopardized, which results in a privileged position of some as opposed to others.

12) Harmonization of the national agriculture policy at all levels is needed, since some of the supportive measures (direct and indirect payments) in place are in contradiction with agri-environmental measures.

13) Also, there is obvious lack of AEI, appropriate sectorial data availability and systematic data collection. Perhaps, in order to overcome bridge the issues, additional training, education, awareness campaigns will be necessary at all levels (farmers, advisory service, administration, research).

14) As a consequence, although the national policy is significantly incorporating agri-environmental measures, neither horizontal nor vertical integration between institutions has been provided for the purpose of their successful implementation.

15) Moreover, political will and consistent agriculture policy is necessary in order to improve the implementation of the agri-environmental measures. Special attention should be paid to the consistency and estimation of the real potential of the sector when the agri-environment measures are regulated.

16) The lack of human resources (well trained and with adequate knowledge and understanding of the topic) in particular, will be major challenge to the country. In additional, even when such human resources exist in the country, they are not in the right position to be able to adequately contribute.

17) On top of that, the limited finical resources and institutional overlapping of authorities can be considered as an additional constrain.

B4.5.2 Recommendations

Generally, the Macedonian government policy over the last two decades was not directed towards implementation and support to the agri-environmental measures. However, two parallel processes have been happening, one through MoEPP, and the other through MAFWE. In most of the cases, the initiatives were related to the harmonization and adaptation of the national legislation with EU aquis. Moreover, issues related to the Agri-environmental policy and Agri-environmental measures were raised in the limelight several times in the past and lot of work has been done. Most of the documents we analyzed do put the focus on agro-environmental issues. Unfortunately, measurable indicators on what has been achieved so far and what the results of this work are, have not been presented to the public. Therefore, based on the work during the preparation of this report which included analyses of the existing relevant documents, analyses of the data provided on the relevant web sites, and interviews with the relevant staff in the MAFWE (everything related to the agri-environmental policies, measures and indicators in the country), we derived several recommendations.

- Recommendations for institutional set-up improvements

- The MAFWE and the other relevant institutions, due to their complex and complicated structure, should coherently implement consistent agro-environmental measures.
- The agri-environmental policy and measures are part of the MAFWE activities and it is necessary for them to increase the capacity of the department of the agri-environment.
- However, closer cooperation with MoEPP is one of the issues that should be improved, because the agri-environmental measures are related to the environmental benefits.
- The improvement of the institutional and personal capacities of the relevant sectors and agencies responsible for the implementation of AEM and monitoring of its effects are very important for effective agri-environmental activities.
- However, it is important to remember that farmers are one of the crucial segments in the agri-environmental policy. Education and training of farmers for agro-environment, particularly cross-compliances is crucial. They should be aware what they have to care for and protect the environment and to make the decision if they are willing to voluntary go above the compulsory level.
- Therefore, we recommend conducting a project targeted towards deep analysis of the institutional set-up in the agri-environment and trough such analysis to determine the strong and weak points of the present situation and to recommend how to improve it. Moreover, such a project should particularly address the capacity building of the relevant institutions in the agri-environmental sector.
- A systematic capacity building of the administration should also be an ongoing practice in order for them to be ready for successful implementation.
- The agri-environmental indicators are somehow neglected at present and it is necessary to properly address who is responsible for the data collection, elaboration of the indicators, their evaluation and visibility for the all the interested stakeholders.

- Recommendations for policy improvements

- Since the issues related to protection of environment, nature and reduction of pollution are conducted exclusively through the MoEPP, their cooperation with MAFWE needs to be significantly improved and all the activities concerning agro-environment should be elaborated thoroughly by both ministries.
- Special attention should be paid to the implementation of implementing certain measures that can lead towards socio–economic outcomes.
- The policy in agriculture lacks consistent directions. In the past it was a subject of frequent changes (sometimes in directions that neglected the previously achieved results). The attempts should be towards mid and long-term goals.
- Due to the very complex and complicated structure of the MAFWE and the other relevant institutions (the Paying Agency, the National Extension Agency, the Food and Veterinary Agency etc.) a solution for coherent implementation of a consistent agri-environmental policy is required.
- The main goals and long-term objectives of the agri-environmental policy in the country should not be changed, because those are well addressed and in compliance with the EU policies. However, the short-term and mid-

term policies, activities and measures can be upgraded and evidence based.

- The inclusion of higher education and research institutions in the agri-environmental activities in the country is essential. They should be engaged in conducting trainings and education, as well as research activities targeted toward agri-environment. Also, establishing of experimental land plots to promote agri-environmental measures should be a part of their activities.
- We highly recommend increasing visibility of the activities in the agri-environmental sector. The citizens should be informed about how important this policy is, what is done towards improving the situation in agri-environment and to be aware of the achieved outcomes and results. The involvement of citizens is important and they have to know what measures are undertaken to minimize the negative effects on the environment, to protect rural areas and their values and finally to be sure that the agricultural production in the country is safe.
- It should be emphasized that the implementation of cross-compliance requirements should be improved. At present, they are compulsory only for the big farms, but should be mandatory for all the agricultural producers in the country.
- Therefore, we recommend conducting a project that will be aimed towards a deep agri-environmental policy analysis where all the aspects of the implemented policies will be foreseen. Moreover, such a project should provide recommendations on how to improve present situation.
- The systematic capacity building of the administration should also be subject of continuous education and training in order for them to be prepared for successful implementation.

• <u>Recommendations for improvements in information and data availability</u>

- Most of the agro-environmental indicators (AEI) are not monitored and there is no data available. However, some of the data required for deriving agri-environmental indicators is regularly collected by the State Statistical Office. Also, some environmental indicators maintained by MoEPP are similar to some of the agri-environmental indicators.
- During our work we did not find any indicator or data required for deriving the indicators on the MAFWE web sites, or on the web sites of the institutions and bodies related to MAFWE. However, MAFWE is the data owner and should invest some additional efforts to make that data transparent and readily available.
- Moreover, MAFWE should be the institution responsible for agri- environmental indicators and their transparency and visibility.
- The agri-environmental indicators are fundamental for proper evidence-based policy in the sector.
- Hence, the system of continuous monitoring of the AEM measures, data collection, structuring and harmonization of data, its visibility and transparency is necessary and needs serious improvements.
- The main recommendations outlined during several interviews with relevant MAFWE staff, are as follows:
- The direct payments for AnGR to be converted in agri-environmental measure. Then farmers will be obliged to sign an agreement and to keep to it. With direct payments they are not obliged to maintain AnGR and they can sell their heads registered as important for preserving the local breeds.
- Cattle breeding in Macedonia relies on small farms and 75% of the cattle are in small farms of there are only several heads. Many measures are adequate for bigger farms, but not so easily applicablefor such small farms, so these measures cannot reach more than 25% of the total number of cattle.
- project for accreditation of the agri-environmental measures is of high importance and the existing on-going activities should be updated with an activity of this kind.
- The project for genetic determination of the PGR is one of the requirements for better and more efficient conducting of the measures related to this issue.
- The representative of MoePP suggested that MAFWE should take part in providing data for some of the indicators on the state of the environment related to agriculture. Due to a shortage of data sources and insufficient capacities to work on some of these indicators. they are reducing the work on some of the indicators related to agriculture.

LITERATURE

1. Council Directive 2008/105/EC of 16 December 2008 on environmental quality standards in the field of water policy amending and subsequently repealing Council directives 82/176/EEC, 83/513/EEC, 84/156/EEC, 84/491/EEC, 86/280/EEC and amending Directive 2000/60/EC [Official Journal L 348 of 24.12.2008]. Available from: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=LEGISSUM:l28180
2. European Commission (2016) European Commission Staff Working Document "The former Yugoslav republic of Macedonia 2016 Report" Accompanying the document Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions 2016 Communication on EU Enlargement Policy {COM(2016) 715 final}
3. European Commission (2017) CAP context indicators 2014-2020, 34. Natura 2000 areas, 2017 Update
4. МЗШВ (2013) Национален план за органско производство, МЗШВ, Скопје, пп. 44
5. МЗШВ (2014) Национална стратегија за земјоделството и руралниот развој за периодот 2014-2020 година, МЗШВ, Скопје, пп. 313
6. МЖСПП (2011) Национална стратегија за води, МЖСПП, Скопје, пп. 258
7. State Statistical Office of Republic of Macedonia (2017) Environmental Statistics: 2017, State Statistical Office, Skopje pp. 169
8. State Statistical Office of Republic of Macedonia (2017) Statistical Yearbook of the Republic of Macedonia 2017, State Statistical Office, Skopje pp. 652
9. State Statistical Office of Republic of Macedonia (2017) Macedonia in figures 2017, State Statistical Office, Skopje pp. 86
10. State Statistical Office of Republic of Macedonia (2017) Regions of the Republic of Macedonia 2017, State Statistical Office, Skopje pp. 131, 649.
11. Trajkova Fidanka, Mihajlov Lj., Zlatkovski V, (2009) Analysis and evaluation of Agri-Environmental Indicators of the Republic of Macedonia
12. Trajkova, F., & Koleva Gudeva, L. (2016). Current State of Agri-environmental Indicators of the Republic of Macedonia, In: 5th Congress of Ecologists of the Republic of Macedonia with international participation, 19-22 Oct 2016, Ohrid, Republic of Macedonia
13. Taylor, A., 2015. Environmental Governance in Croatia and Macedonia: institutional creation and evolution. Environment and Planning C: Government and Policy, 33(5), pp.969-985.
14. United Nations. Economic Commission for Europe. Committee on Environmental Policy, 2002. Environmental Performance Reviews: The Former Yugoslav Republic of Macedonia (Vol. 88). United Nations Publications.
15. World Bank (2015) Environmental Management Framework, Local and Regional Competitiveness Project in Tourism in the Republic of Macedonia, World bank, Skopje
16. Zalidis, George C., et al. "Selecting agri-environmental indicators to facilitate monitoring and assessment of EU agri-environmental measures effectiveness." Journal of environmental management 70.4 (2004): 315-321.
17. National Strategy for Sustainable Development in the Republic of Macedonia, Part II / II, 2008, 49p. http://www.moepp.gov.mk/wp-content/uploads/2014/12/NSSD-2-EN.pdf
18. National programme for Animal Genetic Resources Protection. MAFWE. 2011.
19. Program for Rural Development 2014-2020 (IPARD II) http://www.mzsv.gov.mk/files/%20II%20Програма.pdf
20. National Plan for Organic Agricultural Production 2013-2020. http://www.mzsv.gov.mk/files/Nacionalen%20Plan%20za%20Organsko%20Proizvodstvo_2013%20-%202020.pdf

Web sites used (accessed many times in the period 15 March – 15 April):

21. http://ec.europa.eu/eurostat/statistics-explained/index.php/Agri-environmental_indicator_-_commitments
22. http://ec.europa.eu/eurostat/web/products-datasets/-/ef_mptrainman
23. http://ec.europa.eu/eurostat/statistics-explained/index.php/Organic_farming_statistics
24. http://ec.europa.eu/eurostat/statistics-explained/index.php/Agri-environmental_indicator_-_mineral_fertiliser_consumption

25. http://ec.europa.eu/eurostat/statistics-explained/index.php/Agri-environmental_indicator_-_consumption_of_pesticides
26. http://ec.europa.eu/eurostat/statistics-explained/index.php/Agri-environmental_indicator_-_irrigation
27. http://ec.europa.eu/eurostat/statistics-explained/index.php/Agri-environmental_indicator_-_energy_use
28. http://ec.europa.eu/eurostat/statistics-explained/index.php/Archive:Agri-environmental_indicator_-_land_use_change
29. http://ec.europa.eu/eurostat/statistics-explained/index.php/Agri-environmental_indicator_-_livestock_patterns
30. http://ec.europa.eu/eurostat/statistics-explained/index.php/Agri-environmental_indicator_-_soil_cover
31. http://ec.europa.eu/eurostat/statistics-explained/index.php/Agri-environmental_indicator_-_tillage_practices
32. http://ec.europa.eu/eurostat/statistics-explained/index.php/Agri-environmental_indicator_-_manure_storage
33. http://ec.europa.eu/eurostat/statistics-explained/index.php/Agri-environmental_indicator_-_intensification_-_extensification
34. http://ec.europa.eu/eurostat/statistics-explained/index.php/Agri-environmental_indicator_-_specialisation
35. http://ec.europa.eu/eurostat/statistics-explained/index.php/Archive:Agri-environmental_indicator_-_risk_of_land_abandonment
36. http://ec.europa.eu/eurostat/statistics-explained/index.php?title=Agriculture_and_environment_-_pollution_risks
37. http://ec.europa.eu/eurostat/statistics-explained/index.php/Agri-environmental_indicator_-_risk_of_pollution_by_phosphorus
38. http://ec.europa.eu/eurostat/statistics-explained/index.php/Agri-environmental_indicator_-_pesticide_risk
39. http://ec.europa.eu/eurostat/statistics-explained/index.php/Agri-environmental_indicator_-_ammonia_emissions
40. http://ec.europa.eu/eurostat/statistics-explained/index.php/Agri-environmental_indicator_-_greenhouse_gas_emissions
41. http://ec.europa.eu/eurostat/statistics-explained/index.php/Archive:Agri-environmental_indicator_-_water_abstraction
42. http://ec.europa.eu/eurostat/statistics-explained/index.php/Agri-environmental_indicator_-_soil_erosion
43. http://ec.europa.eu/eurostat/statistics-explained/index.php/Agri-environmental_indicator_-_High_Nature_Value_farmland
44. http://ec.europa.eu/eurostat/statistics-explained/index.php/Archive:Agri-environmental_indicator_-_renewable_energy_production
45. http://ec.europa.eu/eurostat/statistics-explained/index.php/Biodiversity_statistics
46. http://ec.europa.eu/eurostat/statistics-explained/index.php/Archive:Agri-environmental_indicator_-_soil_quality
47. http://ec.europa.eu/eurostat/statistics-explained/index.php?title=Archive:Agri-environmental_indicator_-_nitrate_pollution_of_water
48. http://ec.europa.eu/eurostat/statistics-explained/index.php/Archive:Agri-environmental_indicator_-_pesticide_pollution_of_water
49. http://ec.europa.eu/eurostat/statistics-explained/index.php/Archive:Agri-environmental_indicator_-_landscape_state_and_diversity
50. http://ec.europa.eu/eurostat/data/database
51. http://www.fao.org/faostat/en/#data/EE
52. http://www.fao.org/faostat/en/#data/RFN
53. http://www.fao.org/faostat/en/#data/RP
54. http://www.fao.org/faostat/en/#data/RL
55. http://www.fao.org/faostat/en/#data/EE
56. http://www.fao.org/faostat/en/#data/EF
57. http://www.fao.org/faostat/en/#data/EL
58. http://www.fao.org/faostat/en/#data/LC
59. http://www.fao.org/faostat/en/#data/EK
60. http://www.fao.org/faostat/en/#data/EMN
61. http://www.fao.org/faostat/en/#data/EP
62. http://www.fao.org/faostat/en/#data/ES
63. http://www.fao.org/faostat/en/#data/EW
64. http://www.oecd.org/tad/sustainable-agriculture/agri-environmentalindicators.htm
65. http://www.meteo.gov.mk/
66. http://www.mzsv.gov.mk/
67. http://www.ipardpa.gov.mk/Root/mak/default_mak.asp
68. www.moepp.gov.mk
69. http://www.stat.gov.mk/
70. http://makstat.stat.gov.mk/PXWeb/pxweb/mk/MakStat/?rxid=46ee0f64-2992-4b45-a2d9-cb4e5f7ec5ef
71. https://ec.europa.eu/agriculture/cap-indicators/context/2017_en

B4.6 ANNEXES

Annex 1. Agricultural Land Use (2017)

No	Categories of land use	(ha)
	Total country area	**2,571,300**
1.	**Forests and forest land**	**1,304,300**
2.	**Agricultural area**	**1,267,000**
2.1.	**Cultivated land**	**516,000**
2.2.	**Arable land and gardens**	**417,000**
2.2.1.	*Cereals*	*168,000*
2.2.2.	*industrial crops*	*22,000*
2.2.3.	*vegetable crops*	*52,000*
2.2.4.	*fodder crops*	*39,000*
2.2.5.	*plant nurseries*	*1,000*
2.2.6.	*fallow and other arable land*	*135,000*
2.3.	**Orchards**	**16,000**
2.4.	**Vineyards**	**24,000**
2.5.	**Meadows**	**59,000**
2.6.	**Pastures**	**750,000**
2.7.	**Ponds, reed beds and fishponds**	**1,000**

Annex 2. Data on crop production

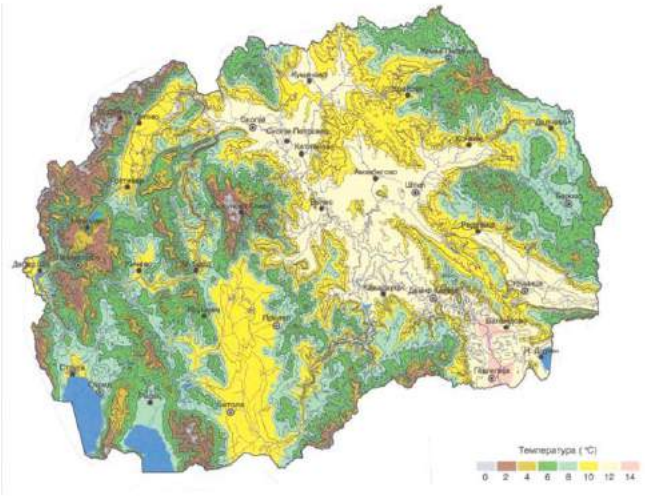
No.	Categories of land use	t
1	**Agricultural area**	**4,215,226**
1.1.	**Cultivated land**	**516,000**
1.2.	**Arable land and gardens**	**2,582,303**
1.2.1.	*Cereals*	*1,267,000*
1.2.2.	*industrial crops*	*31,799*
1.2.3.	*vegetable crops*	*945,487*
1.2.4.	*fodder crops*	*338,016*
1.3.	**Orchards**	**177,630**
1.4.	**Vineyards**	**333,319**
1.5.	**Meadows**	**112,596**
1.6.	**Pastures**	**493,376**

Annex 3 Data on Soils (major soil types and their distribution)

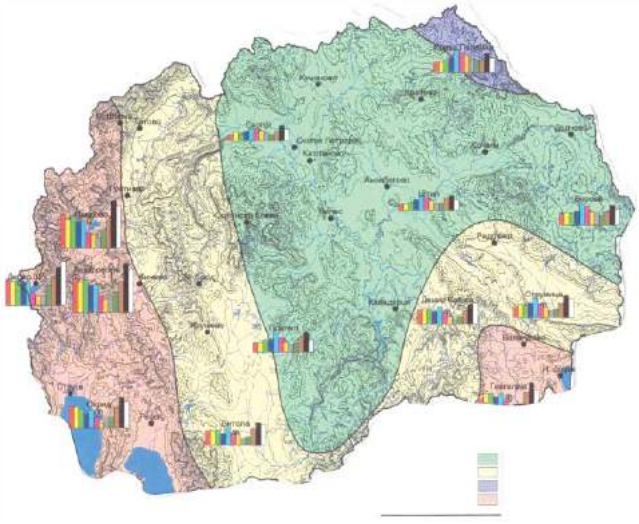
I. **Soils of mountainous relief**	ha
Leptosol	38,502
Rendzic leptosol	146,229
Cambisol	395,957
Complex of Cambisol, Leptosol and Regosol	127,721
II. Soils of rolling relief and lake terraces	ha
Regosol	102,310
Vertisol	60,537
Chromic Luvisol on Saprolite	96,030
Albic luvisol	13,942
Aric regosol	15,612
III. Soils on sloppy relief	ha
Fluvisol (colluvial soil)	159,132
IV. Soils on flat relief	ha
Fluvisol	109,645
Molic Fluvisol	18,295
Gleysol	934
Molic Vertic Gleysol	10,806

Annex 4 Map of main meteorological stations and temperature and rainfall spatial distribution maps

Main meteorological and climatological stations



Mean annual air temperature



Histograms and pluviometric regime (Ristevski P. 1986)

Annex 5 Data on irrigation (areas equipped for irrigation, actually irrigated areas, and structure by crop)

Republic of Macedonia (2013)	Area (ha)
Agricultural holdings able to be irrigated	110,718
Agricultural holdings actually irrigating	96,901
Total irrigated area*	73,649
Cereals	25,598
industrial crops	4,606
forage crops	7,225
leguminous crops	1,238
Vegetable	9,662
Orchards	11,687
Vineyards	9,299
Meadows	1,318
other areas	3,016

*areas under glasshouses, plastic tunnels and small gardens around farm houses are not taken into account

Annex 6. Agri-environmental indicators

AEI No.1. Agri-environmental commitment (Responses, Public Policy)

The indicator gives information on the agricultural area which is covered by commitments under the Rural Development Programmes for several (but not all) types of environmentally friendly farming practices. It shows the implementation of such practices at the end of the programming period 2007-2013 and the corresponding targets for the current programming period 2014-2020.

The main indicator is: Share (%) of area under agri-environmental commitments in Priority 4 on total utilized agricultural area (UAA).

The supporting indicators are:

- Area (ha) under agri-environmental-climate commitments (Measure 10.1)
- Area (ha) in conversion to organic farming (Measure 11.1)
- Area (ha) in maintenance of organic farming (Measure 11.2)

This indicator is not available in the country. However, the areas in conversion to organic farming and areas in maintenance as organic farming are available from AEI No.4, presented below. In order to complete the data on the indicator it is required to have area under agri-environmental commitment. This data is probably available from the Agency for Financial Support in Agriculture and Rural Development (Payment Agency).

AEI No. 2. Agricultural areas under Natura 2000 (Responses: Public policy)

The indicator is reported by the Ministry of Environment and Physical Planning (MoEPP) as an environmental indicator MK – NI 008: DESIGNATED AREAS. The indicator is presented annually. There are no Natura 2000 sites in the Republic of Macedonia. However, the MoEPP is currently implementing activities for further harmonization of the national legislation on nature protection with the EU legislation, as well as the Directives on Habitats and Birds. For this purpose, identification of habitats and species of European importance at the national level has been carried out and nine (9) areas have been identified as potential areas for Natura 2000 and two (2) areas with high natural potential. Three (3) of them are proposed as potential Special Protection Areas (SPA) under the Birds Directive, and six (6) areas as Sites of Community Importance (SCI) in accordance with the Habitats Directive:

- Dojran Lake (SPA),
- Ohrid Lake (SPA),
- Prespa Lake (SPA),
- Mavrovo (SCI),
- Jakupica (SCI),
- Ovche Pole (SCI),
- Cave Ubavica (SCI),
- Galicica (SCI),
- Pelister (SCI),
- Shar Planina - area with high natural potential,
- Mariovo and Kozuf - areas with high natural potential.

According to the Law on Nature Protection from 2004, the categorization of the designated area is introduced, aligned with the International Union for Conservation of Nature (IUCN), enabling inclusion of the national designated areas in the world network of designated areas. However, the areas proclaimed as protected areas based on this law have not been revised and MoEPP presents the protected areas under the old and new legislation together. In the period 1990-2017, the area of designated areas has grown, i.e. the share of designated areas in the overall area of Macedonia in 1990 was 7.14% and in 2017 it grew to 8.94%. Also, the number of designated areas marked an increase from 67 in 1990 to 86 areas in 2017, most of which – 67 areas – belong to natural monuments, followed

by nature parks with 12 areas. Thus, currently the designated area network comprises 86 areas, with total area of 229,900 ha or 8.94% of the territory of Macedonia. Most of it falls into the category of national parks with around 4.47%, followed by natural monuments with 3.07% and the multipurpose area Jasen with 0.97% of the national territory.

The following table presents the protected areas in Republic of Macedonia as reported in the Statistical Yearbook of Republic of Macedonia (2017).

Table B4.6.1. Protected areas in Republic of Macedonia as reported in the Statistical Yearbook of Republic of Macedonia (2017)

	Geographical coordinates	Surface area, ha	Year of proclamation
Strict Nature Reserve			
Ploche Litotelmi	42°09′N/22°01′E	75	2003
Lokvi-Golemo Konjare	41°20′N/22°26′E	50	2003
Tikvesh	41°37′N/20°42′E	10,650	1997
Ezerani	41°00′N/21°00′E	2,080	1996
National Parks			
Galichica	40°59′N/20°52′E	22,750	1958
Mavrovo	41°40′N/20°46′E	73,088	1949
Pelister	40°57′N/21°14′E	12,500	1948
Sites of Natural Significance			
Karshi Bavchi	42°04′N/22°11′E	10	1967
Skopje Forthress	42°00′N/21°26′E	0.67	1987
Zrze	-	100	1996
Zvegor	41°59′N/22°50′E	75	1986
Drenochka Ravine	41°03′N/20°47′E	26	1991
Gol chovek	41°10′N/22°25′E	5	1987
Gorna Slatina Cave	41°35′N/21°29′E	-	1953
Vevchani Springs	41°14′N/20°35′E	-	1999
Arboretum	41°58′N/21°33′E	3.3	1965
Dojransko Ezero Dojran Lake	41°12′N/22°44′E	2,730	1977
Kalnitsa	41°25′N/22°02′E	17	1960
Demir Kapija Ravine	41°24′N/22°16′E	200	1960
Konopishte	41°14′N/22°05′E	70	1990
Markovi Kuli	41°24′N/21°33′E	2,300	1965
Canyon Matka	41°57′N/21°18′E	5,443	1994
Ohrid Lake	41°03′N/20°47′E	23,000	1958
Prespa Lake	40°57′N/21°03′E	17,680	1977
Koleshino Waterfalls	41°22′N/22°48′E	-	1985
Orashac	42°03′N/21°48′E	2	-
Kale Banjichko	41°42′N/21°38′E	97	1983
Beleshnica River	41°40′N/21°17′E	4,180	2002
Platanus trunks, Star Dojran	-	-	1970
Kermes Oak, Gevgelija	-	-	1997
Slatino Spring	41°34′N/21°13′E	-	2004
Platanus, village of .Koleshino, Strumica	-	-	1986
Acer pseudoplatanus Ohrid	-	-	1967
Oak trunks, village of .Beli	41°56′N/22°23′E	-	1983
Macedonian Oak, village of .Trpejtsa, Ohrid	40°57′N/20°47′E	-	1967
, Demir Kapija	41°24′N/22°15′E	-	1963
Black mulberry, Lesnovo Monastery Manastir	42°01′N/22°14′E	-	1962
Monospitovo mud	-	250	-
Orlovo Brdo	41°32′N/22°08′E	-	2003
Konche	41°29′N/22°23′E	0.66	1986
Gladnitsa	41°11′N/22°11′E	52	1988
Duvalo (Kosel)	41°10′N/20°50′E	-	1979
Morodvis	41°51′N/22°25′E	0.5	1986
Platanus village of .Kalishte, Struga	41°08′N/21°39′E	-	1961
Murite	41°42′N/22°59′E	10	1987
Majdan	41°09′N/21°57′E	-	2002
Mlechnik Cave	41°16′N/20°39′E	1	1964
Ubavica Cave	41°42′N/20°55′E	2	1968
Rechitsa	41°59′N/20°58′E	-	1986
Smolare Waterfall	-	-	2002
Katlanovski predel Katlanovo Area	41°54′N/21°42′E	5,442	1991

Source: State Statistical Office of Republic of Macedonia (2017) Statistical Yearbook of the Republic of Macedonia 2017, State Statistical Office, Skopje pp. 652

According to the data presented in the above table, in the Republic of Macedonia there are 51 areas and sites under different levels of protection. The total protected area is 182,890.1 hectares. The protected area is about 7.1% of the total country territory. With respect to the proposed new areas that will be protected under Natura 2000, the share of protected areas in the total country territory will significantly increase. However, there is no data on the agricultural land that is covered by some type of protection, at present.

AEI No.3 - farmers' training and environmental farm advisory services (Responses: Technology and skills).

This indicator should provide data on farmers' education. The EUSTAT data on this indicator presents farmers and areas managed by them in age groups and by the level of their training: Basic training, Practical experience only and full agricultural training. Unfortunately, such data is not available in the country. Similar data is presented by MAKSTAT that can be used as a source for deriving this indicator. The data in MAKSTAT comes from the Farm Structure Survey and it presents the level of education of the persons engaged in agricultural production on individual farms and in agricultural enterprises.

Table B4.6.2. Number of persons according to their education engaged on individual farms and employed at agricultural enterprises by regions fo3 2013

	Without any education	Not completed primary	Primary	Secondary agriculture	Secondary other	Higher agriculture	Higher (Other)	BSc agriculture	BSc (other)	MSc & PhD agriculture	MSc & PhD (other)	Total
RM	**13,779**	**38,881**	**153,205**	**14,681**	**180,906**	**1,151**	**9,033**	**2,538**	**22,718**	**637**	**624**	**438,153**
Vardar	1,099	4,034	14,815	1,152	24,903	109	1,122	420	2,775	29	20	50,478
Eastern	1,377	4,143	18,377	718	26,441	174	1,412	252	4,306	149	78	57,427
Southwest	843	3,457	17,973	490	19,748	40	1,237	519	3,739	147	99	48,292
Southeast	4,324	8,283	22,130	3,018	25,316	255	881	313	2,617	52	39	67,228
Pelagonija	1,040	7,686	25,876	4,382	26,885	314	1,534	485	3,875	138	137	72,352
Polog	1,688	3,229	21,643	2,167	22,686	174	1,217	216	2,541	73	119	55,753
Northeast	2,143	5,506	17,392	2,299	15,852	82	1,209	230	1,798	36	116	46,663
Skopje	1,265	2,542	14,998	455	19,075	5	423	104	1,066	12	13	39,958
Share in % for RM	**3.1**	**8.9**	**35.0**	**3.4**	**41.3**	**0.3**	**2.1**	**0.6**	**5.2**	**0.1**	**0.1**	**100**

Source: MAKSTAT, Farm Structure Survey, 2013

According the data presented in the above table, the most common level of education among the people engaged in agriculture in the country is secondary education (12 years of total education) with 44.7%, but only 3.4% have with completed vocational education in agriculture. Considering the percent of workers with education in agriculture, 3.4% have completed secondary education in agriculture, 0.3% have higher education in Agriculture, 0.6% with a graduate university degree in agriculture and 0.1% with M.Sc. or Ph.D. in agriculture. The total ratio of persons with some education in agriculture is only 4.4%, or a total of 19,007 workers. The highest share among persons with some education in agriculture is secondary education with 77.2%. If we consider workers with a graduate university degree alone, their share is only 13% and together with those with MSc and PhD degrees the share of university educated people is just about 16.7% of the people with some education in agriculture. Their total number is 3,175 and they should give expertise on 1,267 million ha of agricultural area or 516 thousand hectares of cultivated land. The situation with the level of education in agriculture among the workers in agricultural enterprises and individual farms is very indicative and shows that 95.6% of them are without any education in agriculture. It is probably one of the most important reasons ahy the agriculture in the country is characterized among the lowest in Europe and there are huge problems associated with production, productivity and environment in the agricultural

sector. The level of education has to increase and to introduce education in agriculture as one of the most important measures in the agricultural development documents.

AEI No.4. Area under Organic Farming (Responses: Market signals and attitudes)

The area under organic Farming is presented as MoEPP Environmental Indicator MK-NI 026: Area under organic farming. The indicator is calculated as share (percentage) of area under organic farming (sum of existing areas under organic farming and areas in a process of conversion for organic farming) in the total area or total cultivable land area. The indicator is updated annually. Data are available for the period 2005-2016. In the period under review, the production areas and areas under organic production had a variable trend of growth and decline. Production areas with organic production have a positive trend with an increase of 7.8 times, from 266 hectares in 2005 to 2,073.37 hectares in 2016. The areas under conversion have the largest increase, by 17 times in the period from 2005 to 2011, and the largest decline in the period from 2011 to 2014. A positive trend in the increase of the areas under conversion occurred again in 2015 and 2016, and thus compared to 2014 there is a 28 % growth noted in 2016.The target to achieve 4% of cultivable land under organic farming in 2020 was very optimistic and this share is still minor with only 0.26%.

The next table presents the organic farming indicator MK-NI 026 distributed by MoEPP.

Table B4.6.3. Areas under organic agricultural production as % of the cultivable area

Years	Production area with organic production + area under conversion (ha)	As % of the cultivable area	As % of the total agricultural area	Target to be achieved in 2011	Target to be achieved to 2020
2005	593	0.109	0.048	2	
2006	509	0.095	0.042	2	
2007	714	0.136	0.066	2	
2008	1,029	0.198	0.097	2	
2009	1,372	0.268	0.135	2	
2010	5,225	1.027	0.466	2	
2011	6,581	1.288	0.588	2	
2012	4,663	0.914	0.368		4
2013	3,168	0.622	0.251		4
2014	2,359	0.462	0.187		4
2015	2,888	0.563	0.228		4
2016	3,240	0.630	0.260		4

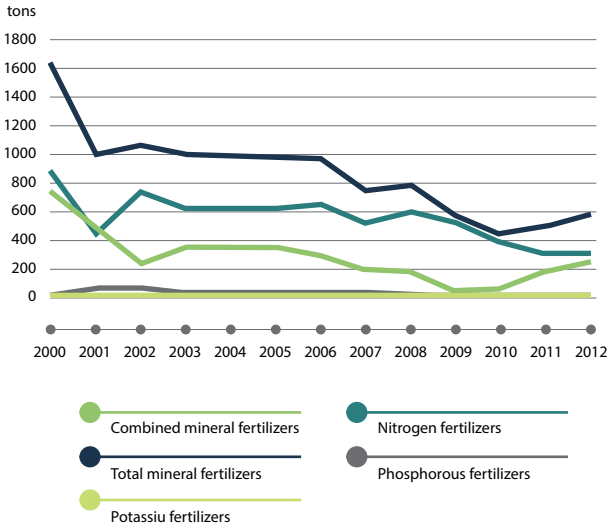
Source: MoEPP

The AEI No. 5. Mineral Fertilizer Consumption (Driving forces: Input Use)

The mineral fertilizer consumption is presented as MoEPP Environmental Indicator MK-NI 08: Mineral fertilizer consumption. This indicator shows the consumption of mineral fertilizers in the Republic of Macedonia, by presenting total amounts in tons of consumed substances, and their application per hectare cultivated land area. The indicator should be presented annually, but data are available for the period 2000-2012. In the observed period, the consumption of mineral fertilizers in agriculture dropped from 16,160 tons to 5,809 tons of fertilizers. The quantity of mineral fertilizers used on cultivated land area (of agricultural companies and cooperatives) expressed in kilograms per hectare, during the observed period showed periodical trends of increase and decrease. In 2004, the consumption of mineral fertilizers was the lowest with 77.74 kg/ha, while in 2006 with it was the highest147.24 kg/ha.

The data in tabular form (excel file) is not accessible on the web site of MoEPP (http://www.moepp.gov.mk/?page_id=2998&lang=en), so we present graphic form of this indicator.

Figure B4.6.1. Consumption of mineral fertilizers



Based on the interview with representative from MoEPP this indicator will not be updated, because they faced with the problem of non-existing source of data for further elaboration of this indicator.

The AEI No.6 Consumption of pesticides (Driving forces: Input Use)

The consumption of pesticides is presented as MoEPP Environmental Indicator MK-NI 09: Consumption of pesticides. This indicator shows the quantities of pesticides used for crop protection, such as fungicides, herbicides, insecticides and a category of total including, apart from the mentioned ones, other plant protection products. Find below the total quantities of used substances in tons, the share of different groups of pesticides, as well as their application per hectare of utilized agricultural area (kg/ha). The indicator should be presented annually, but data are available for period 2000-2012. In the period 2000 to 2006, the use of pesticides in agriculture showed variations of reduction and increase in the highest value recorded is in 2006 with 336 t. In 2012 the use of pesticides dropped to only 95tons. The share of the separate substances in 2012 is: fungicides were the most used with 68.42%, then insecticides with 21% and herbicides with 10.52%.

The data presented by MoEPP are shown in following tables.

Table B4.6.4. Consumed plant protection products in tons *

Year	Total**	Fungicides	Herbicides	Insecticides
2000	312	192	51	57
2001	333	200	59	66
2002	245	113	73	54
2003	222	116	52	42
2004	273	179	32	51
2005	156	99	33	17
2006	336	291	16	20
2007	122	80	17	22
2008	89	68	7	16
2009	104	60	11	27
2010	121	77	9	27
2011	112	79	9	23
2012	95	65	10	20

*Data on consumed plant protection products refer to quantities consumed by agricultural companies and agricultural cooperatives

**The category total, apart from the separately mentioned fungicides, herbicides and insecticides includes other plant protection products as well.

Table B4.6.5. Total pesticides consumed per total utilized agricultural area (kg/ha) - agricultural companies and agricultural cooperatives

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
2.30	2.60	2.09	1.96	2.70	1.89	5.08	2.05	1.66	2.15	2.81	2.46	2.09

Based on the interview with the representative of MoEPP, this indicator will not be updated, because they faced the problem of non-existing source of data for further elaboration of this indicator.

AEI No. 7. Irrigation (Driving forces: Input Use)

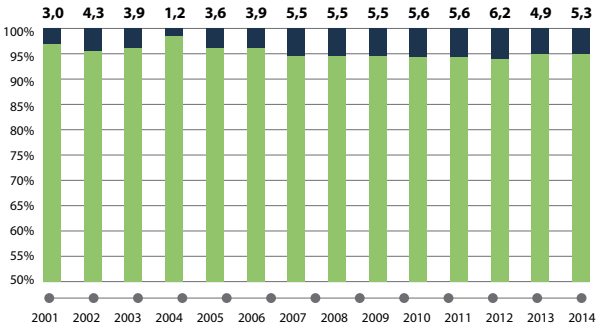
The indicator is available from the MoEPP Environmental indicators as indicator MK-NI 040: Irrigated land. The indicator tracks the trend of irrigated areas in a given time interval on the entire territory of the Republic of Macedonia, as well as the total quantities of consumed water on the entire territory and the proportion of irrigated land compared to the total cultivable land area. Presented data are: Area of irrigated land (expressed in hectares), quantity of water used for irrigation expressed in cubic meters consumed at an annual level, % of irrigated land in the total cultivable land area. The indicator should be updated annually and the data presented address the period 2001-2014.

However, this indicator presents only data for the irrigated land from state owned irrigation schemes. Farmers have developed significant area under irrigation and the data from Farm Structure Survey (FSS) conducted in 2013 shows a much higher percentage of actually irrigated areas (73649 ha compared to the maximum of about 30 000 ha reported by MoEPP). Moreover, the data from the Agricultural Census in 2007 show about 80 thousand ha of irrigated areas, compared with less than 30 thousand ha reported by MoEPP. The data on FSS is available from the State Statistical Office. Therefore this indicator needs serious reconsideration and further elaboration. Using data from FSS will provide temporary solution for 10 years.

The data presented by MoEPP is in graphic form, so we are presenting 2 graphs here, showing the irrigated area and share of irrigated area in total cultivable area.

Figure B4.6.2. Irrigated area for the period 2001-2014 in Republic of Macedonia

Figure B4.6.3. The share of irrigated area to total cultivated land area



AEI No. 8. Energy use (Driving forces: Input Use)

Final energy consumption is an indicator provided by MoEPP as the

.Environmental indicator MK-NI 027. Among other things, this indicator presents the total energy consumption in the agricultural sector and share of this sector in total energy consumption in the country. The indicator presents the energy supplied to meet the demand of the final consumers and is calculated as the sum of final energy consumption from all sectors, namely industry, transport, agriculture, households, and other sectors.

The indicator "Final energy consumption by sector" is expressed in thousand tons of oil equivalents (ktoe) and in percentage as a ratio between final energy consumption by each sector and final energy consumption by all sectors.

Table B4.6.6. Final energy consumption by Agriculture

Year	*Agriculture, forestry and fishery*	*Share of Agriculture, forestry and fishery in total*
2006	30.80 *ktoe*	1.80%
2007	24.65 *ktoe*	1.30%
2008	25.49 *ktoe*	1.40%
2009	22.78 *ktoe*	1.40%
2010	23.58 *ktoe*	1.30%
2011	24.93 *ktoe*	1.30%
2012	24.43 *ktoe*	1.30%
2013	22.56 *ktoe*	1.20%
2014	21.73 *ktoe*	1.20%
2015	22.31 *ktoe*	1.20%
2016	21.95 *ktoe*	1.20%

The share of energy use in agricultural sector is relatively stable and fluctuates from 1.8% in 2006 to 1.2% in the period 2013-2016. Also the energy consumption by agricultural sector is relatively stable and is about 22 ktoe in the last several years.

AEI No. 9. Land Use Change (Driving forces: Land Use)

The land use indicator is presented as MK-NI 014 indicator by MoEPP environmental indicators. Changes in, and the current status of agriculture, forests and other semi-natural land converted to urban and other artificial land. It includes areas sealed by construction and urban infrastructure as well as urban green areas and sport and leisure facilities. The main drivers of land conversion are grouped in processes resulting in the extension of: i) housing, services and recreation, ii) industrial and commercial sites, iii) transport networks & infrastructures and iv) mines, quarries and waste dumpsites.

Units of measurement of changes and current status recording and mapping are hectares. Results are presented as:

- Current status of land cover based on the nomenclature adopted at a European level, at five-year intervals;
- Changes in land cover, at five-year intervals, presented in % of the total area of the country and % of the various land cover types.

The indicator is based on the CORINE Land Cover (CLC) methodology, based on which the largest portion of the land in the Republic of Macedonia

is under forest and semi-natural areas, covering 1,564,488 ha or 60.5% of the total area. The category of agricultural land area covers 927,976 ha or 36.1% of the total area, the category of water bodies covers 55,856 ha or 2.2% of the total area, the category of artificial areas covers 43,000 ha or 1.7% of the total area, and the smallest area of 2,000 ha or 0.1% of the total area is wetlands.

Out of 44 possible classes under the CLC Nomenclature 31 classes are recorded in Macedonia. The biggest overall changes in the period 2006 to 2012 were recorded in the growth of artificial land area and reduction of agricultural land area and forest and semi-natural areas. The land use changes between 2006 and 2012 cover an area of about 26,873 ha which is around 1.04% of the total territory of the country. The overall number of changes is smaller compared to the period 2000-2006 amounting to 1.9% or 50,657 ha. The biggest change occurs in the area of class 311 (broad-leaved forest) into class 324 (transitional woodland with shrubs) and class 323 (Sclerophyllous vegetation) covering total area of 18,171 ha or 44.57% of the total changes. This change is most probably due to wood cut and forest fires.

Land use changes on the account of expansion of residential areas and construction sites is the main reason for the increase in urban and other artificial land development cover. In the period 2006-2012, the greatest change occurred in the class of agricultural land in favor of the growth of artificial land area amounting to 67% of the total change. The greatest contribution of 30.1% occurred in the land class of non-irrigated arable land followed by the class of pastures with 16.3%.

The indicator on land use and land use changes presented by MoEPP is shown in the following tables.

Table B4.6.7. CLC level 1 land use changes (total) in ha

Class	2000 – 2006			2006 – 2012		
	reduction	Increase	total changes	reduction	Increase	Total changes
Artificial areas	910	3,539	2,629	649	1,178	529
Agricultural areas	4,907	1,249	-3,658	3,765	528	-3,237
Forests and semi natural areas	4,744	1,262	-3,482	22,292	367	-21,925
Wetlands	60	84	24	54	73	19
Water bodies	124	4,410	4,286	58	192	134

However, the Land use changes can be calculated by the data presented for Agricultural Land use in the Statistical Yearbook. This data is presented in next table.

AEI No. 10.1. Cropping patterns (Driving forces: Land Use)

This indicator represents the he shares of the utilized agricultural area (UAA) occupied by the main agricultural land uses (arable land, permanent grassland and land under permanent crops). The land use in agriculture is reported annually in the Statistical Yearbook and the data presented there can be used for calculating the indicator. The data are presented in the following table.

Table B4.6.8. Agricultural Area by category of Use in '000 ha

	Agricultural area	Cultivated land					Pastures	Ponds, reed beds and fishponds
		total	arable land and gardens	Orchards	Vineyards	meadows		
2012	1261	509	413	15	22	59	751	1
2013	1261	509	413	15	22	59	751	1
2014	1263	511	413	15	23	60	751	1
2015	1264	513	415	16	23	59	750	1
2016	1267	516	417	16	24	59	750	1

Source: Statistical Yearbook of the Republic of Macedonia 2017

This data can also be used to calculate the annual basis of agricultural land use changes.

AEI No. 10.2. Livestock Patterns (Driving forces: Land Use)

The Livestock Patterns Indicator is defined as a trend in the share of major livestock species (cattle, sheep, pigs and poultry) and density of livestock units (LSU) on agricultural land. The data on livestock number is available in the country from several sources: data published in the Statistical Yearbooks, data from the Farm Structure Survey (for 2013) and data from the Livestock Register operated by MAFWE. The following table presents the data published in the Statistical yearbook of Republic of Macedonia, 2017.

Table B4.6.9. Number of livestock, poultry and beehives in the Republic of Macedonia, period 2012-2016

Species	Category	2012	2013	2014	2015	2016
Cattle	Total	251,240	238,333	241,607	253,442	254,768
	cows and heifers	161,012	154,487	155,432	156,699	160,603
Pigs	Total	176,920	167,492	165,054	195,443	202,758
	sows and gilts	23,534	23,581	20,990	18,696	25,478
Sheep	Total	732,338	731,828	740,457	733,510	723,295
	ewes for breeding	520,767	530,760	531,160	580,840	555,932
Horses		21,676	20,682	19,371	18,784	19,263
Poultry		1,776,297	2,201,550	1,939,879	1,761,145	1,865,769
Beehives		52,897	68,294	73,869	73,960	81,476

Source: Statistical Yearbook of Republic of Macedonia, 2017

The data presented in table above and the data on agricultural land use can be used to calculate the indicator of Livestock Pattern according to the EU requirements.

AEI No. 11.1. Soil Cover (Driving forces: Farm Management)

Soil cover is periods of the year when soil is covered by crops, including catch/cover crops, and it is important for preventing nutrient and pesticide runoff. In addition, soil cover may improve the soil fertility and reduce the risk of soil erosion. The main indicator presents the share of the year when the arable area is covered by plants or plant residues. Due to the lack of input data this indicator cannot be calculated. However it is plausible to derive some of the supporting indicators: i) Share of arable area covered by winter crops, i.e., winter cereals and winter rape, or grass, ii) Share of arable area covered by annual green crops and iii) Share of arable area covered with maize. The share of the area covered by winter crops (with some errors due to the small share of spring wheat, spring barley and spring rapeseed) can be calculated. Furthermore, two other supporting indicators are plausible to be calculated, particularly the share of arable area covered by maize. The data for this is available from the MAKSTAT database, FSS 2013 and from the annual publication Field Crops, orchards and Vineyards, published by the state statistical office. This publication presents systematic data on the used land by category, areas and production of cereals, industrial crops, vegetables, fodder crops, number of fruit trees and grape vines and production of fruit and grapes per particular year, as well as data for a series of several years.

Additional efforts are required to derive some of the indicators required for Soil Cover.

AEI No. 11.2. Tillage Practices (Driving forces: Farm Management)

The tillage practices are an important indicator which is composed of the share of arable areas under conventional, conservation and zero tillage. Unfortunately, we were not able to find any data on this indicator using the national sources or external sources. The major sources in EU for this indicator are the Farm Structure Survey (FSS), the Land Use and Coverage Area frame Survey (LUCAS) and the Survey on Agricultural Production Methods (SAPM). Macedonia is not presented in these datasets, although some of the candidate countries are presented. We also checked the national sources on agricultural machinery and the data do not present machines for drilling (required for zero tillage, nor other

machines required for conservation and zero tillage). Probably at present 100% of the tillage practice is conventional, because we did not find any data on other practices, but this is still a very rough assumption.

AEI No. 11.3. Manure Storage (Driving forces: Farm Management)

This indicator relates to the management of manure. It assesses trends in manure storage facilities on agricultural holdings. The indicator is primarily of relevance for the agri-environmental indicator AEI 18 - Ammonia emissions and nutrient leaching losses from animal manures. It is measured by the two main indicators: i) Share of holdings with livestock which have manure storage facilities in total holdings with livestock and ii) Share of holdings with different manure storage facilities.

We were not able to find data on this indicator from national as well as external sources. The FAOSTAT presents some data on manure management in the country but it is calculated data and it is not clear where the data for the calculation came from. However, even FAO data was not helpful in assessing the main indicators as proposed by EU AEI.

AEI No. 12. Intensification/extensification (Driving forces: Trends)

Intensification is used to describe an increase in farm input intensity. It is a complex concept involving monitoring the trend over time of inputs for which consistent data are not systematically available. Therefore, EU is using the main indicator Trend in the shares of UAA managed by low, medium and high intensity farms. This indicator provides information on the trend in terms of utilized agricultural area UAA managed by farms with different input use. At aggregated level, a decline in the share of area managed by high intensity farms together with an increase (or no change) in the share of area managed by low intensity farms is interpreted as extensification, as contrary to intensification. In a given region or Member State, a rise in the share of UAA managed by low intensity farms may very well happen together with an increase in the UAA managed by high intensity farms. This is interpreted as "no clear trend". There is also "no clear trend" when the shares of UAA in the three intensity classes remain fairly stable, or vary too much during the period studied to identify a trend.

A major data source for this indicator in the EU is the Farm Accountancy Data Network (FADN). We were not able to access FADN data for Macedonia, although we were informed that such data exist.

AEI No. 13. Specialization (Driving forces: Trends)

Agricultural holdings can be described by their activities (cattle breeding, pig breeding, cultivating arable crops, horticulture, etc.). Some farms earn income from diverse activities, while others specialize. Farm specialization describes the trend towards a single dominant activity in farm income: an agricultural holding is said to be specialized when a particular activity provides at least two thirds of the production or the business size of an agricultural holding.

Farm specialization is measured by using the main indicator: Share of the utilized agricultural area (UAA) managed by specialized farming, i.e., a farm where a single type of production or service dominates the farm income. An agricultural holding is said to be specialized when a particular activity provides at least two thirds of the production or the business size of an agricultural holding.

We were not able to find any data from the national sources, but probably FADN data can be used for this purpose, combined with FSS.

AEI No. 14. Risk of Land Abandonment (Driving forces: Trends)

Farmland abandonment is a cessation of agricultural activities on a given surface of land which leads to undesirable changes in biodiversity and ecosystem services. The risk of farmland abandonment is estimated through statistical analysis of key drivers combined into a composite index indicator.

The required driver data are:

- Weak land market
- Low farm income
- Lack of investment in farms
- High share of farm holders over the age of 65 years
- High share of farm holders with low qualification
- Low farm size
- Remoteness and low population density
- Low share of farms committed to specific schemes linked to continue farming

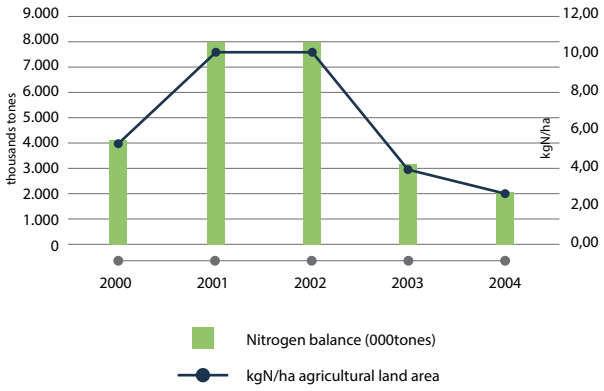
No institution in the country provides data on the main indicators or on the drivers assessing the indicator. Additional effort is required to assess the indicator, develop the methodology and start to present this data.

AEI No. 15. Gross Nitrogen Balance (Pressures and Risks: Pollution)

The MoEPP presents this indicator as environmental indicator MK-NI025 (Gross nutrient balance). They describe the indicator as: The nutrient balance or nitrogen balance establishes the link between the nutrients used in agriculture and the changes in the quality of the environment, in order to achieve sustainable use of soil nutrients in terms of their input and output. The indicator estimates the potential surplus of nitrogen in the agricultural land. This is done by calculating the balance between nitrogen added per hectare of agricultural land. The indicator accounts for all inputs to and outputs from the farm. The inputs consist of the amount of nitrogen applied via mineral fertilizers and animal manure as well as nitrogen fixation by legumes, deposition from the air, and some other minor sources. Nitrogen output is contained in the harvested crops or grass and crops consumed by livestock. The uncontrolled release of nitrogen to the atmosphere, e.g. as N2O from agriculture is difficult to estimate and therefore not taken into account.

MoEPP presents this indicator for the period 2000-2004 only in graphic form. The data is presented in the following graph.

Figure B4.6.4. Nitrogen balance for the Republic of Macedonia in '000 tones and kg/ha period 2000-2004



Based on the interview with the representatives from MoEPP, this indicator will not be updated, because they facethe problem of non-existing source of data for further elaboration of this indicator. They will appreciate help in any further elaboration of this indicator from any scientific institution in the country.

AEI No. 16. Risk of Pollution by Phosphorus (Pressures and Risks: Pollution)

This indicator provides an indication of the potential surplus of phosphorus (P) on agricultural land (kg P per ha per year) and is measured by the main indicator: Potential surplus of phosphorus on agricultural land (kg P per ha per year). To calculate this indicator, a sub-indicator needs to be developed. Currently only limited data are available in EU. The methodology of the phosphorus balance is described in Eurostat/OECD Phosphorus Balance Handbook. The phosphorus balance lists all inputs and outputs into and out of the soil and calculates the gross phosphorus surplus as the difference between total inputs and total outputs. The gross phosphorus surplus per ha is derived by dividing the total gross phosphorus surplus by the reference area.

No data is available in the country and it is necessary to analyze the methodology proposed by EU/OECD and to carefully asses what is available and whether this indicator can be delivered in near future.

AEI No. 17. Pesticide Risk (Pressures and Risks: Pollution)

The pesticide risk indicator should be based on an index of risks of damage from pesticide toxicity and exposure. The conceptual and, where appropriate, modeling framework underpinning this indicator still needs however, to be developed in the EU. Therefore, this indicator is labeled as "No data" on EUROSTAT.

Clearly, we have the same situation in the country and this indicator cannot be presented in near future.

AEI No. 18. Ammonia Emissions (Pressures and Risks: Pollution)

This indicator shows the annual atmospheric emissions of ammonia (NH_3) and the contribution made by agriculture to total ammonia emission. Under the agreed international guidelines for estimating emissions of greenhouse gases, countries are encouraged to use country-specific methods wherever possible as this leads to improved emission estimates. The different methods used by countries can sometimes mean that data are not fully comparable between countries. In Macedonia this indicator is reported by MoEPP as Environmental indicator MK - NI 050. The MoEPP states that agriculture is the key sector for ammonia emissions. Therefore, they present emissions from agricultural sector by subsectors, where the main subsectors giving rise to the highest ammonia emissions, such as breeding of poultry, sheep, pigs and cattle are presented separately, while 'other' summarizes the emissions originating from the breeding of horses, goats and other poultry, as well as the emissions from other sectors.

The emissions from livestock breeding originate from the urea decomposition in the feces of animals and decomposition of urea in poultry. Ammonia emissions depend on the species of animals, their age, manner of breeding, and waste management and disposal. The main reason for emission reduction is the reduction in the number of bred animals, especially manifested among poultry, sheep, goats and horses owing to the decline in the interest to deal with livestock breeding activity and the increased internal village to town migration of the population.

The EUROSTAT presents this indicator trough the main indicator: Ammonia Emissions from Agriculture (kilotons per year) and the reporting indicator: Share of Agriculture in Total Ammonia emissions (%). Both indicators can be derived from MoEPP data for the period 1990-2014.

Table B4.6.10. Total NH3 emissions in the period 2005-2014 (kt) and trend 1990-2014 by sectors

Sector	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Trend 1990-2014
Energy Industries	0	0	0	0	0	0	0	0	0	0	n/a
Manufacturing Industries and Construction	0.000080	0.000085	0.000098	0.000104	0.000147	0.000190	0.000256	0.000323	0.000428	0.000218	-76%
Transport	0.028458	0.028243	0.031920	0.033978	0.035497	0.036118	0.033168	0.028887	0.031126	0.030378	59348%
Other Sectors	1.024128	1.098255	0.929668	1.143506	1.277558	1.313147	1.256695	1.169472	1.216683	1.058298	-4%
Other	0	0	0	0	0	0	0	0	0	0	n/a
Fugitive emissions from fuels	0.001041	0.001174	0.001155	0.001168	0.001070	0.000938	0.000776	0.000286	0.000066	0.000008	-99%
Industrial processes	0	0	0	0	0	0	0	0	0	0	-100%
Agriculture	9.932238	8.931299	9.783473	9.706481	8.775666	8.888080	9.252957	8.505978	8.521779	8.487334	-39%
Waste	0	0	0	0	0	0	0	0	0	0	n/a
Total	**10.985945**	**10.059056**	**10.746314**	**10.885237**	**10.089937**	**10.238473**	**10.543852**	**9.704946**	**9.770081**	**9.576236**	**-36%**

Source: MoEPP Environment indicators MK - NI 050 - Emission of the main polluting substances – emission of ammonia (NH3)

Table B4.6.11.
Amount of ammonia emissions from agriculture in Macedonia by subsectors (2003-1014) in kt

Sector	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Total without sinks	11.70	11.03	10.99	10.06	10.75	10.89	10.09	10.24	10.54	9.70	9.77	9.58
Other	1.17	1.17	1.05	1.13	0.96	1.18	1.31	1.35	1.29	1.20	1.25	1.09
Dairy cattle	4.00	3.45	3.80	2.70	3.47	3.59	3.15	3.42	3.93	3.54	3.69	3.64
Non-dairy cattle	1.31	1.26	1.23	1.24	1.22	1.18	1.31	1.30	1.18	1.18	1.01	1.05
Sheep	1.74	2.01	1.74	1.75	1.14	1.14	1.06	1.09	1.07	1.03	1.02	1.04
Swine	1.52	1.30	1.29	1.39	2.12	1.99	1.56	1.54	1.55	1.41	1.37	1.32
Goats	0.22	0.21	0.20	0.19	0.18	0.19	0.13	0.11	0.10	0.09	0.11	0.11
Horses	0.63	0.60	0.59	0.60	0.46	0.46	0.44	0.39	0.38	0.32	0.31	0.29
Laying Hens	0.99	0.92	0.97	0.93	1.04	1.04	0.98	0.94	0.89	0.82	0.78	0.90
Broilers	0.01	0.01	0.01	0.01	0.02	0.00	0.01	0.01	0.00	0.01	0.12	0.01
Turkeys	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.00	0.01	0.01	0.01	0.01
Other Poultry	0.03	0.03	0.03	0.03	0.04	0.02	0.02	0.01	0.07	0.02	0.01	0.01
Inorganic N-fertilizers	0.07	0.07	0.07	0.08	0.07	0.08	0.10	0.09	0.08	0.09	0.10	0.11

Source: MoEPP Environment indicators MK - NI 050 - Emission of the main polluting substances – emission of ammonia (NH3)

AEI No. 19. Agri-environmental Indicator - Greenhouse Gas Emissions (Pressures and Risks: Pollution)

This indicator is reported by MoEPP as Environmental indicator MK - NI 010 Greenhouse gas emissions. The indicator shows the quantities of greenhouse gas emissions and sinks into/from the atmosphere on national level. The emissions are presented by greenhouse gas type. The indicator provides information on the emissions in the following sectors: energy, industrial processes and products use, agriculture, forestry and other land use (AFOLU) and waste.

In general, the greatest share in the total emissions (excluding the removals from Forestry and other land use sector) comes from the emissions from the Energy Sector, accounting for 65.2% in 2014, followed by the Waste Sector with 19% share, Agriculture (only emissions from manure management and enteric fermentation) with 8.2% and the IPPU sector with 7.6%.

Considering the net emission (where the removals from Forestry and other land use sector are accounted for), again the Energy Sector has the greatest contribution to the emissions, with of 88% in 2014, followed by the Waste Sector with a share of 26%, followed by the emissions from Agriculture (only from manure management and enteric fermentation) with a share of 11%.

The GHG emissions from the AFOLU sector include emissions associated with Livestock, Forestry and Land Use. The activities related to Livestock production emit CH4 and N2O. The CH4 emission is caused by enteric fermentation during herbal digestion in ruminants but also N2O emission occurs during the metabolic processes. Additionally, N2O is emitted as a result of manure storage and processing (management). The emissions due to livestock activity in 2014 were 673.7 kt CO2-eq. Emissions from land use were evaluated throughout the forest land, cropland, grassland, wetland, settlements and other land. The Forestry Sector is the major contributor of GHG sinks in Macedonia, with the exception of several years (2000, 2007, 2008 and 2012) when the amounts of forest fires (burned areas) were significantly above the annual average. The average GHG sink in this sector for 2014 is estimated at 3,471.2 kt CO2-eq. The Land Category, despite the CO2 emissions and/or sinks, is characterized with non-CO2 emissions, particularly as a result of biomass burning, N2O emissions from managed soils, including indirect N2O emissions from additions of N to land due to deposition and leaching, and emissions of CO2 following additions of liming materials and urea-containing fertilizer. These emissions were estimated to be 328.2 kt CO2-eq in 2014.

Their source is the Second Biennial Update Report (SBUR) on Climate Change to UNFCCC (National Inventory Report (NIR) – RCESD – MASA), MoEPP, UNDP, 2017, so the indicator will be updated every 2 years. Data is presented for the period 1990 to 2014. Here we present shorter time series due to the space limitations, but the indicator can be accessed at http://www.moepp.gov.mk/?page_id=3700&lang=en. The data are presented on the following table. The units are Kilotons CO2-equivalent.

Table B4.6.12. Emission of GHG in Republic of Macedonia period 2000-2014 in CO2-eq. [kt]

CO2-eq. [kt]	2000 - base-line	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Energy	9984	9935	9085	8888	8801	9353	8457	8926	9027	8651	8561	9559	9451	8419	7958
Industrial processes and prod-ucts use	828	686	619	845	923	950	1065	961	1132	746	901	938	776	923	922
AFOLU - Livestock	1109	1099	1061	1072	1111	1088	1108	1061	1072	999	1041	1076	1019	989	1002
FOLU	10418	-1621	-1579	-3758	-2485	-2212	-2110	6756	1351	-2851	-868	-237	1915	-1837	-3181
Waste	1523	1563	1563	1551	1542	1601	1628	1685	1766	1867	1981	2055	2147	2226	2323
Total (net emissions)	23862	11662	10748	8597	9893	10780	10148	19389	14348	9412	11616	13391	15308	10721	9023
Total (excluding FOLU)	13444	13283	12328	12355	12378	12992	12257	12633	12997	12263	12484	13628	13393	12558	12204

CO2-eq. [%] (net emissions)	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Energy	42%	85%	85%	103%	89%	87%	83%	46%	63%	92%	74%	71%	62%	79%	88%
Industrial processes and prod-ucts use	3%	6%	6%	10%	9%	9%	10%	5%	8%	8%	8%	7%	5%	9%	10%
AFOLU - Livestock	5%	9%	10%	12%	11%	10%	11%	5%	7%	11%	9%	8%	7%	9%	11%
FOLU	44%	-14%	-15%	-44%	-25%	-21%	-21%	35%	9%	-30%	-7%	-2%	13%	-17%	-35%
Waste	6%	13%	15%	18%	16%	15%	16%	9%	12%	20%	17%	15%	14%	21%	26%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Index 2000=100 (net emissions)

	2000 - base-line	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
CO2	100	40.9	37.1	26.6	32.3	36.5	32.7	77.7	51.9	28.9	38.6	47.3	56.4	34.0	25.3
CH4	100	101.0	99.8	99.2	99.0	99.5	101.5	101.1	105.8	108.2	113.0	118.9	119.8	121.0	125.3
N2O	100	99.5	93.7	97.9	104.8	108.0	106.6	109.7	111.8	103.4	107.7	108.0	103.6	101.2	101.8
HFC	100	215.9	146.6	176.9	299.2	260.7	403.0	233.8	482.0	301.7	336.2	109.6	126.8	205.9	226.6
Total	100	48.9	45.0	36.0	41.5	45.2	42.5	81.3	60.1	39.4	48.7	56.1	64.2	44.9	37.8

AEI No. 20. Water Abstraction (Pressures and Risks: Resource Depletion)

Agriculture is a significant user of water. This water is predominantly used for irrigation to enhance the yield and quality of crops. Worldwide, in 2012 over 324 million hectares were equipped for irrigation, about 85 percent or 275 million ha of which were actually irrigated. Irrigated agriculture represents 20 percent of the total cultivated land but contributes with 40 percent to the total food produced worldwide. The agriculture share in the worldwide water withdrawal is 69%. In the European Union agriculture accounts for around a quarter of the total freshwater abstracted. In the Republic of Macedonia this amount is estimated to 60-70% of the annual water.

Water abstraction by each sector cannot be translated in water consumption equivalents, since the volume of water returned to a receiving water body after use varies significantly amongst sectors. A large share of water abstracted for energy generation (cooling water) is returned. Evaporation and crop uptake in irrigated agriculture result in a much lower proportion of returned water by percolation (typically in the order of 30 %).

The MoEPP reports on the environmental indicator MK-NI 018 - Use of Freshwater Resources and this indicator can be used in order to derive water abstraction for agriculture. MoEPP provides data on fresh water abstraction by sector from surface waters and from ground waters. The sum of both can be used to estimate water abstraction for agriculture. The sector is Agriculture, Forestry and Fishing, but can be used as only agriculture due to huge portion of water used for irrigation that is 60-70% for all sectors and it would be much higher share in only one sector.

The explanation of the indicator provided by MoEPP says that the abstraction of ground freshwater resources is mainly for freshwater supply for households and part of the industry, while the share of agriculture, forestry and fishery is negligible. We are aware of the huge proportion of irrigated areas based on groundwater supply, particularly in highly intensive agriculture and the use of drip irrigation. Therefore, the indicator will need further elaboration and proper estimation of the number of deep wells used for irrigation.

The indicator, from our point of view, has limited availability and probably the error is very high due to missing data on irrigation from groundwater. The period presented is 1990-2014. Data are presented only in graphic form and we are presenting two graphs related to water abstraction.

Figure B4.6.5. Gross abstracted surface freshwater

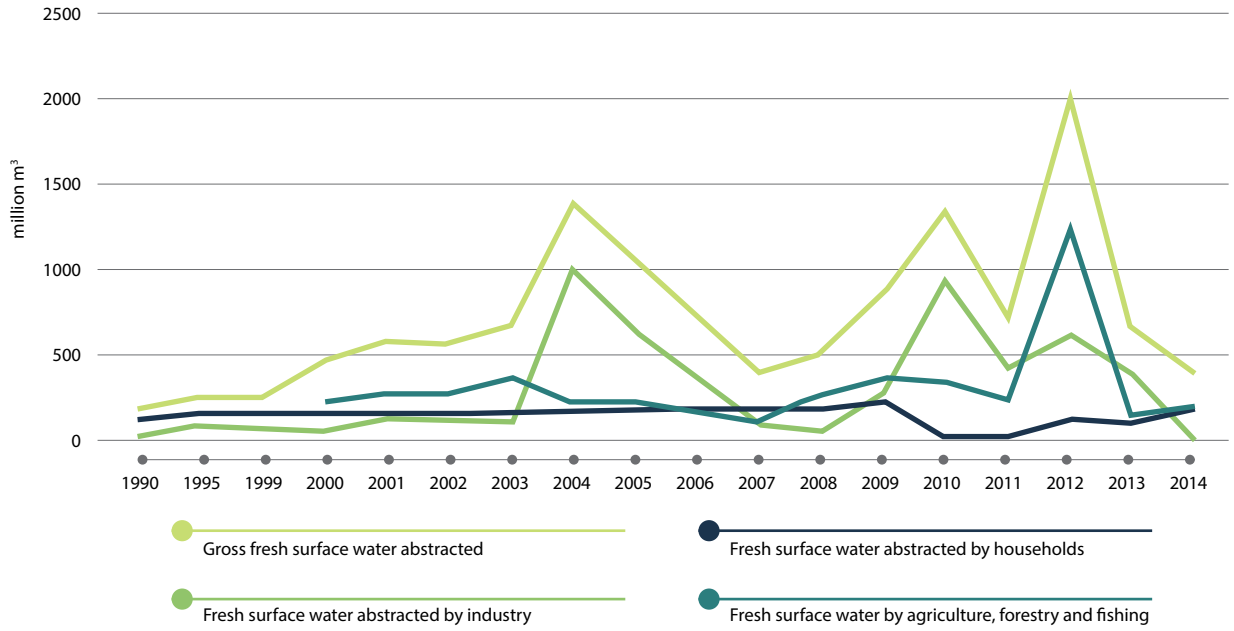
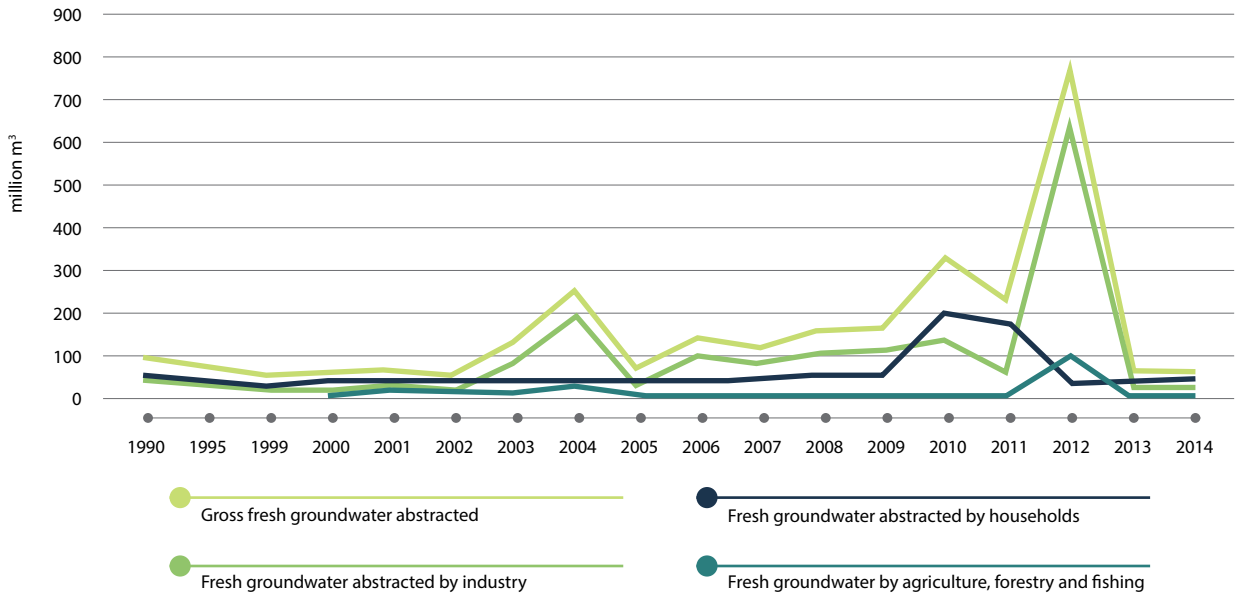


Figure B4.6.6. Gross abstracted ground freshwater



AEI No. 21. Soil Erosion (Pressures and Risks: Resource Depletion)

The EU AEI indicator Soil Erosion estimates the areas affected by a certain rate of soil erosion by water. It is presented by one main indicator "Areas with a certain level of erosion (aggregated to NUTS 3 regions)" and one supporting indicator "Estimated soil loss by water erosion (tons per ha per year)". Two soil erosion indicators have been produced on the basis of empirical computer model. The main indicator represents estimated soil erosion levels for NUTS Level 3 administrative areas that range from very low values (less than 1 ton per hectare per year) to high values (more than 20 tons per hectare per year) for the EU. The second indicator is a cell-based map that estimates the rate of soil erosion by water in tons per hectare per year for cells of 100 m x 100 m for the EU.

The indicators are predicted estimates and not actual values. They are derived from an enhanced version of the Revised Universal Soil Loss Equation (RUSLE) model which was developed to evaluate soil erosion by water at a regional scale. This advanced version is named RUSLE2015 and is based on high quality and peer reviewed published input layers (soil erodibility, rainfall erosivity, topography, land cover, conservation practices). Moreover, the most recent and available pan-European datasets have been used to model the input layers. The model structure has been adapted in order to take into account conservation planning, inventory erosion rates and estimate sediment delivery on the basis of accepted scientific knowledge and technical judgment. In this assessment, the basic RUSLE model has been adapted through the improved quality of the input factors.

The MoEPP Environmental indicator MK-NI053: Soil Erosion is presented as data from the soil erosion map. Therefore, it is not modeled estimate, but data that come from real measurements and expert judgments. It will be necessary to adopt the RUSLE201515 methodology in the country and to adjust the indicator to the EU standards. Unlike data from the soil erosion map that cannot be updated regularly, the modeled data can be updated regularly using the data for the year the model is run for. For that purpose, most likely, the country can be supported by the European Commission Joint Research Center (JRC).

The data on the Environmental indicator MK-NI 053 are presented below:

Table B4.6.13.
Affected area by erosion in 1995

Areas affected by water erosion	km²	%
Total country area	25,713	100.0
No affect (tolerable)	888.83	3.5
Very light affect	7,463	29.0
Light affect	7,936	30.9
Moderate affect	6,893.25	26.8
Strong affect	1,832.41	7.1
Extreme affect	698.96	2.7
Total affect	**24,823.62**	**96.5**

However, the indicator is very limited in its use, cannot be updated, it is not aggregated at NUTS3 level and it is just an area affected by different levels of erosion, but not the amount of soil loss (estimated or measured). The indicator should be updated to the EU standards which would require additional efforts and cooperation with JRC.

AEI No. 22. Genetic Diversity (Pressures and Risks: Resource Depletion)

No indicator is available. It is labeled as "No data" on EUROSTAT. However, information contained in the Annual Report on AnGR Protection (MAFWE, 2016) can show the status of the genetic resources protection. Here we present summarized data about the breed status of AnGR.

Table B4.6.14. Current status of breeds' diversity, number of breeds for which characterization has been carried out and their status in conservation programmes

	Current Total		At Risk		Widely used		Lost (last 20 years)	
	L	I	L	I	L	I	L	I
Cattle	1			N/A	1		N/A	N/A
Water Buffalo	1	N/A	1	N/A	N/A	N/A	N/A	N/A
Sheep	3	3	2	N/A	1	2	0	0
Goats	1	2		N/A	1	2	0	0
Horses	1	N/A		N/A	1	0	N/A	N/A
Donkeys	1	N/A		N/A	1	0	N/A	N/A
Pigs	2	N/A	1	N/A	0	N/A	1	N/A
Chicken	1	N/A	1	N/A	0	N/A	N/A	N/A
Turkey	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ducks	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Geese	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Honey bees	1	N/A	0	N/A	1	N/A	N/A	N/A

- L = Locally Adapted or Native; I = Introduced/ Imported (Recently Introduced and Continually Imported).
- Breeds at risk use FAO classification (http://www.fao.org/docrep/010/a1250e/a1250e00.htm).
- Consider breed characterization during the last ten years.

In the country due to peculiarities of livestock production, AnGR are regulated mostly by the Law of Livestock Production. Therewith, several local breeds are recognized in cattle (Busha), sheep (Karakachanska, Ovchepolian and Sharplanina), goat (local), chicken (local), water buffalo (local), horse (local), donkey (local), dog (Sharplanina Shepherd dog), porcine (local primitive) and honey bee (*Apis mellifera macedonica*). The Busha cattle breed is classified as at risk; the Ovchepolian sheep breed - not endangered; The Sharplanina sheep breed – unknown; Karakachanian sheep breed – critical; local goat – critical; local primitive pig – unknown; local water buffalo – critical; local chicken Srebra - at risk; local horse – unknown; local donkey – unknown. Two recognized organisations for protection of autochthonous breed have been recorded in the MAFWE register (associations for Busha cattle and Ovchepolian sheep breeds). The farmers' association for Srebra chicken was established, but it is still not recognized by MAFWE. In the national register for Busha local cattle breed currently there are 898 heads (831 cows and 62 bulls) kept on 55 farms (ranging from 5 to 64 heads). In 2016 additional 79 farms were visited and 880 animals were identified (Annual Report on AnGR protection, MAFWE, 2016). Their characterization and description is in progress. Currently, there are 1003 semen doses for Busha cattle in the gene bank. Blood samples, hair and tissues have conserved as well. About 50 DNA samples of this breed were send for SNP characterization. Ovchepolian sheep breed has been extensively evaluated and currently in the register of the Recognized Organisations there are 191 males and 5,672 females. From the Ovchepolian sheep breed, 3,906 semen doses and 19 oocytes have been cryo-conserved along with blood, wool and tissue samples. The Sharplanina breed was evaluated recently, and according to farms' visits there are 74 ewes and 14 rams recorded. Karakachanska sheep is endangered and for more than 15 years, a flock has been maintained ex-situ. However, the flock is genetically eroded due to the very small number of animals and insufficient and irregular financial support. But, there are 204 semen doses in the gene bank, as well as blood, wool and tissue samples cryopreserved from this breed. Local goat breed has been characterized and 1,178 does and 79 bucks are recorded as pure local animals,. In addition and there are 937 buck semen doses collected, in addition to blood, hair and tissue samples.

AnGR Protection is already integrated in the national subsidy payment scheme. The annual support in 2016 for the Busha cattle breed was 25 EUR in addition to the basic 45 EUR per registered head. The annual subsidies in sheep and goat production in 2016 were 16 EUR per head, 12 EUR per produced young (age 6-18

months) animal for replacement and 8 EUR additional payment for registered head of local breed.

AEI No. 23. High Nature Value Farmland (Pressures and Risks: Benefits)

This indicator is not available. It is labeled as "No data" on EUROSTAT.

AEI No. 24. Renewable Energy Production (Pressures and Risks: Benefits)

This AEI in EU gives an indication of the importance of the agricultural and forestry sectors in the total production of energy. In particular, the trend of production of renewable energy shows the contribution of agriculture and forests towards the 2020 renewable energy targets, according to which the EU has committed to obtain 20 % of its energy from renewable sources by 2020. The main indicator is "Share of primary energy production of renewable energy from agriculture and forestry to total energy production" However there are number of supporting indicators such as:

- Share of primary energy production of renewable energy from agriculture and forestry to total renewable energy production.
- Production of renewable energy from agriculture, calculated by summing fuel bioethanol production, biodiesel production and biogas production.
- Production of renewable energy from forestry.
- Estimation of the agricultural area of energy crops (utilized agricultural area (UAA)) devoted to the production of renewable energy).

There are some problems with this indicator in EU. Namely, data currently available for the indicators related to the production of renewable energy in agriculture and forestry are subject to a number of limitations. Firstly, they come from different sources and therefore the degree of comparability is low. In addition, the estimations of liquid biofuels and biogas production contain a considerable margin of error and do not permit to extrapolate the specific contribution of the agricultural sector to the production of renewable energy (e.g. data on biogas production contains not only biogas from agricultural sources but also biogas plants based on bio-waste), since the data from different sources are lumped together. In light of the above, the results of the indicator have to be taken with caution.

In Macedonia there is no available data to estimate this indicator. However, it is possible to get data of production for the units that participate at the market as producers of electricity from renewable sources (concessions with highly subsidized price of electricity, two companies shared amount for production of electricity from biogas). However, there is risk to miss some data, particularly on using the biomass from agriculture for other energy purposes. Therefore, the indicator should be developed with attention.

AEI No. 25. Agri-environmental Indicator - Population Trends of Farmland Birds (State/ Impact: Biodiversity and habitats)

The EU AEI population and trends of farmland birds come from the Biodiversity statistics. The EU indices are based on data from 26 EU Member States (data for Croatia and Malta are not available), derived from annually operated surveys of national breeding birds collated by the Pan-European Common Bird Monitoring Scheme (PECBMS); these data are considered to be a good proxy for the whole of the EU. There are 39 species of common farmland birds in EU. The data for the indicator is presented as a Common farmland bird index, with the base year in 1990 or 2000.

The data on this index in Republic of Macedonia is not available, although there are lots of data on biodiversity of the country.

AEI No. 26. Soil Quality (State/Impact: Natural Resources)

In the EU this indicator provides an account of the ability of the soil to provide agri-environmental services through its capacities to perform its functions and respond to external influences. In the agri-environmental context, soil quality describes:

- the capacity of soil for biomass production;
- the input-need to attain optimal productivity;
- the soil-response to climatic variability;
- Carbon storage, filtering, buffering capacity.

The main indicator for soil quality is "Agri-environmental soil quality index" with series of supporting indicators. It is a composite indicator that consists of four sub-indicators of similar weight which have relevance either to the agricultural and/or to environmental performance of soil:

- Sub-indicator 1: Productivity index - has relevance to the agricultural policy field and measures the capacity of soil to biomass production.
- Sub-indicator 2: Fertilizer response rate - has relevance to the agri-environmental policy field and measures the input-need to attain optimal productivity.
- Sub-indicator 3: Production stability index - has relevance to the agricultural policy field and measures the soil-response to climatic variability.
- Sub-indicator 4: Soil environmental services index - has relevance to agri-environmental policy field and measures the carbon storage, filtering, transforming, and soil biodiversity.

Each of these sub-indicators should be developed and presented and this is a complex process that requires many source data that are not available in the country (Soil productivity on grassland and cropland, fertilizer response rate for each soil, organic carbon storage, etc.)

This indicator is not available in the country. The development of this indicator in the country will require time, serious effort and financial resources and it is not probable that it will be developed in near future.

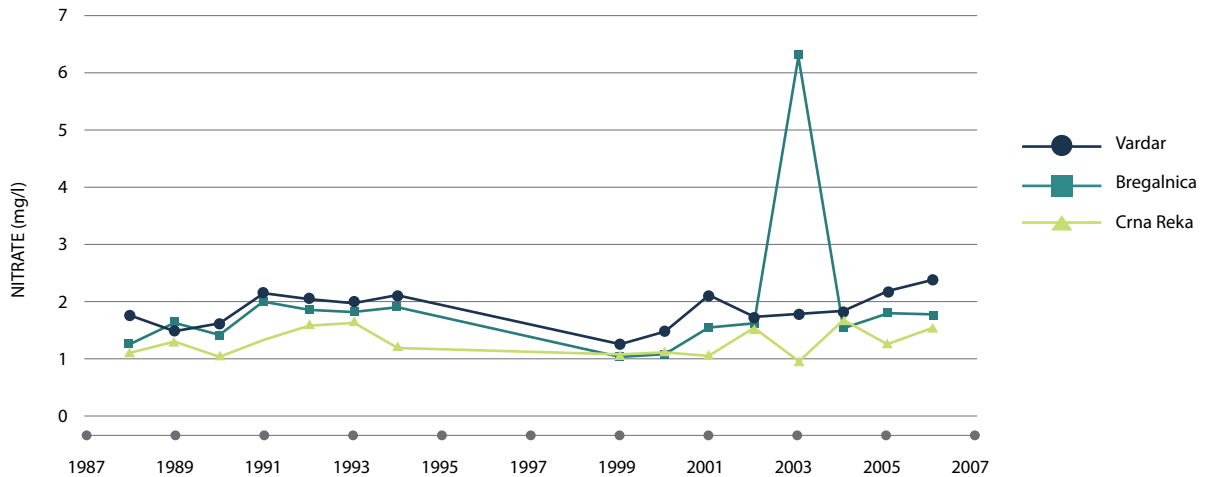
AEI No. 27.1. Water Quality - Nitrate Pollution (State/Impact: Natural Resources)

This indicator according the EUROSTAT is indicated by current values and trends in nitrate concentrations in groundwater and rivers expressed in mg NO3/l for groundwater and mg N/l for rivers. The main indicator is presented as rivers and groundwater with nitrate concentration above 50 mg NO3/l (equivalent to 11.3 mg N/l). Rivers and groundwater with nitrate concentration above 25 mg NO3/l reflect a threshold of concern. However, there is one supporting indicator: Time series of groundwater and rivers nitrate concentrations. All analyses are based on annual average concentration data from single groundwater monitoring stations and groundwater bodies or river monitoring stations. For groundwater, groundwater monitoring station data are used for the current situation and groundwater bodies for the time series and trend analysis.

The indicator is available as MoEPP Environmental Indicator MK-NI 020: Nutrients in freshwater. This indicator has limited availability for the needs of the AEI No.27. 1. Water quality - Nitrate pollution. The only available dataset is a graphic presentation of the Nitrates for 3 major rivers (Vardar, Bregalnica, Crna Reka) for the period 2000-2015. The State Administration for Hydrometeorological Affairs is responsible for monitoring of the water quality. Data is available upon payment.

The data presented by MoEPP is shown in the following graph:

Figure B4.6.7.
The concentration of nitrates in major rivers in Republic of Macedonia period 2000-2015



However, the data presented by MoEPP show very low concentration of NO_3 (less than 3.5 mg/l) and rivers are probably not a topic of concern. The ground water monitoring is not operative.

AEI No. 27.2. Water Quality - Pesticide Pollution (State/Impact: Natural Resources)

The EU AEI Water quality – Pesticide pollution is presented as pesticides in water. Pesticides in water are indicated by current values, exceedances and trends in the concentrations (µg/l) of selected pesticides in groundwater and rivers. There are two main indicators:

- Groundwater with pesticide concentrations above Environmental Quality Standards (EQS).
- Rivers with annual average pesticide concentrations above Environmental Quality Standards (EQS).

A pesticide is a chemical substance used in agriculture to kill or limit organisms which are considered 'pests' because they might endanger agricultural crop output; pesticides can be subdivided into:

- fungicides (against fungi);
- herbicides (against plants considered to be 'weeds');
- Insecticides (against insects).

However, these are number of chemical compounds that are with various behavior and toxicity.

The pesticides in water are covered by the European Commission "Environmental quality standards applicable to surface water". The Commission establishes environmental quality standards so as to limit the concentrations of certain chemical substances that pose a significant risk to the environment or to human health in the surface waters in the European Union (EU). These standards are complemented by a requirement to establish inventories of the discharges, emissions and losses of these substances in order to ascertain whether the goals of reducing or eliminating such pollution have been achieved. The Directive 2008/105/EC of the European Parliament and of the Council of 16 December 2008 on environmental quality standards in the field of water policy. The directive is amending and subsequently repealing Council Directives 82/176/EEC, 83/513/EEC, 84/156/EEC, 84/491/EEC, 86/280/EEC and amending Directive 2000/60/EC of the European Parliament and of the Council set the priority substances. This Directive lays down the environmental quality standards (EQS) for priority substances and certain other pollutants as provided for in Article 16 of Directive 2000/60/EC, with the aim of achieving good surface water chemical status and in accordance with the provisions and objectives of Article 4 of that Directive. This directive lists 33 priority substances in the field of water policy.

The data on pesticides in surface and ground water are not readily available in the country. The responsible body for surface and ground water quality monitoring in the country is national Hydrometeorological Service of Republic of Macedonia. Their Web site does not present any data on water quality. Even the National Water Strategy in Macedonia (2011) does not list the pesticides in the water, but only the consumption of pesticides for the period 2000-2005

For the time being, we can assume that this indicator as unavailable in the country.

AEI No. 28. Landscape - State and Diversity (State/Impact: Landscape)

According the EU AEI, the landscape state and diversity indicator describes the main characteristics of the agrarian landscape, in terms of structure of the landscape, cultural influence on the potential natural vegetation due to human activities, and societal awareness of the rural landscape.

In the agri-environmental context the indicator describes:

- the dominance and internal structure of the agrarian landscape in the context of the wider landscape matrix;
- the hemeroby state, which indicates the degree of influence on land cover and state due to human (agricultural) activities;
- the interest and perception that society has for the agrarian landscape.

The indicator is structured in three components:

- Landscape physical structure
- Hemeroby index
- Societal awareness of agrarian landscape

However, data on this issue are not available (or not existing) in the country. After intensive search we were not able to find any data related to the landscape state and diversity or on rural-agrarian landscapes in the country. It is necessary to carefully analyze this indicator and to initiate methodology for reporting the indicator.

Chapter B5

AGRI-ENVIRONMENTAL POLICY IN MONTENEGRO

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B 5.1. INTRODUCTION

Montenegro is a small, mountainous country in the Southwest Balkan, situated in the Southeast of Europe with a surface area of 13,812 square kilometers. The total length of the land borders is 614 km, while the Adriatic Sea coastline is 293.5 kilometers. The neighboring country to the west and partly to the north is Bosnia and Herzegovina with 225 km of the land border; to the north and northeast are Serbia 124 km and Kosovo* 79 km, to the southeast is the border with Albania (172 km) and to the southwest the border with Croatia (14 km).

According to the Law on Territorial Organization[1], Montenegro is divided into 23 local self-governance units (municipalities). Although a small country, its area is quite diverse. This diversity also applies to certain regions, and even to larger municipalities. Thus, according to the Law on Regional Development[2] Montenegro is divided into three regions, as presented in table B5.1.1 Such a division is also used in the Strategy of Regional Development, adopted in 2011.

Table B5.1.1. Overview of the regions (areas and population) in Montenegro

Region	Area		Population, Census 2003		Population, Census 2011		Density, Inhabitants
	km²	%	Figure	%	Figure	%	/km²
Coastal	1,591	11.5	145,847	23.5	148,683	24.0	93.5
Central	4,917	35.6	279,419	45.1	293,509	47.3	59.7
Northern	7,304	52.9	194,879	31.4	177,837	28.7	24.3
MNE total	13,812	100.0	620,145	100.0	620,029	100.0	44.9

Source: MONSTAT - Census 2011

According to the last census carried out in 2011 by the Statistical Office of Montenegro – MONSTAT, the population of Montenegro was 620,029. The population density is 45 people per square kilometer on average, making Montenegro one of the most sparsely populated countries in Europe. The coastal region covers the area smallest in size, but with highest population density (93.5 inhabitants/km²), while the Northern region covers more than half of the Montenegrin territory, but with very low population density (only 24 inhabit/ km²). The results of the last two censuses showed trends in population migration between the last two censuses from the Northern region by 9%.

The macro-economic indicators (Table B5.1.2) show slight growth of the total GDP and GDP per capita in the period 2010-2016. The value of import and export permanently grows with a decreasing negative trade balance. Montenegro's economy is characterized by a high share of the services sector in GDP with tourism as one of the key sectors in the whole economy. Services and tourism together made about 40% of GDP.

Table B5.1.2. Montenegro's macro-economic indicators for the period 2010 – 2016

Indicator	2010	2011	2012	2013	2014	2015	2016
GDP per capita (EUR)	5,006	5,211	5,063	5,402	5,561	5,779	6,067
GDP growth in real terms (%)	2.5	3.2	-2.7	3.5	1.8	3.2	3.9
Unemployed (%, at the end of the period)[1)]	19.7	19.7	19.7	19.5	18.0	17.6	17.7
Export of goods and services (mil EUR)	1,157.7	1,382.6	1,389.4	1,390.1	1,388.1	1,539.2	
Import of goods and services (mil EUR)	1,960.5	2,099.6	2,166.4	2,143.7	2,074.2	2,213.6	
Bal. of trade in goods and services (mil EUR)	-802.9	-717.0	-776.9	-683.2	-686.1	-674.4	

Source: MONSTAT

* *This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence*

[1] Law on Territorial Organization (Off. Gaz. no. 54/11, 27/13; 62/13 and 12/14)

[2] Law on Regional Development (Official Gazette of MNE, No 20/2011)

Montenegro is a candidate country for EU membership. In October 2007, Montenegro signed the Stabilization and Association Agreement (SAA) that entered into force in January 2008 as the Interim Agreement on Trade and Trade-related Issues. The Government of Montenegro adopted the Montenegro's Programme of Accession to the European Union 2014 – 2018 in 2013, which lays down the short-term and medium-term priorities.

Montenegro submitted an application for EU membership on 15th of December, 2008 and became a candidate country for membership of the European Union on 17th of December, 2010. In December 2011, the Council launched the accession process with a view to opening negotiations in June 2012. The accession negotiations with Montenegro started on 29 June 2012. Chapter 12 (Food safety, Veterinary and Phytosanitary Policy) was opened on June 2016, Chapter 11 (Agriculture and Rural Development) was opened on December 2016, while Chapter 27 Environment has not been opened yet.

The agricultural sector plays an important role in Montenegro's economy. The Gross Value Added (GVA) of agriculture, hunting and forestry in total is 295.5 million EUR (2016) and its share in the total GVA was 9.03%. The employment data published regularly by MONSTAT refer only to employment in business entities (enterprises, co-operatives, etc.) without employment in family agricultural holdings, where the share of agriculture is 1.15%. If we take into consideration the data of employment of 47,870 annual work units (AWU) on agricultural holdings, it can be estimated that agriculture's contribution to the total employment in the country is about 24%. Agriculture, as a multifunctional sector, is the foundation of the whole food chain and many related services; it contributes to the tourism, preserves the rural areas and their specific character, protects the biodiversity and desirable landscape, provides vitality of rural areas etc.

Montenegro declared and accepted the concept of sustainable development of agriculture and rural areas with the Strategy for the Development of Agriculture and Rural Areas 2015-2020. This means a good balance between economic development, environmental protection and social aspects. The starting point for the strategy was the multi-functional role of agriculture; hence agriculture has to be considered in a broader context than just as an important contributor to the GDP and the total employment.

The agricultural policy is organised in four main groups: a) market measures and direct support policy; b) rural development policy; c) support to general services in agriculture; and 4) social transfers to the rural population.

The rural development policy and measures play a very important role in the Montenegrin agricultural policy. This is primarily because of the specificities of the Montenegrin agricultural sector and rural areas which are prevail in the total areas.

The first group (axis) of measures in RD policy is directed to strengthening the competitiveness of food producers through support to investments in primary production and processing industries, support for introduction of international standards and organization of the producers.

The second group (axis) refers to the sustainable management of resources (agri-environmental issues) where four measures are implemented so far: financial support of sustainable use of mountain pastures, preservation of genetic resources in agriculture, organic farming and construction of storage space for manure.

The Law on Agriculture and Rural Development defines the main goals of agriculture and rural development: agricultural resources management in a long term, sustainable manner, by preserving the environment; providing a steady supply of safe food, acceptable from the aspect of quality and prices; improvement of the standard of living of the rural population and overall rural development. These goals are to be achieved through the implementation of various measures, which are to be gradually aligned with those within the framework of the EU Common Agricultural Policy.

According to Article 14 of the Law on Agriculture and Rural Development, sustainable agriculture resource management by preserving environment has to be ensured by implementation of appropriate measures:

a) Support to the development of areas with limited opportunities for agricultural production,
b) Support to agriculture programs harmonized with the principles of environmental protection – agri-environmental measures,
c) Agro-forestry programs.

B5.2 AGRICULTURE IN MONTENEGRO

Based on the most recent data obtained by the Statistical Office (MONSTAT) in 2016, the total agricultural land in Montenegro is 334,048 ha, while the utilized agricultural area (UAA) is 255,845 ha. The structure of agricultural land is unfavourable. The average size of total agricultural land per agricultural holding is 7.6 ha, while the average size of utilized agricultural land is 5.8 ha/holding. The used agricultural land is divided into small parcels, which makes it more difficult for cultivation. The share of agricultural holdings which possess up to 2 ha of UAA is very high (58.2%). Permanent grasslands (meadows and pastures) make up for 94.3% of the agricultural land, while arable land together with gardens has a share of only 5.7%.

About 6% of the total soil in Montenegro has high and medium fertility, while over 90% of the soil has limited or low fertility. 95% of the total territory soil in Montenegro is naturally acidic. The characteristics of the Montenegrin terrain are such that the terrains with slopes above 10° (65%) are predominant, while the slopes between 5 and 10° account for 28%. Only 7% of the territory is flat (a slope less than 5°) where intensive land use in agriculture is possible without it resulting in significant erosion processes. The meadows and pastures on the slopes are not exposed to erosion due to the fact that they are used in an extensive manner.

The best quality land is located in river valleys, karst valleys and plateaus. The main plain areas are placed in the Central region around of municipalities of Podgorica, Danilovgrad and Nikšić (Ćemovsko, Zetsko Bjelopavićko, Nikšičko, Ulcinjsko and Grahovsko Fields).

When land resources are considered, it is important to mention that 2,650 ha are regularly irrigated in the plain area close to Podgorica, including the large vineyard with more than 2,300 ha. The drainage system covers 1,640 ha.

Table B5.2.1. Key agricultural indicators

Indicator	2010	2016
Share of Agricultural land in total land, %	37.34	18.52
Share of Arable Land in agricultural land, ha	36.58	5.67
Share of Permanent Crops in agricultural land	3.17	2.10
Share of Agricultural GDP in total GDP	7.9	8.1
Share of Agricultural Labour in total Labour		24.1
Share of Agricultural Export in total Export		15.3
Share of Agricultural Import in total Import		25.4

Agricultural production is highly diversified due to the big differences in geographical, climate conditions and land structures in different regions.

The Coastal region, characterized by Mediterranean climate, is particularly favourable for fruit growing, especially citruses and olives, but also for vegetables and vineyards. The Central region (the area of Podgorica and Danilovgrad), where flat areas are mostly present, is characterized by intensive vegetable, grape and fruit production, as well as livestock production, especially in the areas of Niksic and Cetinje.

The North region, as a predominantly mountainous area, is characterized by semi extensive livestock production, and some continental fruit production and potato production on mountain plateaus. The agriculture is mainly labour intensive and acts as a social buffer, providing an income (partly or completely) to about 43,000 rural households.

Table B5.2.2. Land Use

Item	Land area, ha (2017)	% of total land (2017)
Land Total	1,381,200	100
Forest	631,000	45.7
Total agricultural land, ha	334,048	**24.2**
Used agricultural land, ha	255,846	**18.5**
Arable land & gardens	9,100	**0.7**
Permanent crops (fruit, grapes, olives)	5,412	**0.4**
Pastures and permanent grasslands	241,233.2	**17.5**
Abandoned land	181,952	**13.2**
Agricultural land/capita (ha)	**0.54**	**0.54**
Arable land & permanent crops/capita (ha)	**0.023**	

Source: MONSTAT

In Montenegro, the share of crop production output is higher (estimated at about 55 %t) than that created by the livestock sector (45%). Taking into consideration the structure of land resources (extremely high share of permanent grassland), it can be concluded that the output created in the Montenegrin livestock sector is quite low. In other words, the available land resources are not used to their full potential, since they could provide fodder for a much larger ruminant population, leading to increased milk and meat production.

Table B5.2.3. Farm Structure,

Item	Source/year 2016)	
	Number of holdings	Percentage of holdings
Total	43,480	100
Up to 2 ha of UAA	25,328	58.2
Between 2 ha and5 ha	8,006	18.5
Between 5 ha and 10 ha	4,708	10.8
Between 10 ha and 100 ha	5,142	11.8
Above 100 ha UAA	296	0.7

*UAA – Utilized Agricultural Area, Source: MONSTAT

The plant production is dominated by the production of vegetables, grapes, potatoes, fruit and olives. Vineyards cover 2,980 ha, with prevailing autochthonous varieties (Vranac and Kratosija) mainly for the production of red wine. The total grape production in 2016 was 30.2 thousand tons. Most of the vineyards belong to the "Plantaze" Company (2,300 ha) and are under an intensive system of production (Table B5.2.4a). Fruits together with olive trees are grown on about 3,200 ha, nearly half of which are orchard plantations (plums, mandarins, peaches, apples). Olive growing is still mostly traditional; there are slightly above 120,000 olive trees, with the autochthonous Zutica as the dominant variety and the annual production is about 800 tons. Area under plantation orchards and vineyards have decreased in past several years.

The **a**rea used for vegetable production is about 1,800 ha with total production of about 46 thousand tons, according to the statistical data for 2016. The most important vegetable species are: tomato, pepper, watermelon, cabbage, cucumber. Vegetable production in greenhouses is performed on 75 ha with positive trends in terms of volume, range of products and expanding of the growing season (area and volume have doubled in the past five years). Potato production is a very important sector; potatoes are grown on 2,100 ha, with total production of 40 thousand tons in 2016. According to the experts' estimations the real potato production is higher, in term of area and volume of production. Two thirds of potato production is in an intensive system of production including potato seed production.

Table B5.2.4a. Agricultural production – crop production in 2016

Crop Production (total)	Areas in ha	Production in t
Cereals	2,372.5	7,020
Vegetables	1,764	45,959
Potatoes	2,110	39,246
Grapes	2,976	30,153
Fruits	2,667	29,844.5
Olives	118	766.5
Tabaco	34	50.5

Pesticides are used only or mostly on arable land and permanent crops that are under a system of intensive production (approximately one third of total arable land). Total use of all pesticides in 2016 was 240 tons and this volume has increased by 25% in the last five years. Pesticides are used in accordance with the prescribed rules of good agricultural practices for pesticide uses. In 2014 Montenegro amended the existing Law on Plant Protection Products, so through these amendments the EU Directive 2009/128/EC on Sustainable Use of Pesticides has been transposed into the national legislation.

The Montenegrin livestock sector is dominated by the rearing of ruminants, primarily due to

high share of meadows and pastures in total agricultural area. With 89,452 heads, cattle breeding is the largest sub-sector of the livestock production (Table B5.2.4.b). The average farm size, although it has increased in the past five years to 4.1 heads/farm, is still small. Dairy farms with 20 or more cows/farms (in total about 200 farms), reared under semi intensive or intensive rearing systems, are mostly located in the area of the municipalities of Niksic, Podgorica and Danilovgrad, near to the milk processing industry, while the rest are in the northern part.

Sheep breeding (192,636 heads) is characterized by a semi-extensive way of production, mostly based on rearing local sheep breeds, mainly in mountain areas. Goat breeding is also an important sector, especially in the Central and South Regions. Poultry and pig production are low, primarily due to the lack of domestic production of animal feed. Half of the total poultry production is intensive production in bigger farms as farms of laying hens or broilers, while the pig production, organized mostly on small family farms, could be considered as intensive production.

Table B5.2.4.b. Agricultural production – Livestock production in 2016.

Livestock	Numbers of heads	Livestock units	Number of farms
Cattle	89,269	77,720	21,939
Pigs	55,840	3,250	13,607
Ships and goats	191,992	19,120	5,514
Goats	31,458	3,145	3,200
Horses	3,947	3,125	2,775
Poultry	835,705	11,700	17,067
Bee	67,705		

Total livestock population, aggregately taken, is about 120,000 livestock units - LSU, or 0.45 LSU/ha of agricultural land. That means that there is a very low animal density per ha. Nevertheless, there is real potential for much higher livestock production. The average population density in the EU-27 in 2010 was 1 LSU/ha, which is about 2 times higher than in Montenegro.

The average annual production of milk in the last ten years is around 180 million liters; 95% of which is cow's milk. Average milk yield per cow is very low, less than 3,000 kg of milk per lactation. The main reason is that subsistence small-sized farms prevail, which are not motivated to improve the level of production and to introduce new technologies. The total domestic meat production is about 17,000 tons (Meat sector study, 2010), which covers only 36% of the total meat consumption in the country. Approximately 60% of the meat produced in Montenegro comes from ruminants, which are predominantly grown in semi-intensive production systems with maximum possible use of grazing.

One of the structural characteristics of Montenegrin agriculture and food production is the low level of finalization of agricultural products, a significant share of self-supply, as well as significant sales of agro-food products through unregistered trade channels.

Montenegro is a net importer of agro-food products with very high dependency on food imports. The total exports hardly cover for 16% of imports, while the export of agro-food covers 13% of the agro-food imports. The relatively small number and share of exported products emphasizes the problem of the low competitiveness of domestic products, considering the quality, prices and potential quantities that may be distributed outside Montenegro.

B5.3 ENVIRONMENT AND ENVIRONMENTAL POLICY

The Proclamation of Montenegro as an Ecological State from September of 1991 was incorporated into the Constitution of Montenegro in 1992 and reaffirmed by the Constitution from 2007. That is a framework for the development of Montenegro as an environmentally friendly country. To achieve this proclamation, Montenegro has to have strong commitment and dedication to preserve and improve the natural resources and environment generally.

The **Law on Environment** ("OG of MNE", 48/08 and 52/16) is an umbrella law in the area of environment and it lays down the principles of environmental protection and sustainable development, environmental protection instruments and measures, access to information, public participation, access to justice in environmental matters, environmental financing and other issues relevant to the environment. Apart from this Law, there is a large number of other laws

and implementing acts regulating specific environmental issues.

The Law on Environmental Impact Assessment (OG of MNE no. 80/05 and 40/10) prescribes the procedures for carrying out an Environmental Impact Assessment for projects that may have significant impact on the environment, while **the Law on Strategic Environmental Assessment** (OG of MNE no. 80/05 and 59/11) prescribes the procedures for assessment of the impact of certain plans and programs on the environment.

The Ministry of Sustainable Development and Tourism (MSDT) is the key authority in charge of environmental policy, including the responsibility for nature protection, urban planning and climate change and tourism development. Certain areas are under the competence of the Ministry of Agriculture and Rural Development (water management, forestry management and agricultural biodiversity).

The National Strategy for Sustainable Development - NSSD (2007-2014 and revised version **2015-2030)** represents a concrete step in the efforts to realize the declarative commitment of Montenegro to be an ecological state. The strategy, as well as the accompanying Action Plan, are based on the concept of balancing the three pillars of sustainable development - the economic, social and ecological, along with the definition of two additional steps for sustainable development of Montenegro.

The monitoring of the environment status according to the **Environmental Monitoring Programme of Montenegro** (adopted annually by the Government of Montenegro) and according to the national list of environmental indicators, is conducted by EPA, which prepares an annual report on the state of the environment and submits to the MSDT. The regular monitoring of the environmental state based on the adopted national indicators list started in 2013.

The Environmental Protection Agency (EPA) was established as the authority responsible for the protection of the environment through implementation of regulations, licensing, inspection activities, preparation of monitoring programs and reporting in accordance with the national indicators on the state of the environment.

By the Decision of Government of Montenegro from March 2017, the status of the Environmental Protection Agency was changed. The Agency is now an administrative body within the Ministry of Sustainable Development and Tourism and its name is **Agency for Nature Conservation and Environment (ANCE)**. The main drive behind the strengthening of the environmental policy and legislation has been the process of accession to the European Union (EU) including the beginning of the accession negotiations.

In the field of air protection - monitoring of air quality and regular reporting to the European Environment Agency and the local public has been established in accordance with the EU standards.

Air quality in MNE is mainly affected by the emissions resulting from fuel combustion in large and small furnaces and internal combustion engines, emissions from the industry, as well as the unfavourable weather conditions.

Air quality is mostly jeopardized in Niksic, Pljevlja and Podgorica. In order to identify measures for improvement of air quality in the above-mentioned municipalities, the Ministry of Sustainable Development and Tourism, in cooperation with the Agency for Environmental Protection and the local governments adopted the Air Quality Plans for the municipality of Pljevlja, Niksic and Podgorica.

When it comes to **water,** it is a fact is that Montenegro has good quality of underground and surface water. In the area of waste water management and water supply, there are a lot of ongoing projects, which are defined in the strategic planning documents.

The largest source of pollution of surface and ground water is communal wastewater. There is an impact of the agricultural activities, the industry, primarily the food industry, as well as impact of the small and medium enterprises on water quality. It is important to mention the growing impact of transport infrastructure and fuel distribution on surface water quality.

Waste management is still an area where Montenegro has to put more efforts in order to reach a functioning system that ensures sustainable development, maximum protection of the environment, and creation of databases required for

decision-making at the national level, as well as for reporting to international instances. In Montenegro, the dumping continues to represent the most common methods for waste treatment.

At the national level, there is still a need to address the problem of industrial waste generated as a result of the production activities of large industrial systems such as the Aluminium Plant Podgorica, the Steel Factory in Niksic, the Thermal Power Plant in Pljevlja and others.

The Water Management Strategy (adopted in June 2017) lays down the long-term directions and objectives of water management and preservation of water quality.

The Law on Water (OG of MNE 27/07 and OG of MNE 48/15) regulates the area of water quality. Directive 2000/60/EC, establishing a framework for Community Action in the Field of Water Policy (Water Framework Directive-WFD), is transposed to a great extent through the Law on Water, Law on Water Management Financing (OG of MNE 65/08 and 40/11) and through other relevant regulations.

In Montenegro, there are two closely equal watersheds: the Danube and the Adriatic. Monitoring of freshwater, surface waters (for ecological and chemical status and the environmental potential) and groundwater (chemical and quantitative status) and monitoring of coastal waters (including transitional waters) has been done for many years, but it is not fully in accordance with the WFD, which is why there is an ongoing IPA project dedicated to the implementation of WFD.

The Nitrate Directive 91/676/EEC, concerning the protection of waters against pollution caused by nitrates from agricultural sources, is partially transposed through the Law on Water ("OG of the RoM" 27/07 and "OG of MNE" 48/15) and the Law on Plant Nutrition Products ("OG of the RoM" 48/07 and "OG of MNE" 40/11). The Rulebook on Criteria for Establishing Sensitive and Vulnerable Areas for the Protection of Water against Pollution ("OG of MNE" 32/16) transposed provisions of this Directive in a part related to the criteria for establishing vulnerable areas for the purpose of protection of water from pollution caused by nitrates from agricultural sources.

The Climate Change - National Strategy with Action Plan for transposition, implementation and enforcement of the EU Acquis on Environment and Climate change 2016-2020, which represents the overall strategic framework for Chapter 27 – Environment and Climate Change, was adopted by the Government of MNE on 28 July 2016. The Strategy lays down the obligations in the context of continuous coordination of activities undertaken by the state bodies and local government bodies competent for environmental protection in the process of harmonization of the national legislation with the EU Acquis.

Certain issues in the area of climate change are regulated by the Law on Air Protection ("OG of MNE" 50/10 and 43/15), the Law on Road Transport Safety ("OG of MNE" 33/12), the Law on Efficient Use of Energy ("OG of MNE" 57/14) and the Law on Amendments and Supplements to the Law on Environmental Impact Assessment ("OG of MNE" 27/13). The Law on Climate Protection should be drafted in the upcoming period.

The National Climate Change Strategy by 2030 was adopted in September 2015 and it provides strategic guidelines for the achievement of goals within INDC (Intended Nationally Determined Contribution). Having submitted the document „Intended Nationally Determined Contribution", Montenegro undertook the obligation to reduce GHG emissions by 30% until 2030 compared to the base year 1990. The emission level of greenhouse gases for Montenegro from sectors covered by INDC was 5239 kilotons in 1990 and Montenegro pledges to reduce it at least by 1572 kilotons, to the level below or at 3667 kilotons. The reduction is to be achieved by general increase of energy efficiency, improvement of industrial technologies, increase of the share of renewables and modernization in the power sector.

The National Biodiversity Strategy for the period 2010 – 2015 and 2016-2020 identified, inter alia, agrobiodiversity (plant and animal genetic resources) as a very important segment of total Montenegrin biodiversity. By this strategic document, 7 strategic targets for the period until 2020 were identified: (i) biodiversity to be included "de facto" among the social and political priorities; (ii) multidisciplinary and multi-sector approach to biodiversity protection; (iii) establishment of an efficient mechanism of funding and

switch to sustainable biodiversity economy; (iv) substantial reduction of identified direct pressures on biodiversity; (v) creating preconditions and implementation of targeted measures for the protection of the most endangered parts of biodiversity; (vi) creating an efficient ecological network as the main mechanism for biodiversity conservation and (vii) improvement of knowledge of biodiversity and its broad and equal accessibility.

The Law on National Parks (O.G. 56/09 and 28/14) regulates the preservation, maintenance and monitoring of natural and other values and segments of the protected areas. The implementation of these activities is a responsibility of the public enterprise – National Parks of Montenegro. The National network of the protected areas currently covers 124,964.24 ha, or around 9% of the territory of Montenegro, including five national parks: Durmitor, Skadarsko Lake, Lovćen, Biogradska Wood and the newly established Prokletije. During 2015, the Regional park Piva (entirely) and the Regional park Komovi (partially) were established as protected areas of nature. That resulted in an increase in the level of share of protected areas in the overall surface of Montenegro up to **12%.**

The activities on establishing the **Ecological Network NATURA 2000** in Montenegrostarted in 2009, through the cooperation with WWF. The project titled "Montenegro and Natura 2000: Strengthening the Capacity of the Government and the Civil Sector to Adapt to th EU Nature Protection Acquis" was focused on the EU Habitat Directive and was completed in June 2012. A list of Natura 2000 species and habitats present in Montenegro was prepared using previous knowledge from the EMERALD Network project but updated and modified to the requirements from the EU Habitat Directive Annexes. Meanwhile, the Catalogue of NATURA 2000 habitats which exist in Montenegro, has been prepared and used for first the Fieldwork Inventory Training of the previously identified NATURA 2000 habitats in Montenegro.

In Natura 2000, areas used for breeding of animals and agricultural activities, particularly agri-environmental measures, (organic farming and sustainable use of mountain pastures), will be improved. The existence of these areas also depends on the continuation of their use but they are affected due to changes in agricultural practices and the depopulation of these areas. Therefore, these support measures can contribute to their improvement.

High Natural Value (HNV) land and farming systems are not formally recognized in national strategic documents, but close to 70% of Montenegro's area belong to HNV farmland. A substantial area of the country is covered by semi-natural vegetation communities. For many of these, farming practices, especially the grazing and browsing of livestock, continue to be amongst the dominant factors in their maintenance. Montenegrin herbaceous pastures range from the Alpine grasslands of the highest mountains, through Mediterranean-mountain Nardus grasslands to dry grasslands on the alluvial plains.

Shrubby semi-natural habitats – such as maquis, garrigue and Bruckenthalia heaths – are also significant in the Mediterranean zone, frequently in mosaics with xeric grassland communities. Traditional orchards are also common and dominate the permanent crop sector, especially in the continental zone. In many parts of the country, HNV livestock systems survive, for example transhumance, which is still practiced in practically all the municipalities of the northern part of the country.

Although there is no classification of farming practices in Montenegro, two main types of farms and farming systems can be recognized as HNV:

1. Traditional HNV farming systems, where the whole farm is working predominantly on HNV farmland. These include sedentary, mainly mixed farms (including hay producers, orchards growers etc.) with extensive grazing systems; transhumance of cattle and sheep farms in the mountain regions from lowland pastures, as well as organic farms, where these have high biodiversity.

2. More intensive farmers, part of whose land consists of extensively-used grassland, landscape elements and traditional orchards, or who inherited extensive farms and decided to continue with the traditional management on that part of their larger holding. Such farmers, mainly conventional, maintain about 30% of the HNV farmland in Montenegro.

Cross-compliance: In the CAP of EU all direct payments and certain rural development payments are linked with the compliance with a number of statutory requirements relating to environment, climate change, good agricultural state of the land, human, animal & plant health standards and animal welfare. In more detail, in the scope of cross-compliance rules there are two segments: a) Statutory Management Requirements and b) Good Agricultural and Environmental Conditions. The Statutory Management Requirements are related to: Natura 2000 Directives (birds-habitats); Nitrates and Groundwater Directives; Sewage Sludge Directive; Animal Identification-Registration; Pesticides Directive; Hormones ban Directive; General Food Law; Notification of diseases Directives and Animal welfare Directives.

The Good Agricultural and Environmental Conditions (GAEC standards) include: Minimum Soil Cover; Minimum Land Management; Retain Terraces; Crops Rotations; Arable Stubble; Appropriate Machinery Use; Management Livestock Stocking Rates; Permanent Pasture Protection; Retention Landscape Features; Unwanted Vegetation and Olive Groves.

The agricultural policy measures in Montenegro, outlines in the Strategy from 2006 and developed in detail in the National Program from 2008, recognized, among other things, an introduction of the principle of the mandatory fulfillment of certain requirements related to the so-called cross-compliance rules. Farmers must fulfill cross-compliance conditions for direct payments that are connected to environmental protection, food safety and the protection of animal welfare.

Many of the Statutory Management Requirements are already incorporated into the legal documents presented above. In addition, the first step or course of action in the introduction of the cross-compliance rules, was the preparation of the Code of Good Agricultural Practice in 2013. This document has the status of recommended and not mandatory. However, many of its provisions are put in the Agricultural budget measures and in the open calls launched by the Ministry of Agriculture and Rural Development for the investments support with the scope of the current rural development policy. This practice will help farmers to be better prepared for the CAP requirements, where cross-compliance rules are highly ranked.

B5.4 AGRI-ENVIRONMENTAL STATE

The significance of agriculture in Montenegro is never considered from the economic viewpoint only, as its other important functions have to be taken into consideration. Similarly to the developed EU countries, the multifunctional role of agriculture is one of the main starting points for the creation of the agricultural policy. The most important elements of this policy are: the rural development function, the environmental, economic, cultural and social function, as well as food security. Thus, agriculture, regardless of its share in the GDP, is one of the key sectors of every country's economy. In a well preserved environment agriculture offers high quality food, thus preserving the rural areas and their specific character, protecting the biodiversity and a desirable landscape.

Based on the OECD methodology for defining rural areas, the entire territory of Montenegro could be considered as rural. However, having in mind the disparity between the territorial units at the local level (municipalities) and taking into account other specificities of Montenegro, it is suggested to use the approach of rural and mountain areas in Montenegro, to define whole rural areas. The structural, as well as the natural conditions, influence the existence of diversified, fragmented and mostly non specialized agricultural holdings and production. Taking into account the structure of the agricultural land and natural conditions dominated by pastures and permanent grasslands, it should be emphasized that the conditions in a large part of the country are mainly suitable for livestock or at least combined livestock-crop production.

Since the Agricultural sector is defined in many national strategic documents as one of the three most important sectors in Montenegrin economy, it requires the full attention of policy makers and of the relevant authorities so that they would take measures for sustainable develop-

ment of agriculture and rural development. In addition, it is in accordance with the Constitutional provision of Montenegro to be an ecological state.

B5.4.1 Agri-environment in the national strategic and program documents

The second Strategy for the Development of Agriculture and Rural Areas adopted for the period 2015-2020 reaffirmed the concept of sustainable development of agriculture and rural areas (a full balance between economic development, the need to preserve the environment and the social aspect) that was launched and strongly underlined in the first strategic document (The Strategy from 2006).

The aim of this strategy was to set up a framework and to define priorities and a sustainable path for the development of agriculture and rural areas within the context of Montenegro's aim to implement the EU model and concept of agricultural development with support measures that are in line with the EU agricultural policy.

The main objectives defined in the Strategy for the Development of Agriculture and Rural areas 2015-2020 are:

1) Long-term management of agricultural resources in a sustainable way, along with the preservation of the environment, which is followed by other objectives, such as

2) Ensuring a stable supply of safe food that is affordable both in terms of quality and price;

3) Improving both the standard of living of the rural population and the standard of rural development in general, whilst preserving traditional values; and

4) Strengthening the competitiveness of food producers.

From the prospective of agriculture and preservation of environment, the most important natural resources are: agro-biodiversity (plant and animal genetic resources), soil, water and forest.

Based on the analysis of the structure and trends in agriculture, the available natural resources and political framework, this strategic document identified the following needs for further development of this sector:

1. Improving the competitiveness:

- Increase in the competitiveness of the agricultural and agro-processing sector,
- Increase in the average size and reduction in the fragmentation of holdings;
- Improvement of the transfer of technology, including supporting competences and

qualification of the farmers with professionalism,

- Improvement of the value chains from farmer to consumer.

2. Improving food safety and food quality:

- Improvement of the food safety standards providing food to consumers at affordable prices;
- Enhancing the quality of products (quality standards, organic products, PDO/PGI).

3. Improving sustainable resource management:

- Continue the efforts towards preservation of the the eco-systems;
- Ensure sustainable management and utilization of natural resources (land, water, forests, plant and animal resources);
- Mitigate and adapt to climate changes;
- Improve the infrastructure in agriculture (roads, water supply, irrigation, waste water treatment).

4. Improving the quality of life and development of rural areas:

- Improve the standard of living in rural areas;
- Through improvements of basic services (energy supply infrastructure; health, social, cultural facilities and others);
- Through the diversification of income generating activities and possibilities ensuring economic and social cohesion between rural and urban areas;
- Through the provision of possibilities for employment and a lasting source of income to a significant part of the population, thus contributing to fighting poverty and depopulation;

- Through the increasingly important integration of tourism development and agricultural development, taking advantage of the wide range of domestic products through the promotion of national cuisine;
- Through the preservation of the tradition and cultural heritage of the countryside.

5. Improving administrative capacities:

- Enhance the institutional development and ensure regulatory development and enforcement;
- Improve inter-ministerial cooperation in addressing identified challenges and enhance collaboration with local self-governments.

In order to avoid overlapping during the implementation of the IPARD II measures and rural development measures that are supported through the agricultural budget, clear demarcation will be made between the measures financed from the national budget and donor projects.

The measures foreseen within this strategy go beyond the domain of agriculture (development of ANC (areas with natural constrains), development of organic and other environmentally friendly practices, preservation of agricultural genetic resources) and also agro-forestry management, and require appropriate institutional capacity for the complete adjustments to the EU principles.

In 2013 MARD, adopted the Code of Good Agricultural Practice (GAP) which gives advice on how to produce food in a way that takes into account the preservation of the environment. Its recommendations will enable the Montenegrin agricultural producers to protect the agricultural land in Montenegro, keep rivers, lakes and shallow water clean and healthy, avoid pollution by nitrates, protect the health and well-being of animals, thus protecting Montenegro from serious diseases that could threaten the livelihoods of farmers, safe use of pesticides, to protect themselves, consumers, animals and the environment. The GAP code addresses all of the issues listed as pressures in the Action plan for fighting land degradation and mitigation of the consequences of drought in Montenegro.

The National Forest Strategy adopted in 2013 is a very important national strategic document in regards to the managing of natural resources. The forests of Montenegro cover 60% of the country territory. However, around half of these forests have emerged in the past half a century by succession on **abandoned agricultural land** and the old forests were intensely logged in the second half of the twentieth century.

Forests are managed multi-functionally according to contemporary standards, which means they are natural, healthy, vital and resistant to negative impacts, and they perform their ecological and other functions.

The strategy defines two general objectives pertaining to forests as eco-systems and natural resources and to the economic sector of forestry:

1. Improvement of the forests and of the sustainability of their management by increasing the standing volume in forests available for wood utilization.

2. Increase the GDP of the forestry sector, wood industry and other activities that are dependent on forests from 2% to 4% of total GDP.

The Strategy of Water Management of Montenegro, adopted in 2017, defined the model of strategic water management planning. Water management should be based on the principle of water immunity as a resource and the conditions for the existence of water as a natural public good can be used only in a way that does not endanger its substance and does not exclude its natural role.

Therefore, water management should be organized in such a way that the quantity, quality and reliability of water are based on the maintenance of the ecological functions that the population depends on, and which should be preserved so that the use of water does not jeopardize the sustainability of aquatic and associated ecological systems.

The National Biodiversity Strategy for the period 2016-2020 identified agro-biodiversity (plant and animal genetic resources) as a very important segment of the total Montenegrin biodiversity and its preservation is defined through the second strategic target - multidisciplinary and multi-sectorial approach to biodiversity protection; and the fifth strategic target - creating

preconditions and implementation of targeted measures for the protection of the most endangered parts of biodiversity.

The National Program for Conservation and Sustainable Use of the Genetic Resources in Agriculture (2008-2013) and the Action Plan for Conservation of the Genetic Resources in Agriculture (2009-2013) were the first multi-year planning documents adopted for the conservation and sustainable use of genetic resources in agriculture. They were designed in two parts, two main groups of resources, i.e. as a program and action plan for plant genetic resources and for genetic resources in livestock breeding.

B5.4.2 Institutional and Legal Settings

Institutional Settings

The Ministry of Agriculture and Rural Development (MARD), as an umbrella institution, proposes laws and other regulations, proposes system solutions in agriculture, defines the agricultural policy and undertakes measures for its implementation. MARD has responsibilities for: the management and use of agricultural (natural) resources, use and protection of water resources; protection against the adverse effects of water; protection of water against pollution; water supply in rural communities; conservation and management of agro biodiversity and forests; hunting; food safety; and application of modern technology in agriculture.

Within MARD, five directorates are responsible for the specific area of Agriculture and Rural Development: Directorate for Agriculture, Directorate for Rural Development, Directorate for Water Management, Directorate for Forestry, Hunting and Wood Industry, Directorate for Payment.

The Directorate for Rural Development is responsible for the creation and implementation agri-environmental measures for management of natural resources (natural pastures, organic agriculture, agro-biodiversity).

The Directorate for Water Management carries out the tasks related to the management of water and water resources and development policy, monitors the normative activity at the national level, and develops legislation and works to harmonize it with the EU regulations.

The Directorate for Forestry, Hunting and Wood Industry is responsible for the forest management and protection of forests from illegal logging, poaching and fire and other regulations that regulate the area of forestry, hunting and wood industry.

The Directorate for Food Safety, Veterinary and Phytosanitary Affairs - the phytosanitary sector is responsible for the administrative and other related professional activities referring to: the protection of the plants health, seeds and seedlings, the protection of plant varieties, genetically modified organisms (GMO) and genetic resources, the safety and quality of food of plant origin at a primary production level, plant protection and plant nutrition.

The Environmental Protection Agency is responsible for monitoring of the environmental status, where some of indicators are directly related to agri-environmental issues such as the monitoring of the use of pesticides, fertilizes, monitoring of the parameters of water and soil pollution.

The Biotechnical Faculty is responsible for the monitoring of plant health and harmful organisms (Phytosanitary lab) and temporary actions of soil quality control (agrochemical lab). This institution is responsible for the implementation of programs for conservation and sustainable use of plant and animal genetic resources and management of the plant gene bank.

CETI – The Centre for Eco-toxicological Testing of all segments of the environment: air, surface and ground water, sea water, waste water, drinking water, soil.

Legal Settings

The Montenegrin Constitution, as the highest legal act, defines Montenegro as a civil, democratic, **ecological** and state of social justice, based on the rule of law (Article 1), and stipulates that everyone has the right to a healthy environment, to timely and full information about the state of the environment, the possibility of influence when deciding on issues of importance to the environment and the legal protection of these rights.

The Constitution stipulates that everyone, and in particular the State, is obliged to preserve and improve the environment (Article 23) and thus international treaties are confirmed and published as an integral part of the domestic legislation that has priority over the domestic legislation.

The Law on Agriculture and Rural Development (OG of MNE 56/09, 18/2011, 34/14, 01/15 and 51/2017) regulates: the development of agriculture and rural areas, the objectives and measures of agrarian policy, the incentives in agriculture and the preconditions for their realization, the rights and obligations of beneficiaries of subsidies, supplementary activities in agriculture, agriculture and other issues of importance for the development of agriculture and rural areas. The measures for sustainable management of agricultural resources are defined through the promotion of agricultural programs that are compatible with the principles of environmental protection - agro ecological measures and regulating the conservation and sustainable use of agricultural genetic resources (Article 16).

The Law on Organic Farming (OG of **MNE no. 56/13)** defines the main objectives of organic farming:

1) Establishment of a sustainable agriculture management system that:

- Respects natural systems and cycles and maintains and improves the quality of land and water, plant and animal health and their balance;
- Contributes to a high level of biodiversity;
- Rationally uses energy and natural resources (water, soil, organic matter and air);
- Respects animal welfare standards and in particular meets the specific needs of animals in relation to their species;

2) Production of different types of food and agricultural products using non-harmful procedures for environment, human, plant and animal health.

The Law on Livestock (OG of MNE, no. 72/2010, 48/2015) regulates the manner and preconditions for the rearing of domestic animals, the way of adopting and implementing breeding programs, the preservation of genetic variability, the marketing of animal feed and genetic material, the rights and obligations of livestock farmers and other issues relevant to livestock breeding. Chapter 4 of this law declares the preservation of genetic variability and the genetic resources of domestic animals as public interest. The funds for preservation of the genetic resources of domestic animals are provided in the budget of Montenegro (Article 33). The preservation of biological diversity in livestock farming as well as the conservation of autochthonous breeds (protection of breed and its name) are governed by Articles 34, 35 and 36.

The Law on Plant Protection Products (OG of MNE no. 51/08, 40/11 and 18/14) is in line with the acquis. Since 2009, Montenegro has been using the list of EU – approved active substances and only products containing the approved substances can be placed on the market. Currently, plant protection products containing active substances approved in the EU are the only ones that are accepted. Currently, all plant protection products are imported.

The Law on Water (OG of MNE no. 27/07 and 48/15) regulates the legal status and way of integral water management, water and coastal land and water facilities, conditions and manner of carrying out aquatic activities and other issues of importance for water management and water resources, such as:

- territorial water management;
- use of water (for water supply, irrigation, bottling, fish farming, production of electricity, navigation, sports and recreation, etc.);
- protection of waters against pollution, while defining areas of special protection of waters, vulnerable areas and plans for protection against pollution, monitoring;
- watercourse regulation and protection against harmful effects of waters (defining endangered areas of floods, protection against erosion and floods, etc.)

The Law on National Parks (OG of MNE 56/09, 40/11) stipulates the establishment of the Public Enterprise "National Parks of Montenegro" (PENP) to implement measures related to the management and protection of national parks. It defines the borders of the five parks (Biogradska Gora, Durmitor, Lovćen, Prokletije and Lake

Skadar), as well as the regime of their operation and management. The newest Law on National Parks (OG 28/14) revises the boundaries of the National Park Durmitor and incorporates the concept of ecosystem services.

The Veterinary Law (OG of MNE no. 30/12 and 48/15) regulates the conditions and manner of carrying out veterinary activities, animal health protection, measures of veterinary public health, veterinary protection of the environment, as well as other issues of importance in the performing of veterinary activities.

The Law on Agricultural Land (OG of MNE no. 15/92, 59/92, 27/94, 73/10, 32/11) regulates the preservation, arrangement and use of agricultural land. Agricultural land, for the purposes of this Law, shall be considered as: arable land, gardens, orchards, vineyards, meadows, pastures, ponds and swamps, as well as other land that can serve the general interests, if it is used or can be used for agricultural production.

During the exploitation of agricultural land, land users are obliged to take measures to improve its physical, chemical and biological properties, prevent the reduction of the agricultural area land, as well as to adhere to the measure of protection and preservation of the environment determined by special regulations.

B5.4.3 Agri-environmental policy

The agricultural policy measures defined by the Strategy and National Program are organized in four main groups: market policy measures, rural development policy, support for general services in agriculture, and social transfers to the rural population.

The market policy measures prepare the market intervention and direct payment measures. Market interventions consist of two measures: market intervention program, and risk management in agriculture.

Direct payments to the farmers consist of the two main measures: a) Direct support for livestock production paid per head of livestock and b) Direct support to crop production per hectare of cultivated land.

Direct support to livestock production - is a direct payment measure which is closely related to preserving the agri-environment. This measure is designed to support the rearing of cattle, sheep and goats due to the specific natural conditions in Montenegro reflected in the prevailing low-productive natural meadows and pastures in the structure of agricultural land. These areas could be used and valorised only by rearing ruminants under semi extensive or extensive systems of production that are tightly linked with the staying of the active workforce in the predominantly rural areas of Montenegro.

The direct support to livestock production consists of:

- premiums per head for breeding cows and heifers, sheep and goats,
- slaughter premiums per head for beef cattle and other categories of adult cattle (for slaughtering in registered slaughterhouses).

The main aims of these measures are:

- balanced development of cattle, sheep and goat breeding in all regions,
- better utilization of available resources, especially natural meadows,
- strengthening of the vertical integration in meat production and improving the safety systems by encouraging cattle slaughter in registered slaughterhouses under appropriate veterinarian and sanitary conditions (and reducing slaughtering on farms).

CC: The basic eligibility conditions for premiums are: the animals to be registered and identified under the national system of animal identification and registration, and the agricultural holdings to be registered in the register of holdings, while the other criteria are defined in the annual plan of the Agro-budget.

Direct support to crop production is a measure designed to support improvement in the crop production potential. Due to the specific natural conditions, very limited arable land available, which is also underutilized, the average crop yields are low. Crop production development is one of the conditions for rational utilisation of a very limited natural resource, as well as for providing a minimum level of production of crops traditionally raised in this area.

The aims of this measure are:

- to increase the competitiveness of crop production,
- to achieve optimal utilisation of available resources, through regular cultivation of land suitable for crops and forage production, observing the principles of GAP,
- to improve forage and cereals production on available arable land.

The support is implemented in the form of direct payments per hectare of cultivated land surface for basic crops: cereals, potatoes, plants for animal feed (plants for silage production, annual and perennial fodder crops, grass-legume mixture and lucerne), buckwheat and other crops (apart from tobacco) based on the Annual program of the Agro-budget.

CC: The eligibility conditions for premiums are for the agricultural holding to be registered as a producer and to have registered or entered the parcels of arable land in the Land Parcel Identification System (SIZEP), as well as implement the GAP.

The Rural Development Policy measures are as follows:

Axis 1. – Measures for improving the competitiveness of agriculture with ten different supporting measures for development of different sectors of agriculture.

Measure - Support of investments in agricultural holdings in the frame of EU / IPA and IPARD projects.

One of the main causes of the low competitiveness of Montenegrin agriculture is the low productivity of physical assets, caused by the insufficient supply of mechanical equipment. Thus, the IPARD program is aimed to:

- modernize production and strengthen competitiveness through:
  - increasing productivity of the farm,
  - reduction in production costs,
- achieve national and EU standards in the field of:
  - protection of the environment, better use of natural resources,
  - public health, animal and plant health, animal welfare, protection at work.

Support measures for improvement of grape, vegetable, fruit and olive production.

Axis 2. The measures for sustainable management of natural resources are exact agro-environmental measures. These measures include:

- Preservation of autochthonous genetic resources in agriculture (varieties and breeds),
- Organic production,
- Sustainable use of mountain pastures,
- Support to manure management (manure storage)

More detailed description of these measures will be provided in the next chapter.

Axis 3. Measures for improving the quality of life and diversification of economic activities in rural areas

Measure 1: **Diversification of economic activities in rural areas**

Very few members of the Montenegrin agricultural population generate any income from non-agricultural sources, while there is a large number of unemployed or partially employed people who are seeking out alternative employment. Thus, the development of other economic (i.e., non-agricultural) activities among agricultural holdings and in forestry, as well as the development of different types of activities and services that are not narrowly connected to agriculture, could bear significant importance.

Support is given to holders and members of agricultural holdings and other holdings in rural areas that promote non-agricultural activities. All activities that could potentially create new employment opportunities in non-agricultural areas are supported, while modernising pre-existing non-agricultural activities in the area:

- provide services (direct sales of products at the holdings, offering rural tourism)
- domestic handcrafts (production of local products made of wool, wood, etc)

- trade in local agricultural and other products
- other commercial activities of importance to the economic development in rural areas

The aim is: improvement of the living conditions and quality of life in rural / mountainous areas; increase in the incomes of agricultural holdings; increasing employment in rural areas; support to the traditional local economy of farmers in mountain areas, contribution to the preservation of biodiversity and the traditional "open" landscapes; reducing of the depopulation of rural areas.

Measure 2. **Revitalizing and development of rural areas and construction of infrastructure**

Poor rural infrastructure (local roads, water management and, in some regions, electricity) is typical of many rural areas in Montenegro, especially in distant, mountainous areas. This condition negatively impacts the economic and social status of rural areas and contributes to the depopulation of rural villages.

The aim is: to improve the living conditions and quality of life in rural areas and to establish conditions for developing agriculture and for diversifying economic activities in both agricultural holdings and rural areas in general.

B5.4.4 Agri-environmental measures in place

Axis II of Rural Development policy titled as the **Sustainable Management of Natural Resources** consists of a direct set of agri-environmental measures which are implemented in this Montenegrin agricultural policy. This set of measures consists of four different measures:

- Preservation of the genetic resources in agriculture
- Support to Organic agriculture
- Sustainable use of Mountain pastures
- Support to manure storage at farms

1. Preservation of genetic resources in agriculture

Reasons for implementation

As a relatively small land surface, Montenegro is extremely rich in terms of its genetic inventory of plants and animals in agriculture, as reflected by its great number of varieties and breeds and the autochthonous population of plants and animals used in food production. This fact puts an obligation on the government to pay well-deserved attention to biodiversity in agriculture.

The objectives of this measure are:

a) contribution to protection of biodiversity, generally,

b) conservation and sustainable use of autochthonous breeds of domestic animals;

c) study and selection of genotypes from indigenous populations of plant species;

d) updating the databases on the genetic resources

Measure description

The subsidy is given for livestock farming and plant production which are included in the action plan for the preservation and sustainable utilisation of genetic resources in agriculture. This subsidy incorporates:

A) Plant genetic resources support is given to:

- permanent crops (old olive trees 50 EUR/tree, autochthonous vineyards and fruit varieties – 2,000 EUR/ha of plantation)
- vegetable or other one-year crops (500 EUR/ha, with minimum of 0.3ha)

B) Animal genetic resources support includes:

Busha – autochthonous cattle breed (80 EUR/head),

Sheep: Zetska žuja, Sora, Jezeropivska breed and Ljaba 8 EUR/head and for Zetska žuja additional 7 EUR/head),

Domestic Balkan goats (8 EUR/head),

Donkeys (50 EUR/head)

C) Monitoring, identification, inventory, morphological characterization and reports

The support is based on the eligibility criteria specified in the Agricultural Budget adopted annually.

The budget is very limited (A - 10,000 EUR; B – 20,000 EUR and C – 10,000 EUR), total 40,000 EUR.

The program of in situ conservation of farm animal genetic resources so far included 23 farmers which rear about 1000 heads of different sheep breeds, 100 heads of Busha cattle breed and 20 heads of donkey.

2. Support to organic agriculture

Production systems in Montenegrin agriculture are chiefly extensive and can relatively simply use a programme of limited chemical (pesticide and fertiliser) usage, in line with organic production. This means that there is great potential for an important part of agriculture to be adjusted to the production technologies that enable sustainable use of agricultural land and long-term protection of natural resources and environment.

The objectives: sustainable management of natural resources; reducing the negative impacts of agriculture to the environment; conservation of biodiversity; raising the quality of agricultural products; contribution to Montenegro as an ecological state.

Scope:

A) Payment in plant production:

- permanent crops - 400 EUR/ha, with threshold of 0.5 ha;
- field crops – 250 EUR/ha, with threshold of 0.15 ha
- production of vegetables – 350 EUR/ha, threshold of 0.15 ha

B) Payment in livestock production:

- LU of cows and heifers – 100 EUR; minimum 3 cows
- LU of sheep and goats – 100 EUR; minimum 30 sheep or goat
- Laying hens 2 EUR per bird; minimum 300 birds
- Beehives – 40 EUR.

Support is provided to producers who produce organic products in accordance with the Law on Organic Production.

Agricultural producers who are registered in the Register of Entities in Organic Production and in the Register of Agricultural Holdings can obtain the right to support. Support is granted based on the eligibility criteria specified in the Agricultural budget adopted annually.

After on spot and administrative control conducted by Monteorganica (National Organic certification body) and cross checking by the Department for Payments (DP) support for organic production in 2017 was approved and paid to 239 producers in a total amount of 303,525.53 EUR.

The total budget planned for 2018 is 350,000 EUR.

Organic production has been chosen as a pilot project for testing the introduction of LPIS (Land Parcel Information System) in Montenegro. This measure covers plant production, livestock production and beekeeping, and it is exactly because of this wide area of sectors included in organic production that we have chosen this measure. The open call for this measure was announced on 8th of May 2017.The implementation of this this pilot project is under the responsibility of the Department for Payments (DP), which has organised many public presentation and workshops for producers registered for organic production about the procedures of application for fulfilling the Payment requests and for plant production on a parcel drawn in the LPIS. A total of 228 producers applied only for plant production, 18 for livestock (with beekeeping) and 18 producers for both types of productions. 984 parcels were drawn in LPIS which covers approximately 620 hectares.

3. Sustainable use of mountain pastures

Reasons for implementation - Montenegro is very rich in mountainous pastures that are traditionally used in extensive livestock farming (cattle, sheep and goats), for milk and meat production. These mountain pastures, including the transhumance, represent a special richness that contributes to the preservation of local biodiversity (specific flora and faunae and adapted local breeds) and has a special economic importance. That system enables the production of traditional products (different types of cheeses, kajmak - skorup and other kinds of dairy products, lamb and other types of meat, etc.) that have important roles in the Montenegrin national cuisine.

Recently, the number of rural holdings rearing livestock in this way has been decreasing; this system of mountain-pasture utilisation is shrinking and prompting a number of negative consequences. Preserving mountain pastures and transhumance is also very important from the vantage of preserving Montenegro's natural and cultural heritage.

The objectives: sustainable use of natural resources - agricultural land; maintenance of natural and cultural heritage; preservation of traditional products; restoration of pasture by removing weeds.

Description of the measure:

Support is provided for the family farms that move livestock (ruminants and horses) from villages to the mountain pastures – (called **katuns**) for minimum of three months during summer.

Support is **10 EUR per Livestock Unit** of cattle (cows, heifers, bulls, oxen), sheep and goats (calves, lambs and kids are excluded)

The total budget is 220,000 EUR

In 2017, 1441 farmers moved their cattle to mountain pastures during the summer and received support for the sustainable use of mountain pastures. They stayed in the mountains for more than three months with a total of 21,284 LU.

4. Support to manure storage and disposal

This is a relatively new measure introduced in 2016.

The objective is to improve the manure disposal providing better use of it in land fertilising and to protect the environment.

Description of the measure:

Support is provided as investment support - grants for the construction and reconstruction of facilities for storage of manure.

The maximum grant support (ceiling) is 2,800 EUR per eligible investment.

The guidelines for support are in the Agricultural budget, while detailed eligibility criteria are specified in the open call.

The total budget planned for 2018 is 100,000 EUR

During 2017, a total of 66 livestock breeders successfully realized investments in manure management facilities. The support (grant) was 60% of the investment cost or 141,060 EUR, although the planned budget for this measure in 2017 was 80,000 EUR.

IPARD programme and Agri-environmental Measures

The Program for Development of Agriculture and Rural Areas in Montenegro under IPARD II 2014-2020 and the measures selected within the Programme are in line with what is described within the Indicative Strategy Paper (ISP) and the Strategy for Development of Agriculture and Rural Areas 2015-2020. Planned type of actions presented within the Indicative Strategic Paper and the key objectives of IPA II assistance are set to promote the alignment of the Montenegrin agricultural policy with the Common Agricultural Policy (CAP) and to contribute to a competitive, sustainable and efficient agriculture sector while maintaining vibrant rural communities, to increase the added value of products, create new jobs, improve the living conditions in rural areas, as well as make connections with the tourism sector. To achieve these goals, IPA II assistance will be provided in two strands: institutional capacity building and rural development measures.

The IPARD II programme 2014-2020 and its implementation will have a positive impact on addressing the pressure to the environment. Enforcement and compliance with the National Minimum Standards and EU standards will have a very important positive impact, and it is expected that the overall state of the environment will improve, which will have an indirect positive impact on nature, biodiversity and the landscape.

A direct positive impact on soil, water, air and climate could be expected through the construction and/or reconstruction of manure storage capacities, including equipment for its handling and use.

For the implementation of the IPARD II programme, the Managing Authority, in close cooperation with the IPARD Agency, will prepare the National Rulebooks for the implementation of each measure, which will incorporate the provision of the measures set in the IPARD II programme as well as the requirements of the

Sectoral Agreement. The IPARD Agency, in close co-operation with the Managing Authority, will develop templates of Application Forms and Business Plans and will provide instructions/ guidelines for applicants for their preparation.

The agriculture in Montenegro is still of extensive character, meaning low application of fertilisers, herbicides and similar chemicals, which lead to soil, water and air pollution. Therefore, when speaking of quality and quantity of these three critical factors, it may be said that there has been no need for any specific interventions in terms of agri-environment measures on our territory so far. This viewpoint may be justified by the fact that the share of meadows and pastures in the total agricultural land is high, which actually indicates high level of preservation of biodiversity and ecosystem.

Agri-environment measures are aimed to contribute to the European Strategy 2020 observing the rural development objectives in the context of natural resource management and climate change.

Agri-environment measures to be further developed are related to support for introduction and maintenance of organic agricultural production methods, usage of pastures and conservation of autochthonous genetic resources.

The financial allocation of funds for the AE measures through the IPARD II Programme 2014-2020 is around 4 Mil. EUR. The public support for AE measures is 100% (85% of EU contribution and 15% of National contribution). The draft text of the AE measures in the Programme does not include any targets yet.

The Managing Authority (Directorate for Rural Development) is responsible for establishing a reliable system for collecting statistical and financial data for monitoring and evaluation (M&E) purposes.

In order to assess whether or not the Programme implementation is on track to achieve the programme's objectives, it is important to monitor the Programme during implementation and to evaluate its impact.

M&E is the process of collecting and analysing information about the Programme in order to assess whether the implementation of the Programme is on track to reach the set of objectives, and whether or not the Programme has achieved or contributed to the desired impact.

The objective of the Monitoring function is "to monitor the effectiveness and the quality of the implementation of the IPARD II programme. It shall be carried out by reference to relevant physical, environmental and financial indicators. It shall also ensure that operations are selected for funding in accordance with the criteria and mechanisms applicable to the programme, and comply with the relevant Union and national rules".

The System of M&E has been established, both during the implementation of the IPARD II measures, as well as during the implementation of theAE measures.

It is planed that the AE measures through IPARD II programme 2014-2020 will start to be programed and implemented during 2019.

B5.4.5
Agri-environmental indicators

The Regulation on the National List of Environmental Protection Indicators was adopted in 2013 (OG of MNE no. 19/13). The national list of indicators includes indicators on the state of biodiversity, land water, sea, soil, air, climate change as well as indicators of the effects of waste production, agriculture, fisheries, energy, transport and tourism on the environment. Out of a total of 57 indicators defined and adopted by the Regulation, the monitoring program so far encompassed 37 indicators.

An indicator-based overview of the state of the environment in Montenegro is based on information and analysis resulting from many years of implementation of monitoring programs for all segments of the environment (which are implemented by the institutions selected in the tender procedure), in addition to data obtained from individual institutions whose data are relevant to environmental protection.

In addition to indicators that are officially monitored by the EPA (periodically - on an annual or multi year level), for some Agri-environmental indicators there are available data obtained through implementation of other agri-policy measures or as the result of regular activities and work of other institutions.

Rationale of the status Agri-environmental indicators in Montenegro (table B5.4.5.1)

From the **domain of Responses**, under the sub-domain *Market signals and attitudes,* the monitoring of the indicator **Area under Organic Farming** is regularly carried out and reported by the Environmental Protection Agency (EPA) every four years. This indicator shows the trends of distribution of the area under organic agriculture and their share in the total agricultural production. According to the report of EPA for last four years, the area under organic farming covered 0.6% of the total agricultural land.

The indicator **Agri-environmental Commitments,** under sub-domain **Public Policy**, is described in detail in the previous chapter (B1.4.4).

In the scope of the domain **Driving Forces**, under the **sub-domain Input Use**, the indicators: **Mineral Fertilizer Consumption, Consumption of Pesticides and Energy Use** are regularly monitored by EPA. According to the Indicator-based State of the Environment Report of Montenegro (2013) the total consumption of mineral fertilizers for 5,776 ha of arable land was 1,185 tons, while the total consumption of pesticides was 136 tons (Annex, Table B5.6.9). The total quantity of used mineral fertilizer consumption includes the use of a composites based on nitrogen (N), phosphorus (P2O5) and potassium (K2O) in agricultural production. Excessive use of fertilizers affects the pollution of water and soil, and disrupts the natural balance of micro flora land.

The total quantity of used pesticides includes the aggregate use of plant protection products (fungicides, herbicides, insecticides, etc.) in agriculture. The table data shows the possible amounts of plant protection products, generated on the basis of the imported amounts of product. However, based on the fact that purchases of plant protection products does not mean that all those amounts will be utilized, the conclusion is that there is a real possibility that the amount of resources consumed are less then presented here.

Table B5.4.5.1 .The status of Agri-environmental indicators

Domain	Sub-domain	Nr	Title	Indicator	Institution	Note
Responses	Public policy	1	Agri-environmental commitments		MARD	Measure described in chapter B1.4.4
		2	Agricultural areas under Natura 2000 (Archived)			
	Technology and skills	3	Agri-environmental indicator - farmers' training and environmental farm advisory services (Archived)	No		
	Market signals and attitudes	4	Area under organic farming (see Organic farming statistics)	**Yes**	MSDT and EPA	Monitoring frequency 4 years, available data from 2013.

Domain	Sub-domain	Nr	Title	Indicator	Institution	Note
Driving forces	Input use	5	Mineral fertiliser consumption	**Yes**	MSDT and EPA	Monitoring frequency 4 years, data from 2013.
		6	Consumption of pesticides	**Yes**	MSDT and EPA	Monitoring frequency 4 years, data from 2013.
		7	Irrigation	Yes	MONSTAT	There are data that can be used to obtain indicators
		8	Energy use	**Yes**	MSDT and EPA	Monitoring frequency 4 years, data from 2013.
	Land use	9	Land use change (Archived)			Indicator can be perceived using CORINE Land Cover
		10.1	Cropping patterns	Yes	MONSTAT	There are data that can be used to obtain indicators, annually.
		10.2	Livestock patterns	Yes	MONSTAT	There are data that can be used to obtain indicators, annually.
	Farm management	11.1	Soil cover	Yes	MONSTAT	There are data that can be used to obtain indicators, three-yearly.
		11.2	Tillage practices	Yes	MONSTAT	There are data that can be used to obtain indicators, three-yearly.
		11.3	Manure storage	No		No data.
	Trends	12	Intensification/extensification	No		Monitoring is planned for the period from 2020 to 2025 with the Economic Account in Agriculture and FADN
		13	Specialisation	No		Monitoring is planned for the period from 2020 to 2025 with the Economic Account in Agriculture and FADN
		14	Risk of land abandonment (Archived)	No		
Pressures and risks	Pollution	15	Gross nitrogen balance (Archived)	No		
		16	Risk of pollution by phosphorus	No		
		17	Pesticide risk	No		
		18	Ammonia emissions	**Yes**	MSDT and EPA	Monitoring frequency 4 years, data from 2013.
		19	Agri-environmental indicator - greenhouse gas emissions (see Climate change - driving forces)	Yes		Data in Second National Communication on Climate Change to UNFCCC
	Resource depletion	20	Water abstraction (Archived)	No		
		21	Soil erosion	No		
		22	Genetic diversity	No		
	Benefits	23	High Nature Value farmland	No		
		24	Renewable energy production (Archived)	Yes	MONSTAT	There are data that can be used to obtain indicators
State/Impact	Biodiversity and habitats	25	Agri-environmental indicator - population trends of farmland birds (see Biodiversity statistics)	No		
	Natural resources	26	Soil quality (Archived)			
		27.1	Water quality - Nitrate pollution	**Yes**	MSDT and EPA	Monitoring frequency 4 years, data from 2013.
		27.2	Water quality - Pesticide pollution (Archived)	No		
	Landscape	28	Landscape - state and diversity (Archived)	No		

The indicator **Energy Use** follows the trend of energy consumption by energy products, and thus the use of renewable energy, implementation of energy efficiency policies and energy conservation. The structure of the primary energy consumption of 72% consists of charcoal (42%) and oil derivatives (30%) and the remainder (28%) of other fuels. In the observed period (2000-2011), there was a drop in the consumption of primary energy (about 21%) with an annual rate of 1.9%. However, in the period 2002-2004 and from 2005-2008, there was an increase of 21.4% and 17.23% (Annex – Figure B5.6.2).

The monitoring of indicator **Irrigation** will soon be organized through a three-year study on the structure of agricultural Holdings.

From the domain of **Driving forces** and under the sub-domain **Land Use,** for the indicator **Land Use Change** there is no official data in Montenegro, but this indicator can be perceived using the CORINE Land Cover. For the indicators **Cropping Patterns** and **Livestock Patterns,** there are available data provided by the Statistical Office (MONSTAT), but none of these indicators have been included in the national list of indicators.

In the **Driving Forces** domain, under the sub-domain **Farm Management,** for the indicators **Soil Cover** and **Tillage Practices** some data can be produced based on the three yearly data of the Statistical Office of Montenegro, MONSTAT.

For the **Manure Storage** indicator there are no official data on state level, only partial data obtained through the implementation some agro-policy measures and projects.

From the same domain, under the sub-domain **Trends,** the following indicators: **Intensification/ Extensification**, **Specialization** and **Risk of Land Abandonment** have not been included in the national list of indicators so far. But, for the first two mentioned indicators, monitoring is planned for the period from 2020 to 2025 through the Economic Account in Agriculture and FADN, while for the third mentioned indicator there is no official data.

B5.5CONCLUSIONS AND RECOMMENDATIONS

B5.5.1 Conclusions

State *of the agri-environment (policy, measures, indicators, institutional setup)*

Based on the structure of the agricultural land it could be stated that Montenegro has a relatively well-preserved environment/agri-environment, even with vast areas of unused agricultural land.

Due to the prevalence of an extensive or semi extensive livestock production system, very low stocking density, especially of herbivores, as well as a generally low level of pesticides and mineral fertilizers use, there are no serious polluters in the agricultural sector,

The protected areas with limited agricultural activities (such as National Parks and Parks of Nature) made up 12% of the total area with a perspective of increasing,

The area under agricultural land marks an increasing trend, thanks to the support measures and subsidies though the agro-budget.

Most of the legislation relevant to the efficient implementation and managment of the agri-environmental measures have been adopted.

The responsibilities in the field of natural resource management partly overlap between MSDT and MARD - primarily in terms of agricultural/livestock production in the area of national parks, as well as with regards to the conservation and the use of agro-biodiversity, forests and waters.

EPA is responsible for monitoring of the indicators adopted in the regulations, but has not established monitoring for all of the adopted indicators.

Needs: What are the needs of the all the relevant stakeholders concerning the implementation of a successful agri-environmental policy

- To provide an appropriate framework for sustainable use of the resources up to their maximum potential, simultaneously providing their preservation,
- To promote sustainable use of the natural resources as the best approach in their preservation
- To improve the farmers' education on agri-environmental issues
- To copy successful comparative practises and experiences
- To significantly increase the budgetary support for the agri-environmental measures, including education of the farmers
- A more active role of NGO-s (civil society) in the preservation of the resources via their usage for food production
- To raise public awareness at all levels
- To provide a framework for the farmers to be the managers of the resources

Challenges - faced by the government, the institutional capacities of the relevant institutions, or the farmers in addressing agri-environmental policy

- The Government and the capacities of the relevant institutions (research and professional services)
  - to increase the budget for AE measures
  - to enhance the human capacities at all levels–
    - to introduce AE in the regular educational systems
    - to reinforce education of the children
    - additional education of the adults
  - more and deeper involvement of the research entities in the AE matters
  - to follow and respect the latest global trends related to AE
  - to strengthen the role of local communities
  - to raise the public awareness on AE
- Farmers
  - education on
    - the importance of the environment and its preservation
    - cross-compliance rules as a real need of the farmers that they can benefit from on long term
    - how to implement the AE practices on farms, especially with regards to the implementation of the codex of good agricultural practices
  - enhancement of networking:
    - among the farmers
    - farmers with the local administration
    - farmers with the media, social groups etc.
  - strengthening the farmers technical capacities, especially the infrastructure

Constraints: Which constraints are preventing the target groups from fulfilling the needs? (legal, institutional, etc)

- The legal frame is not completely put in place
- The institutional frame is still weak
  - low level of collaboration among stakeholders and overlapping in the sharing of the responsibilities (especially among MARD and MSDT)
  - local authorities are not involved in the designing and execution of policies related to the AE measures
  - weaknesses of the state administration (there is a practise of just copying experiences of other countries without serious analyses)

B5.5.2 Recommendations

Recommendations for institutional set up improvements

- To strengthen the human capacities of the extension service at the state and local level
- To improve the technical capacities of the professional services at all levels
- To provide better networking between the extension service and educational/research institutions
- To speed-up the building of an implementing structure for agricultural policy harmonized with the CAP (Paying Agency, Managing Authority, IACS…);
- To develop analytical capacity for programming and analysis of agricultural policy, including AE indicators;
- To educate the administration in the modern management of public policies, with special focus on AE;

Recommendations for policy improvements

- To ensure continuity in policy making based on multi-annual programming documents
- To increase the financial support to agriculture by widening the number of the beneficiaries of direct payments, developing and implementing cross-compliance rules
- To broaden the support to manure storage (to significantly increase the total budget and grant support per farm) with monitoring of manure management in accordance with the codex of GAP
- To create a new National Program with an Action Plan for conservation and sustainable use of genetic resources in agriculture (with two segments: for plant and for animal genetic resources). The New National Program has to be fully harmonized with the Global Plans of Actions (for PGR and AnGR) issued by FAO.
- To develop new measure/s for areas with natural constraints, ANC scheme (agro ecological measures)
- To introduce CAP, area payments scheme that will include support to all used agricultural areas not only cultivated land, but also meadows and pastures (the total share is extremely high, 94%)
- To harmonise the internal sector policies (agricultural, national park, tourism etc.) in order to avoid overlapping and prevent conflicts which may cause harmful effect on the environment
- An important step is to define the vulnerable zones and to establish monitoring of surface water and groundwater. Montenegro needs to establish a network to monitor the concentration of nitrates in surface and ground waters. Based on the results of the monitoring, waters polluted by nitrates and waters at risk of pollution by nitrates from agricultural sources should be identified and vulnerable areas from which swell or leaching water polluted by nitrates in surface and groundwater should be determined
- To enhance the vocational education and trainings for farmers;
- To raise the public awareness on AE and bring all the relevant issues related to the AE closer to the broader public in Montenegro

Recommendations for improvements in information and data availability

- To develop and fully implement evidenced based policy, which, among other things, requires the following:
  - to remove the existing gaps in statistics
  - to develop, implement and monitor the overall indicators in agricultural sector
  - to develop AE indicators (grouping them as DPSIR indicators) that will serve policy makers, but also researchers and other stakeholders (civil society etc.)
  - regular annual reporting - green report or indicator-based assesment reports
  - precise data collection on mineral fertilizers and pesticides use
  - the specific/targeted sector studies related to the AE, including impact assessment of agriculture to the environment

LITERATURE

Books:

Fuštić, B. i Đuretić, G. (2000): Zemljišta Crne Gore. Univerzitet Crne Gore, Podgorica,

Marković Božidarka, Marković, M. (2010): Review of Agriculture and Agricultural Policy in Montenegro (page: 165–188). Chapter 7 in Monography: Agriculture in the Western Balkan Countries, ISSN 1436-221X, ISBN: 978-3-938584-51-4, Edited by Leibniz Institute of Agricultural Development in Central and Eastern Europe – IAMO.

Milan Marković, Božidarka Marković, Biljana Lazović (2012): High Natural Value Farming in Europe – Chapter Montenegro (page 301-310). Editors: Opperman R., Beaufoy G., Jones G – Institute for Agroecology and Biodiversity. ISBN 978-3-89735-657-3.

Agricultural policy and European integration in South Eastern Europe (edited by Tina Volk, Emil Erjavec and Kaj Mortensen); Milan Marković: Agriculture and Agricultural Policy in Montenegro. Food and Agriculture Organization of the United Nations. Budapest, 2014

Senija Alibegić – Grbić, Pero Erić, Savo Vučković, Branko Ćupina, Radisav Dubljević, Petre Ivanovski, Tatjana Prentović, Đorđe Gatarić, Branislav Nedović (2005): Unapređenje proizvodnje krme na prirodnim travnjacima. Univerzitetski udžbenik, Sarajevo.

Grupa autora (2017): Poljoprvreda planinskih područja – priručnik za proizvođače. Univerzitet Crne Gore, Biotehnicki fakultet.

Strategies and policy reports:

Strategy for the Development of Agriculture and Rural Areas 2015 – 2020. Ministry of Agriculture and Rural Development, Government of Montenegro, 2015.

Programme for the Development of Agriculture and Rural Areas in Montenegro under IPARD II (2014-2020), Ministry of Agriculture and Rural Development, Government of Montenegro, 2015.

National Biodiversity Strategy with an Action Plan for the period 2016 – 2020. Ministry of Sustainable Development and Tourism, Government of Montenegro, 2015.

National Strategy for Sustainable Development 2015 – 2030. Ministry of Sustainable Development and Tourism, Government of Montenegro 2016.

Regional development strategy 2014 – 2020. Ministry of Economy, Government of Montenegro 2014.

National Strategy of Climate Change until 2030. Ministry of Sustainable Development and Tourism, Government of Montenegro 2017.

Strategy of Water Management of Montenegro. Ministry of Agriculture and Rural Development, Government of Montenegro 2017.

Radisav Dubljević (2009): Country Pasture/ Forage Resource Profiles, Montenegro and edited by J.M. Suttie and S.G. Reynolds http://www.fao.org/ag/agp/agpc/doc/counprof/montenegro/montenegro.htm

Codex of good agricultural practice of Montenegro, Ministry of Agriculture and Rural Development, Podgorica 2013.

Mapping and Typology of Regions of Montenegro, Ministry of Sustainable Development and Tourism of Montenegro, May 2015, IFB No: MNE-LAMP-7647ME-NCB-TS-13-B.1.11.3

Forests and Forestry Strategy with development plan – National Forest Strategy. Ministarstvo poljoprivrede i ruralnog razvoja i LUX Development , 2013.

Indicator–based State of the environment Report of Montenegro. Environmental Protection Agency of Montenegro, Podgorica 2013.

National Strategy for Integrated Coastal Zone Management (NSICZM) of the Republic of Montenegro, Ministry of Economic Development, Ministry of Tourism and Environmental Protection, 2007

Summary of the National Action Plan of Montenegro to Combat Desertification under UNCCD, Ministry of Sustainable Development and Tourism of Montenegro, 2015.

Spatial plan of Montenegro until 2020. Ministry of Economic Development, 2008

Web sites and data base

Official website of the Institute of Hydrometeorology and Seismology of Montenegro: www.meteo.co.me

Climate services in Montenegro, S. Pavicevic, M. Knezevic, Global Framework for Climate Services Regional Consultations Meeting, Antalya, Turkey, 22-23 November 2014

Statistical Annual Bulletin 2012, 2013, 2014, 2015, 2016. Statistical Office of Montenegro – MONSTAT

http://www.epa.org.me/index.php/sektor-za-zastitu-prirode-monitoring-analizu-i-izvjestavanje/162-zemljiste.

B5.6 ANNEXES

Table B5.6.1. Data on agricultural land use

Utilized agricultural land by categories, ha	2014	2015	2016(p)
Total agricultural utilised land	230 321.2	231 405.4	255 845.8
Arable land	6 898.4	6 853.3	7 103.9
Cereals for the production of grain	2 362.3	2 298.3	2 372.5
Potatoes	1 645.1	1 616.6	1 612.7
Vegetables, watermelons and melons	1 164.0	1 228.1	1 274.5
Fodder crops	1 599.8	1 599.0	1 680.4
Other crops and fallow land	127.2	111.3	163.8
Kitchen gardens and/or gardens	1 832.4	1 861.1	1 922.4
Orchards	769.7	767.6	778.7
Vineyards	144.1	144.1	116.4
Potatoes	492.6	505.1	537.5
Vegetables	426.0	444.3	489.8
Permanent crops	5 007.0	5 057.9	5 486.3
Orchards[1)]	2 256.4	2 292.0	2 551.4
Orchards - plantation	1 156.8	1 147.2	1 217.6
Orchards - extensive	1 099.6	1 144.8	1 333.8
Vineyards	2 703.3	2 708.0	2 860.4
Nurereries	47.3	57.9	74.5
Perennial meadows and pastures	216 583.4	217 633.1	241 333.2

[1)] Olives are included, Source: Statistical yearbook 2017 (MONSTAT)

Table B5.6.2. Data on Soils (major soil types and their distribution)

Soil type	Area (km²)	Area (%)
Regosol	6.3	0.046
Arenosol	4.2	0.031
Colluvium	157.9	1.143
Calcomelanosol	6633.4	48.026
Rendzina	326.2	2.362
Ranker	65.4	0.473
Eutric cambisol	1172.7	8.491
Distirc cambisol	3842.7	27.821
Calkocambisol	456.5	3.305
Terra Rossa	850.3	6.156
Pseudogley	5.8	0.042
Fluvisol	183.6	1.329
Eugley	106.8	0.773
Peat soil	0.2	0.001
Total	**13812.0**	**100,000**

Table B5.6.3abc: Data on crop production (crops, areas, yield). Harvested area and production of Wheat, Maize, Barley, Oats, Rye on arable land and hay from meadows, Lucerne and clover,

a

Year	Wheat			Maize for grain			Barley		
	Area harvested, ha	Yield, tons		Area harvested, ha	Yield, tons		Area harvested, ha	Yield, tons	
		t/ha	Total		t/ha	Total		Per ha	Total
2014	738.6	2.9	2 158.6	650.3	5.1	3 304.6	423.7	2.7	1 147.3
2015	736.5	2.9	2110.5	629.4	4.3	2700.2	370.1	2.6	952.0
2016	747.4	3.2	2353.8	628.1	4.2	2649.9	385.9	2.8	1067.8

b

Year	Oats			Rye			Potatoes		
	Area harvested, ha	Yield, tons		Area harvested, ha	Yield, tons		Area harvested, ha	Yield, tons	
		Per ha	Total		Per ha	Total		Per ha	Total
2014	209.9	2.3	475.9	182.9	2.9	527.2	2 137.7	14.5	31 907.1
2015	202.7	2.7	555.5	178.2	1.9	338.8	2123.1	16.7	35444.7
2016	207.1	2.7	557.0	183.9	2.1	392.1	2150.2	18.4	39503.9

c

	Lucerne and clover			Meadows		
	Area harvested, ha	Yield - hay, tons		Area harvested, ha	Yield - hay, tons	
		Per ha	Total		Per ha	Total
2014	772.8	6.7	5184.5	61 860.5	2.6	162 257.7
2015	735.1	6.0	4408.3	63 323.4	2.7	174 693.6
2016	743.0	6.2	4639.0	72 819.9	2.7	194 738.8

Table B5.6.4. Production of some important vegetables (2015 - 2016)

Species	Total			Arable land		
	Area harvested, ha	Yield, tons		Area harvested, ha	Yield, tons	
2015		Per ha	Total		Per ha	Total
Cabbage, white	318.4	33.4	10 623.2	249.3	35.3	8 791.6
Watermelon	482.7	41.8	20 194.2	481.0	41.8	20 125.3
Dry beans	100.5	8.5	855.5	43.4	9.1	396.8
Pepper	180.6	24.9	4 499.6	103.0	28.6	2 941.6
Onion	126.9	18.4	2 341.6	58.2	17.9	1 041.9
Tomato	114.3	34.4	3 935.8	72.2	36.7	2 650.4
Cucumber	49.9	36.5	1 821.7	36.5	39.2	1 432.2
Melon	53.8	25.4	1 368.9	51.8	25.5	1 321.6
2016						
Cabbage, white	379.5	32.3	12257.5	281.0	34.6	9723.4
Watermelon	419.9	41.5	17412.7	418.2	41.5	17368.7
Dry beans						
Pepper	229.6	24.6	5643.8	128.2	28.4	3645.9
Onion	133.7	18.5	2473.4	60.9	18.2	1109.8
Tomato	139.6	32.0	4464.1	83.3	38.2	3183.7
Cucumber	49,9	36,5	1 821,7	36,5	39,2	1 432,2
Melon	53,8	25,4	1 368,9	51,8	25,5	1 321,6

Table B5.6.5. Production of some important fruits and olives under plantation (2014 – 2016).

Species	Area under the fruit tree			Yield per ha, t			Production, t		
	2014	**2015**	**2016**	**2014**	**2015**	**2016**	**2014**	**2015**	**2016**
Plums	204.1	227.3	234.2	9.7	5.5	6.8	1 976.4	1 259.2	1587.6
Apples	132.3	139.7	151.1	20.1	20.2	10.8	2 656.0	2 816.8	1638.3
Mandarins	138.7	143.4	153.8	23.1	18	22.4	3 204.4	2 574.7	3449.5
Pears	33.9	35	43.6	5.3	10.4	9.9	180.7	365.5	431.6
Peaches	94.6	92.5	76.9	13.5	16.1	10.4	1 276.1	1 491.9	797.2
Olives	82.8	88.9	117.5	3.1	2.7	3.5	253.8	244.3	412.0

Table B5.6.6. Production of grapes on plantation (2014 – 2016)

	Production		Of that on plantations			
	total, t	production, t	productive area, ha	number of grapevines of productive age	yield t per ha	yield kg per vine
2014	18873.5	17128.7	2 598,3	9 726 732	6,6	1,8
2015	24826.6	23085.6	2 634,1	9 820 800	8,8	2,4
2016	30153..0	28925.4	2 783.2	10 552 905	10.4	2.7

Table B5.6.7. Data on livestock production (number of heads and structure) 2011 - 2016

Year	Cattle		Pigs		Sheep		Horses	Poultry	Beehives
	Total	Cows and heifers in calf	Total	Sows and first farrow sows	Total	Ewes for breeding			
2011	87173	62199	21398	2945	208771	172924	4035	470047	42237
2012	84701	63062	18451	2317	207047	169295	3905	732090	42680
2013	89058	65591	20572	1601	190843	153450	4858	620354	42458
2014	93550	67104	22053	2993	204403	165351	4968	595675	43210
2015	92452	65893	24951	2699	194636	155543	4927	606225	48007
2016	89269	63590	55841	3448	191992	151679	3947	835705	67703

Table B5.6.8. Total fertilizers and pesticides consumption in Montenegro, 2005 - 2011.

	2005	2006	2007	2008	2009	2010	2011
Arable land (ha)	5772	5746	5883	5399	5243	5150	5776
Total fertilizers consumption (t)	1310	1413	1635	1766	1769	2767	1185
Total pesticides consumption (t)	52	52	53	186	89	133	136

Source: EPA Indicator based report

Figure B5.6.1. Total and unit consumption of mineral fertilizers per surface area unit in Montenegro, 2005-2011 (Source: Indicator-based State of the Environment Report)

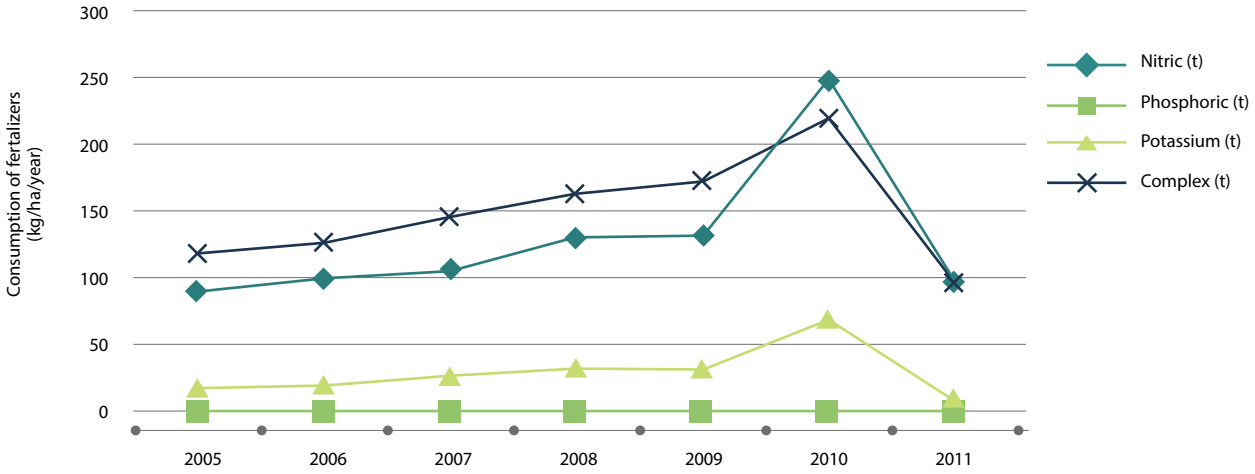


Figure B5.6.2. Final energy consumption by sector in Montenegro, 2000-2011 (Source: Indicator-based State of the Environment Report)

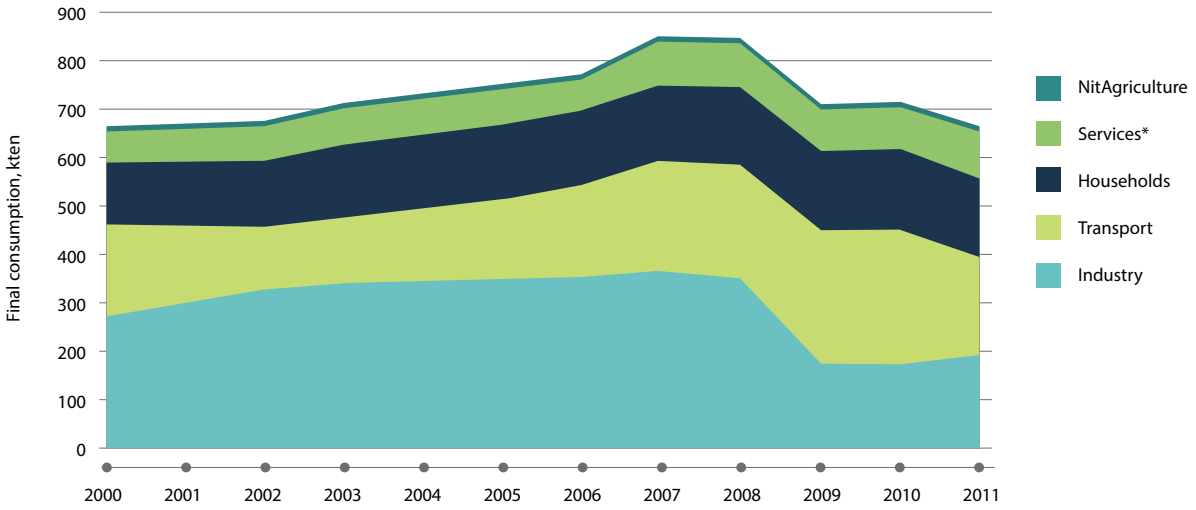


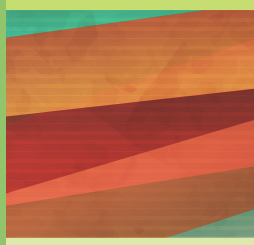
Table B5.6.9. Meteorological main and climate stations characteristics

	ID	Lat	Long	Elevation	Station Type
1.	Bar	42° 06′	19° 05′	6	main
2.	Cetinje	42° 23′	18° 55′	640	main
3.	Herceg Novi	42° 25′	18° 43′	40	main
4.	Kolašin	42° 50′	19° 31′	944	main
5.	Nikšić	42° 46′	18° 57′	647	main
6.	Pljevlja	43° 21′	19° 21′	784	main
7.	Podgorica	42° 26′	19° 16′	49	main
8.	Ulcinj	41° 55′	19° 17′	4	main
9.	Žabljak	43° 09′	19° 07′	1450	main
10.	Golubovci-PG	42° 22′	19° 15′	33	main[3]
11.	Tivat	42° 28′	18° 31′	5	main[4]
1.	Andrijevica	42° 44′	19° 47′	772	climate
2.	Berane	42° 51′	19° 53′	691	climate
3.	Bijelo Polje	43° 02′	19° 44′	606	climate
4.	Budva	42° 17′	18° 50′	13	climate
5.	Crkvice	42° 34′	18° 38′	937	climate
6.	Danilovgrad	42° 33′	19° 06′	53	climate
7.	Grahovo	42° 39′	18° 40′	695	climate
8.	Kotor	42° 26′	18° 46′	1	climate
9.	Krstac	43° 00′	18° 42′	1017	climate
10.	Mojkovac	42° 58′	19° 35′	811	climate
11.	Petnjica	42° 55′	19° 58′	730	climate
12.	Petrovac	42° 12′	18° 57′	17	climate
13.	Plav	42° 36′	19° 57′	933	climate
14.	Plužine	43° 09′	18° 51′	780	climate
15.	Rožaje	42° 51′	20° 10′	1007	climate
16.	Šavnik	42° 57′	19° 06′	825	climate
17.	Župa	42° 44′	19° 07′	789	climate

[3] Airport synoptic
[4] Airport synoptic

Chapter B6

AGRI-ENVIRONMENTAL POLICY IN SERBIA



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B6.1 INTRODUCTION

The Republic of Serbia was granted EU candidate status on March 1, 2012 by the European Council. The Stabilisation and Association Agreement is an international agreement that entered into force on September 1, 2013 between Serbia and EU, which gave Serbia the status of a country associated with the European Union. The first intergovernmental conference between Serbia and EU was held in Brussels on January 21, 2014, signalling the formal start of Serbia's accession negotiations at the political level. During the previous seven intergovernmental conferences (last one held on December 11, 2017) in Brussels, 12 out of the 35 chapters were opened.

Chapter 11 - Agriculture and Rural Development has not been opened yet. Explanatory screening for Chapter 11 was held on 18-20 March 2014. Bilateral screening for Chapter 11 was held in the period 14-16 September 2014. The screening report was reviewed on 24 February 2015. Chapter 12 - Food Safety, Veterinary and Phytosanitary Policy has not been opened yet. Explanatory screening for Chapter 12 was held on 3-7 February 2014. Bilateral screening for Chapter 12 was held on 20-24 October 2014. Chapter 13 - Fisheries was opened in June 2018.

The Ministry of Agriculture, Forestry and Water Management has a Sector for International Cooperation, which includes the Department for European Integration, Multilateral and Bilateral Cooperation in the field of agriculture.

Main country indicators:

- 88,499 km^2 (77,589 km^2 excluding the territory of Kosovo*)[1];
- Inhabitants: 7,186,862 excluding Kosovo* [2]
- 92.6 inhabitants per 1 km^2 excluding Kosovo* [2]; Trend: intraregional population distribution is rather unequal. The population density of 513 inhabitants/km^2 in the *Beogradski region* is five times higher than in the other regions of the Republic of Serbia. On the other hand, the *Region Juzne i Istocne Srbije* with 60 inhabitants/km^2 has a lower population density.
- GDP for 2016 was 38,295.6 mil USD (Conversion according to annual average exchange rate), 5,426 per capita, USD[1]

* *The 2011 Census was not conducted on the territory of Kosovo*. In the municipalities of Preševo and Bujanovac there was undercoverage of the census units due to fact that it was boycotted by most of the members of the Albanian ethnic community.*

Agriculture in the country

Agricultural land share in total country area (excluding territory of Kosovo*): 49.8% (3,861,477 ha).[3]

Gross Value Added for Agriculture, Forestry and Fishing in GDP: 8.67% (2015).[1]

Registered Employment: Employees, self-employed persons, unincorporated enterprises and their employees in agriculture, forestry and fishing (33,313) + registered individual farmers (89,106) = 122,419 (6.09% in total).[1]

Major crops (by area) are maize, wheat, sunflower, soya, cabbage and kale, peppers, plums, tomato, lucerne, clover, sugar beet, potatoes etc. Major livestock (by number) are pigs, sheep, cattle, goats etc.

Strategic approach to the rural development policy of the country

The National Agriculture and Rural Development Strategy (NARDS) of Serbia for the period 2014-2024 was adopted on 31 July 2014 and published in the "Official Gazette of the RS", no. 85/2014. It is based on the following vision for the development of agriculture and rural areas:

An efficient and innovative agri food sector based on knowledge, modern technologies and standards that offers high quality products to domestic and foreign markets and ensures sustainable development of the natural resources, environment and cultural heritage of

the rural areas; a sector that provides economic activities and employment opportunities and quality of life to the young people and the other rural inhabitants.

In accordance with this vision, the following strategic development goals have been defined:

- Increased production growth and stability of producers' incomes;
- Improved competitiveness achieved by getting adjusted to the requirements of the domestic and international markets and through technological and technical improvement of the sector;
- Sustainable resources management and environmental protection;
- Improvement of the quality of life in rural areas and poverty reduction;
- Efficient public policy management and institutional framework improvement for agricultural and rural areas development.

Major challenges and strategic objectives with regards to the environmental and agri-environmental issues

The main threats to the soil are: decline of organic matter content, sealing, salinization, acidification, contamination, compaction and erosion. It is necessary to protect the waters (surface and underground) from agriculture pollution (by nutrients). The challenge is to increase the area under irrigation systems. It is essential to control the quantity and quality of extracted water. Another major challenge is to increase the area under organic farming, map and protect the high natural value farmland, encourage and increase agricultural production in areas with natural constraints. One of strategic objectives and a major challenge is to protect the agrobiodiversity and genetic resources for food and agriculture (both plant and animal genetic resources), as well as agroecosystems and cultural landscapes which have been shaped as a result of the traditional agricultural practices throughout previous decades and centuries.

Data and expert view on major environmental and current agri-environmental issues in the country

On the basis of the repeated (1991 and 2011-2013) sampling and analysis of the soil from the same 1300 sites in AP Vojvodina, the content of organic matter has declined by about 0.5% on average (Part of this study was conducted in the framework of Project No. TR 31072: "Status, trends and possibilities to increase the fertility of agricultural land in the Vojvodina Province", which is supported by the Ministry of Education and Science of the Republic of Serbia).

The occurrence and progress of the erosion processes is one of the major causes of soil degradation and its deteriorated quality. It is estimated that erosion processes (of various degrees) affect up to 80% of the agricultural soil in Serbia. While in the central regions and the highlands water erosion prevails, the predominant type of erosion in Vojvodina is wind erosion. Approximately 85% of the agricultural land in Vojvodina is affected by wind erosion. The soil quality is also affected by the uncontrolled and inadequate waste disposal.[13]

With regards to the nitrate concentration, the quality of groundwater has been constantly improving since 2009 and in 2013 it was at its best for the period 2004-2013. As far as the nitrate concentration in surface waters is concerned, the water quality was constantly improving from2008 to 2013.[15]

National rural development support policy

In order to fulfill the strategic goals, the following policy interventions have been proposed:

- Direct payments and market and price support interventions, related to income support of the farmers;
- Rural development interventions, financed under the IPARD II Programme and under the national support schemes;

- Support to general services, including veterinary and plants protection;
- Institutional development and capacity building.
- Institutional reforms with regard to efficient policy management and building capacities for implementation of the EU CAP – policies should be implemented.

Assess relevant laws and regulations for agri-environment

Serbia has a general legal framework for agriculture and rural development, instead of particular laws and regulations on the agri-environment. (see 4.2.). The overall implementation of the laws is not at a satisfactory level. There are not sufficient capacities to monitor the implementation of laws and the judiciary is slow. There are no by-laws under the Law on Land Protection.

B6.2 AGRICULTURE IN SERBIA

The Republic of Serbia consists of two different geographical parts that affect the intensity and characteristics of agricultural production: the lowlands of Vojvodina and the highlands of Central Serbia.

Table B6.1.1. Key agricultural indicators

	2010 [4]	2015 [1]	2016 [1]
Share of utilized agricultural land in total land*	65.11	44.70	44.33
Share of arable land in agricultural land	65.22	74.70	75.52
Share of permanent crops in agricultural land	5.88	5.42	5.46
Share of agricultural GDP in total GDP	8.50	8.67	/
Share of agricultural labour in total labour	/	6,86	6.09
Share of agricultural exports in total exports	7.42	7.07	7.15
Share of agricultural imports in total imports	2.59	3.33	3.15

* The total amount of agricultural land did not include unutilized agricultural land (424.054 ha in 2012 [3])

The Statistical Office of the Republic of Serbia changed its methodology in 2012, which is the reason why the share of agricultural land in the total land has significantly decreased. The share of arable land in agricultural land, on the other hand, has increased. However, the absolute values of the areas both under arable and agricultural lands have decreased compared to the beginning of this decade.

Other shares during the observed period were stable, except for the share of agricultural imports in the total imports, which has increased.

Table B6.1.2. Land Use

	[1] 2016 (ha)	2016 in % of total land
Land Total	7,758,900	100
Forest	2,168,746	27.95
Utilized agricultural land	3,439,887	44.33
Arable land & gardens	2,597,808	33.48
Permanent crops (fruit, grapes, nurseries)	187,942	2.42
Pastures	311,211	4.01
Wooded pastures	No date	No date
Agroforestry	No date	No date
Fallow	16,624	0.21
Abandoned land	424,054 - 2012 [3]	5.47
Agricultural land/capita (ha)	0.48	
Arable land & permanent crops/capita (ha)	0.39	

The share of agricultural and arable land in the total area of the Republic of Serbia is primarily the consequence of geomorphological and pedogenetic factors. These factors have had influence not only on the total areas under these land uses, but also on their distribution within the country. The largest areas subject to the above land uses are in the northern part of the country, the Autonomous Province of Vojvodina, as well as in the valleys of the large rivers in central Serbia. The share of agricultural land in the total area of AP Vojvodina is significantly higher, at the level of 71.3%, while the arable land is at the level of 65.8%.

Table B6.1.3. Farm Structure

	[3]/2012	
	Number of holdings	Percentage of holdings
Total	631,552	100
No land	10,107	1.60
Up to 2 ha of UAA	293,770	46.52
From 2 ha to 5 ha	185,090	29.31
From 5 ha to 10 ha	90,273	14.11
From 10 ha to 20 ha	32,878	5.21
From 20 ha to 50 ha	13,133	2.08
From 50 ha to 100 ha	4,386	0.70
From 100 ha UAA	1,915	0.052
From 100 ha to 300 ha	1,456	0.23
From 300 ha to 500 ha	143	0.02
From 500 ha to 1,000 ha	135	0.02
From 1,000 ha to 2,500 ha	125	0.02
From 2,500 ha to 5,000 ha	44	0.01
From 5,000 ha UAA	12	0.002

***UAA – Utilized Agricultural Area**

Based on the data from Table B6.1.3, it can be concluded that the Republic of Serbia has a large share of agricultural holdings with a small total area of land at their disposal (77.3% out of total number of holdings). The situation is further complicated by the fact that the land plots owned by one holding are often fragmented and distant from one another.

Table B6.1.4. Agricultural production[1]

Crop Production (total)	Areas (ha)	Production (t)
Cereals	1,605,215	10,258,245.1
Oilseeds (Sunflower, Soya, Rape seed)	396,137	1,236,977
Sugar beet	49,237	2,683,859
Tobacco	5,256	7,811
Fruits (Apples, Plums, Sour Cherries, Raspberries, Grapes)	147,918	1,079,784
Vegetables (Beans, Cabbage, Kale, Peppers, Tomatoes)	37,451	447,744
Potatoes	31,594	528,070
Meadows	313,690	671,317
Pastures	230,109	392,067
Other crops (Lucerne, Clover, Maize for fodder)	152,200	909,305
Livestock (total)	Heads Number	Number of farms
Cattle	893,000	177,252
Pigs	3,021,000	355,052
Sheep and goats	1,865,000	217,902
Horses	15,000	10,095
Poultry	16,242,000	327,445
Other animals (Beehives)	792,000	/

From the total areas under the crops in Table B6.1.4 and their total production, it can be concluded that the average yields per hectare are very modest. This comes as a result of the low economic power of the agricultural holdings and the lack of government subsidies, which accounts for a decreased amount of applied chemicals (fertilizers and plant protection products). On the other hand, the reduced use of chemicals lowers the possibility of pollution. Also, there is an extensive production of plant biomass from meadows and grasslands.

Cattle are mostly bred in the regions of Šumadija and Western Serbia (45.9% compared to total amount of cattle on the territory of the Republic of Serbia), while pigs are raised in region of Vojvodina (41.9%).

Compared to the ten-year average (2007–2016), the total number of cattle is lower by 6.2%, pigs by 13.5%, goats by 23.2% and poultry by 10.6%, while the number of sheep is higher by 5.8%.

B6.3 ENVIRONMENT AND ENVIRONMENTAL POLICY IN SERBIA

The Republic of Serbia 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 access by water to inland Europe and the Black Sea. Its watershed, including the Morava River tributary, covers most of Serbia's southern mountainous regions. Serbia has a 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 based on 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, the least developed region, and includes the majority of Serbia's mountains. In terms of altitude, the highlands (altitudes greater than 500 meters) cover 33,992 km^2, or 38.47% of the Serbian territory; mountains exceeding 1,000 m cover 9,887 km^2 (11.19%); medium height

mountains with altitudes of 1,000–1,500 m are spread over 9,681 km^2; and the high mountains (over 1,500 m) cover just 206 km^2, or 0.23% of the territory. The Republic of Serbia has a moderate continental climate with pronounced local variations[14]. Environmental monitoring, data collection and management, environmental indicators production, preparation of national reports on the state of the environment and its components as well as reporting to the European Environmental Agency (EEA) and to other international organisations is the responsibility of the Serbian Environmental Protection Agency (SEPA).

The National State of the Environment Report in the Republic of Serbia contains all the relevant data, information and indicators prepared by SEPA and is published yearly.[15,16]

Air emissions indicators show an increase of NH_3 after 2005. The most significant share in the total quantity of emissions of GHG comes from the energy sector (NO_x -57% and SO_2 - 82%) and agriculture (92% for NH_3). The emissions of PM_{10} are constant across the entire period and the most prominent sources are from the energy sector. The share of agriculture is 9%.[15] According to the latest data, methane emissions (CH_4) in the agricultural sector and other land use have decreased, and nitrous oxide (N_2O) emissions slightly fluctuated in the same sector in the period 1990-2013.[40]

The surface and ground water quality monitoring, performed by SEPA, shows that in most cases the concentrations of nitrates and orthophosphates remain within the range of values defining an excellent or good ecological status (I and II class of water quality). The worst quality has been detected in surface waters (rivers and channels) in the province of Vojvodina as pollutant concentrations of almost half of the samples are not within the ranges prescribed for those particular water bodies. With regards to **water emissions**, data indicates average sewage systems connection rates for 60% of the inhabitants.

The soils of Serbia are extremely heterogeneous as a result of a varied geological base, climate, and vegetation. As a response to the need for establishing an integrated environmental monitoring in 2010-2014, efforts have been made at increasing the area subject to soil quality monitoring. The results of the fertility control show that the largest number of samples has a low content of organic carbon. The average content of organic carbon in agricultural land is 1.98%.[40] Very low content was found in 5.24% of samples.[17] The total area of agricultural land converted into artificial surfaces in 1990-2012 was 11,367 ha.[40]

High genetic species and ecosystem diversity are the key characteristics of the Republic of Serbia [18]. The Republic of Serbia hosts:

- 39% of European vascular flora,
- 51% of European fish fauna,
- 49% of European reptile and amphibian fauna,
- 74% of European bird fauna,
- 67% of European mammal fauna.

Nearly all typical terrestrial biomes of Europe (and four of the world's twelve terrestrial biomes) are found on the territory of the Republic of Serbia: e.g. the zonobiome of deciduous (broadleaf) forests. In the Republic of Serbia, this zonobiome primarily occurs as oak and beech forests; Steppe zonobiome – with muck land as zonal soil and steppe (in the Republic of Serbia mostly with forest steppe) vegetation; Zonobiome (orobiome) of conifer boreal forests – in the mountain climate of the Republic of Serbia's western, south-western and south-eastern parts; Zonobiome (orobiome) of "tundra" highland– in the Alpine climate of the Republic of Serbia's highlands. The current area under protection is about 662,402.00 ha or 7,48% of the total surface of Serbia and includes 5 national parks, 18 nature parks, 20 exceptional landscapes, 68 nature reserves, 38 cultural and historical areas and 310 natural monuments. The HNV farmland covers 11,872 km^2 of agricultural land. This is equivalent to approximately 19% of the total agricultural area, and 13% of the total territory of the Republic of Serbia.[14]

A new legal framework for environmental protection was introduced in 2004 through the enactment of the Law on Environmental Protection, the Law on Strategic Environmental Assessment, the Law on Environmental Impact Assessment, and the Law on Integrated Pollution Prevention and Control (IPPC) ("Official Gazette of the RS", no. 135/2004). These laws are fully harmonized with the EU Directives on Environmental Impact Assessment,

Strategic Impact Assessment, IPPC, and Public Participation. The body of environmental legislation comprises more than 100 laws and regulations. The legislative, executive and judicial powers are mostly exercised within the legally prescribed area of responsibility of the republic's authorities. According to the law, certain responsibilities are delegated to the autonomous province and the local government.

Implementation of EU Directives

The Water Framework Directive (WFD) has been partially transposed by the Water Law ("Official Gazette of the RS", No 30/10, 93/12 and 101/16)[9] and several implementing acts. The main responsible institution is the Ministry of Agriculture, Forestry and Water Management. The institutions responsible for monitoring are the Ministry of Environmental Protection – the Environmental Protection Agency and the Republic Hydrometeorological Service of Serbia. The implementation of the WFD is in an initial stage.

The Nitrates Directive has been partially transposed by the Water Law ("Official Gazette of the RS", no. 30/10, 93/12 and 101/16)[9]. The Ministry of Agriculture, Forestry and Water Management (MAFWM) is the authority responsible for determining the vulnerable zones and their boundaries, proposing action programmes with mandatory measures for protected areas designated as vulnerable zones, proposing the Code of good agricultural practice in order to achieve a general level of water protection against pollution by nitrates from agricultural sources of all bodies of surface water and groundwater. Finally, it is the authority responsible for the adoption of the Code of good agricultural practice. These activities are carried out by the Republic Water Directorate, the Directorate for Agricultural Land and the Department of Rural Development of the MAFWM. Other relevant institutions for the implementation of the requirements include the Environmental Protection Agency and the Republic Hydrometeorological Service of Serbia. The preparatory work for implementation of the requirements of the Nitrates Directive has started. A proposal for the Nitrates Vulnerable Zones and a draft Code of Good Agricultural Practice have been developed.

The transposition of the **Directive 86/278/EEC** on the protection of the environment, and in particular of the soil when sewage sludge is used in agriculture, is in progress. The Ministry of Agriculture, Forestry and Water Management carries out the activities related to the transposition and implementation of the Directive. In the following period, the Republic of Serbia should decide whether and to what extent the waste sludge from the treatment plant will be applied.

The Habitats Directive is almost fully transposed except for Article 8 on financing, and the articles on reporting. Nevertheless, the system for financing protection measures related to special areas of conservation (Regulation on Ecological Network, "Official Gazette of the RS", No 102/2010)[19] has been designed. The main legal acts transposing the Directive requirements is the Law on Nature Protection ("Official Gazette of the RS", No. 36/09, 88/10, 91/10, 14/16)[11]. The competent authority for transposition and implementation is the Ministry of Environmental Protection. Other institutions responsible for implementation are the Institute for Nature Conservation of Serbia, the Environmental Protection Agency and some other bodies.

In accordance with the Regulation on Ecological Network ("Official Gazette of the RS", No. 102/2010)[19] the ecological network includes 101 ecological sites of international and national importance. The implementation of the provisions of the Directive is ongoing. Serbia has made some progress in identifying territories according to the EMERALD network requirements (61 site identified) and has established a good information basis for collecting additional data and further analysis needed for identification of NATURA 2000 territories.

The Birds Directive is almost fully transposed through the following national legislation: Law on Nature Protection ("Official Gazette of the RS", No. 36/09, 88/10, 91/10, 14/16)[11] and the accompanying by-laws and the Law on Game and Hunting ("Official Gazette of the RS", No. 18/2010)[41] and the accompanying by-laws.

The institutional structure for the implementation of the Birds Directive has been

established at the national, provincial and local levels. The competent authority in charge of the implementation of the Birds Directive is the Ministry of Environmental Protection.

The **EU Monitoring Mechanism - Regulation 525/2013 (MMR)** has not been aligned with; however, the draft Law on Climate Change and the accompanying by-laws that transpose the MMR have been prepared. The Ministry of Environmental Protection is the main competent authority and the coordinator of the environmental and climate change mitigation and adaptation policies and the UNFCCC implementation in Serbia. According to article 50 of the Law on Air Quality ("Official Gazette of the RS", No. 36/2009 and 11/2013)[20], SEPA is responsible for the GHG inventory preparation and maintaining.

B6.4 AGRI-ENVIRONMENTAL STATE IN SERBIA

B6.4.1 Agri-environment in the national strategic and programme documents

Both internal and external challenges for the development of agriculture and rural areas in relation to environmental protection have been defined within the **Strategy for Agriculture and Rural Development of the Republic of Serbia for the period 2014-2024.** ("Official Gazette of the RS", No. 85/2014)[21] and include, in particular, sustainable resource management and climate change.

The Republic of Serbia has diverse natural resources that are favorable for different types of agricultural production. On the other hand, the fragmentation of acres, abandoned infrastructure, insufficient care of watercourses and forests, are just some of the manifestations of decades of long investment neglect of agriculture.

The insufficient policy coordination, lack of legislation (ownership relations), lack of information and databases, and insufficiently defined competencies between individual bodies and organisations account for specific limitations in the area of protection and improvement of the state of natural resources. The creation of conditions for the growth of agricultural holdings, i.e. better utilization of available agricultural land, is a delicate policy challenge in the coming period.

In accordance with the vision and the stated principles of the Strategy, one of the established strategic development goals is sustainable resource management and environmental protection.

Operational goals for the implementation of the priority area related to the protection and improvement of the state of the environment include: protection of waters against the negative effects of agriculture; greater application of sustainable agricultural practices (application of agri-environmental measures and technology) that are environmentally friendly; establishing and promoting an integrated production system; improvement of integral pest management and organic production, system of control, certification and control of organic production; raising awareness about the importance of using renewable energy sources and production of energy crops; controlled waste and effluent management from primary agricultural production; development and improvement of the system for managing by-products of the food industry; conservation and sustainable management of plant and animal genetic resources; preservation of landscapes and agroecosystems, agricultural areas of high natural value and their resources. The strategy pays special attention to the reforms that need to be implemented with the aim of encouraging sustainable agricultural practices, application of laws and regulations for pollution prevention, land and water conservation, control of non-selective conversion of agricultural land for other purposes, and protection of forests and areas with high natural resources.

The National Programme for Agriculture for the period 2018-2020 ("Official Gazette of the RS", No. 120/2017)[22] (NPP) is an operational programme for implementation of the agricultural policy, which contains measures classified as direct payments, measures for market regulation, as well as special subsidies and loan payment support in agriculture.

The measures aimed at general goals such as sustainable resource management and environmental protection include the following: payments for various types of organic agriculture: subsidies for suckler cows, subsidies for cows, for breeding and fattening calves, subsidies for breeding cattle, lambs, goats and pigs, subsidies for production of fish for consumption, subsidies for beehives, subsidies for the implementation of breeding programmes for the achievement of the breeding goals in livestock breeding.

A Draft of the **National Programme for Rural Development for the period 2018-2020** has been submitted for adoption and it includes a set of various agri-environmental measures under the group of rural development measures intended for environmental protection and sustainable rural development (measures such as compensation on income gained for: organic production, conservation of plant and animal genetic resources, agri-environmental measures, sustainable management of arable land, forestry-environmental measures etc.).

The implementation of the **National Environmental Protection Programme** ("Official Gazette of the RS" No. 12/2010)[23] ensures and implements environmental planning and management. The programme defines the objectives of environmental protection. Among the priority goals of environmental protection in the economic sectors are the goals related to agriculture.

Continuous goals 2010-2019: assess the diffuse pollution of soil and water from agricultural land; reduce the release of nutrients and other hazardous substances from point and diffuse sources and identify areas vulnerable to water pollution by nitrates; introduce a system of controlled use of fertilizers and plant protection products on agricultural land in order to reduce the impact on the environment; improve the management of environmental protection in livestock farms and food factories; develop organic agriculture; suppress and prevent the spread of allergenic plants and weed plants; improve the sustainable management system, especially in private forests; develop modern monitoring of harmful and hazardous substances in soil, silviculture and hunting, as well as allergenic plants (allergenic pollen) and weed plants; implement measures for establishing a sustainable level of organic matter in the soil; improve the management in the field of hunting and fishing and reduce their negative impact on biodiversity and protected natural goods; explore the possibility of using natural geological raw materials to reduce the acidity of the soil; protect high-quality agricultural ecosystems; limit the conversion of high fertility agricultural land.

Mid-term goals 2015-2019: organize agricultural activities in areas identified as vulnerable to nitrate contamination in accordance with Directive 91/676/EEC and in natural protected areas; control agricultural production in protected natural resources; introduce limit values of the amount of heavy metals in agricultural land and sewage sludge used for agriculture under Directive 86/278/EEC.

Biodiversity Strategy of the Republic of Serbia for the period 2011-2018 ("Official Gazette of the RS" No. 13/2011)[18] defines the objective to improve the integration of biodiversity concerns into all relevant sectors.

Activities to achieve the goals set in the agriculture and livestock sector are: develop a national strategy and programme for sustainable use, develop and conserve plant genetic resources and domestic animal genetic resources; develop a national programme for organic farming; establish an efficient national agri-environmental programme; develop and promote best practices guidelines for sustaining biodiversity in agriculture and support their implementation. The new biodiversity strategy for the upcoming period is under construction.

The National Strategy for Sustainable Use of Natural Resources and Goods ("Official Gazette of the RS", No. 33/2012)[24] defines the main goals that include the goals related to agriculture. In the Renewable Energy Sources - framework for Sustainable Use, individual goals and measures refer to an increase in the production and sustainable use of biomass.

The part Land Resources - framework for Sustainable Use, outlines goals for agriculture: reduce the permanent loss of land to the lowest possible extent; reduce the acidity of agricultural land; maintain the humus content and prevent the loss of organic matter in agricultural land; reduce the erosion of agricultural land; prevent

alkalization and/or secondary salinization of soil; re-cultivate the existing degraded land; manage the agricultural land; support the development of organic agricultural production; introduce and implement the Code of Good Agricultural Practice for sustainable land management.

Waste Management Strategy for the period 2010-2019 ("Official Gazette of the RS", No. 29/2010)[25] is the fundamental document that provides the conditions for rational and sustainable waste management in the Republic of Serbia. The strategy defines the overall goal - developing a sustainable waste management system in order to reduce environmental pollution and degradation of the area.

B6.4.2 Institutional and Legal Settings

Pursuant to the Law on Ministries ("Official Gazette of the RS", No. 44/2014, 14/2015, 54/2015, 96/2015 – second law and 62/2017)[6], two ministries shall deal with the Agri-Environmental Policy:

- The Ministry of Agriculture, Forestry and Water Management (MAFWM) performs the state administration, which, among other matters, relates to: strategy and policy of agricultural development; quality control of agricultural products; rural development; professional agricultural services; registration and protection of plant varieties and breeds of domestic animals; conservation and sustainable use of plant and animal genetic resources for food and agriculture; inspection in the field of agriculture, etc.

The Directorate for Agricultural Land, as an administrative body within the Ministry, conducts the land policy issues in agriculture; protection and use of agricultural land; management of agricultural land in state ownership; allocation of funds for the execution of works and monitoring the implementation of the annual programme of protection, arrangement and use of agricultural land in the Republic of Serbia, etc.

The Directorate for Agrarian Payments (DAP), as a part of the Ministry of Agriculture, Forestry and Water Management (MAFWM), was established based on the Law on Agriculture and Rural Development ("Official Gazette of the RS" No. 41/2009, 10/2013, 101/2016)[27]. The Directorate conducts the activities related to the implementation of the subsidies programme in agriculture, prepares the open calls for applications, decides upon the right to assistance, makes payments to the final beneficiary, carries out administrative and on the spot checks, establishes and keeps accounting records of contractual obligations and payments, implements international assistance to agricultural policy in the Republic of Serbia, manages the Farm Register.

One of the goals of the Directorate is fulfillment of the requirements for using the European funds in the area of agriculture. After gaining the EU candidacy status for full EU membership, Serbian agriculture will become eligible for the fifth component of the Instrument for Pre-accession Assistance (IPA) related to rural development. With the establishing of the Directorate, the necessary institutional framework has been set up which will not only enable the use of the IPA funds, but also provide further integration of the Serbian agriculture into the EU Common Agricultural Policy (after gaining full membership into the EU), i.e. the European Agricultural Guarantee Fund (EAGF) and the European Agricultural Fund for Rural Development (EAFRD).

The establishment of the Directorate increased the transparency and efficiency of the national subsidies implementation and made the Directorate open to the final beneficiaries, in terms of any assistance needed.

The Veterinary Directorate, as an administrative body within the Ministry, carries out the following activities: animal health protection, registration or approval and control of facilities for production of foodstuffs of animal origin (slaughterhouses, dairies, etc.); registration or approval and control of facilities for production of animal feed and safe disposal of carcasses and by-products of animal origin, etc.

The Plant Protection Directorate is responsible for, inter alia: protection of plants against infectious diseases and pests; control of plant protection products and fertilizers in the production, domestic and foreign trade; application control of plant protection products;

production and registration of plant protection products and plant nutrition; phytosanitary control and inspection in domestic and foreign trade of plants, seeds and planting material, etc.

The Water Directorate is responsible for, inter alia: multi-purpose use of water; protection against water; implementation of water protection measures; inspection supervision, etc.

The Forest Directorate is responsible for, inter alia: forestry policy; implementation of forest protection measures; inspection in the field of forestry and hunting, etc.

- Ministry of Environmental Protection

The Ministry is in charge of the state administration affairs, which, among other things, relate to: basics of environmental protection; system of protection and improvement of the environment; national parks, inspection in the field of environmental protection; application of the results of scientific and technological research and development research in the field of environment; nature protection; air protection; protection of the ozone layer; climate changes; cross-border pollution of air and water; protection of water from pollution to prevent deterioration of water quality; protection against noise and vibration; protection against ionizing and non-ionizing radiation; management of chemicals and biocidal products; waste management, etc.

SEPA, as an administrative body within the Ministry, is in charge of the state administration affairs related to: development, harmonization and management of the national information system for environmental protection (monitoring the state of the environmental factors through environmental indicators, pollutant register, etc.); state monitoring of the quality of air and water; collection and standardization of environmental data, compiling and producing environmental reports and implementing environmental policy.

The Frame of the Agri-Environmental Policy is regulated by the following laws:

- The Law on Agricultural Land ("Official Gazette of the RS", No. 62/06, 65/08 – second law, 41/09, 112/15 and 80/17)[7] regulating the planning, protection, organisation and use of agricultural land. Agricultural land is an asset of general interest for the Republic of Serbia, which is used for agricultural production and cannot be used for other purposes, except in cases and under conditions stipulated in this Law. This law establishes the Agricultural Land Administration as an administrative body within the ministry responsible for agriculture and regulates its area of responsibility.

- The Law on Land Protection ("Official Gazette of the RS", No. 112/2015)[8]

regulating the land protection, systematic monitoring of the state and quality of the soil, remediation measures, recultivation, inspection supervision and other issues of importance for the protection and conservation of the land as a natural resource of national interest.

- The Water Law ("Official Gazette of the RS", No. 30/10, 93/12, and 101/16)[9]

Regulating the legal status of waters, integral water management, water land management, sources and methods of financing water activities, supervision of the implementation of this law, as well as other issues of importance to water management.

- The Law on Forests ("Official Gazette of the RS", No. 30/10, 93/12, and 89/15)[10]

regulating the preservation, protection, planning, growth and use of forests, disposal of forests and forestland, transposition of this law, as well as other issues of importance to forests and forestland.

- The Law on Nature Protection ("Official Gazette of the RS", No. 36/09, 88/10, and 91/10 – corr. and 14/16)[11]

regulating the protection and preservation of nature and the biological, geological and landscape diversity as part of the environment.

- The Law on Organic Production ("Official Gazette of the RS", No. 30/2010)[12]

regulating agricultural and other products using methods of organic production, its objectives, principles, methods, controls, certification, as well as processing, marking, storage, transport, trade, import and export of organic products, as well as other issues of importance to the organic production.

The responsibility for climate change, Nature 2000, protected areas, lies with the Ministry of Environmental Protection, and MAFWM, together with the Ministry of Environmental Protection, is in charge of the agro-biodiversity and protection of high nature value agricultural land.

The responsibilities of the two ministries overlap to a small extent, especially those of the directorates and agencies within them. However, this can be looked at as a form of cooperation between the different institutions.

B6.4.3 Agri-environmental policy

The agri-environmental policy is regulated through the following laws, rulebooks and regulations and in accordance with the strategy of the Republic of Serbia harmonized with the EU standards[26].

The Water Law ("Official Gazette of the RS" No. 30/10, 93/12, 101/16)[9] is in line with the recommendations of the Water Framework Directive of the European Union (Directive 2000/60/EC of the European Parliament and Council, WFD).

- Article 97. **-** For the protection of water quality, it is forbidden to:

  5) use fertilizers or plant protection products in the coastal zone up to 5 m;

- Article 165. **-** Fees for water pollution shall apply in the case of:

- 4) pollutant discharges on agricultural land, construction or forest land and direct or indirect contamination of water;

- 5) producing or importing fertilizers and chemicals for plant protection, as well as phosphate-based detergent;

The Law on Agricultural Land ("Official Gazette of the RS" No. 62/06, 65/08, 41/09, 112/15, 80/17)[7], sets the rules on planning, protection and agricultural land management. Furthermore, the law prescribes prohibition of discharge and disposal of hazardous and harmful substances on agricultural land, drainage canals and irrigation systems.

- Article 21 prescribes the basic requirements for the owner or user of agricultural land (agricultural land from first to fifth cadaster class). It is obligatory to control the fertility of arable land and keep record of the amount of used mineral fertilizers and pesticides. Fertility assessment of arable land and control of added mineral fertilizers and pesticides has to be done whenever necessary or at least every five years. The laboratory analyses of agricultural land can be performed by institutions which have been authorized by the Minister of Agriculture, Forestry and Water Management.

The Law on Agricultural Land also introduces erosion measures which require farmers to apply temporary or permanent prohibition on ploughing meadows and pastures, crop rotation, growing perennial plants, growing or raising agri-protection belts etc.

The Law on Agriculture and Rural Development ("Official Gazette of the RS" No. 41/09, 10/13, 101/16)[27] sets out the basic definitions, rights and responsibilities of agricultural producers, enforcing a duty for protection of the environment, animal health, animal welfare and soil.

The Law on Subsidies for Agriculture and Rural Development ("Official Gazette of the RS" No. 10/13, 142/14, 103/15, 101/16)[28] – defines the following measures to support agriculture and rural development:

- Article 3. - The types of subsidies are:

  1) direct payments;
  2) rural development measures;
  3) special subsidies;
  4) credit support in agriculture;

- Article 34. - Subsidies for rural development measures include support for programmes related to:

1) improving competitiveness;
2) preservation and improvement of the environment and natural resources;
3) diversification of income and improvement of quality of life in rural areas;
4) preparation and implementation of local rural development strategies;
5) improving the system of creating and transferring knowledge.

- Article 37. - Subsidy measures related to the preservation and improvement of the environment and natural resources include subsidies for:

  1) sustainable use of agricultural land;
  2) sustainable use of forest resources;
  3) organic production;
  4) conservation of plant and animal genetic resources;
  5) preservation of agricultural and other areas of high natural value;
  6) support for agri-environmental measures, good agricultural practices and other policies for environmental protection;

- Article 38. - Subsidies for organic plant production include payments for plant production and refunds for fuel and/or fertilizer and/or seed which are aimed for areas under organic plant production.

The Law on Organic Production (**"Official Gazette of the RS" No. 30/2010)**[12] sets the criteria for organic production, controlling and certification of organic production, processing, labelling, storage, transport, export and import. The Law is mostly in the line with Council Regulation (EC) on organic production and labelling of organic products and the Commission's implementing Regulation No. 834/2007 on organic production and labelling of organic products. In 2011 the Rulebook on the Control and Certification of Organic Production and Organic Production Methods ("Official Gazette of the RS" No. 48/2011, 40/2012): Rulebook on the documentation submitted to the Authorized Controlling Organisation issuing certificates, and on the conditions and manner of sale of organic products ("Official Gazette of the RS" No. 88/2016)[29] was adopted. The law and regulation have been prepared in accordance with Council Regulation No.834/07 as well as Commission Regulation No. 889/08 and Commission Regulation (EC) No 710/2009.

The Animal Welfare Law ("Official Gazette of the RS" No. 41/2009)[30] regulates: the prevention and treatment of disease and injury of animals; prevention and mitigation of pain, distress and other negative situations; and provision of diets and living conditions that are suited to the needs and nature of animals. The Law contributes to food safety, human health and psychological wellbeing. The provisions are related to the diets and living conditions with significant impact on the protection of the environment. In fact, the key on-farm environmental aspect of livestock production is related to the natural living processes, i.e. organic manure which should be absorbed as feed for crop after the metabolic process of animals.

The Animal Husbandry Law ("Official Gazette of the RS" No. 41/09, 93/12, 14/16)[31] regulates the treatment of animal waste (feces and urine) and their use as an organic fertilizer. Animal waste must be treated in a way which does not affect the human health and the health of animals, the environment and the quality of food.

The Law on Veterinary Matters ("Official Gazette of the RS" No. 91/05, 30/10, 93/12)[32] and its Rulebooks regulate the following aspects of manure from livestock farms:

- *Rulebook on veterinary, sanitary conditions of facilities for breeding and keeping ungulates, poultry and rabbits ("Official Gazette of the RS", No. 81/2006)*[33]:

  Article 10. - after washing the farm's stable and equipment, the waste water must be collected in waterproof tanks and purified before discharge into natural recipients. Sewage waters from farms should be collected in separate septic tanks or discharged into the sewer system.

  Article 11. – special area for storage and disposal of manure from the stable must be located and constructed to prevent environmental pollution and spreading of infective agent diseases to animals and humans; storage should be placed opposite the main wind

direction and located at least 50 meters from the stable.

- *Rulebook on the method of classification and treatment of the by-products of animal origin, veterinary-sanitary conditions for development of facilities for collection, processing and disposal of the by-products of animal origin and the requirements for animal disposal locations and landfills ("Official Gazette of the RS", No. 31/2011)*[34]:

  Article 4:

  Paragraph 45) - organic manure is of animal origin and added to the soil for the purpose of plant nutrition and soil fertility repair, in order to improve the physical, chemical and biological properties of the soil, and may include manure, content of the digestive tract, compost and residues of fermentation;

  Paragraph 67) - organic manure is feces or urine from animals on farms with or without litter, other than fishponds.

The Law on Environmental Protection ("Official Gazette of the RS" No. 135/04, 36/09, 36/09 – other law, 72/09 – other law, 43/11 – decision of the Constitutional Court and 14/16)[35] regulates the integral system of environmental protection to ensure healthy environment. Among issues relevant to the agricultural policy, the Law specifically relates to the protection of natural value (landscapes), biological diversity, species and ecosystems diversity, public natural goods such as water-fronts and forests. Agricultural production is also addressed in this provision of the Law on Planning and Utilization of Natural Values. Further, the Law is referred to in the National Strategy for Sustainable Use of Natural Resources and Goods from 2012[24].

- Article 22 – prescribes the protection of land and soil, sustainable use of land including measures of systematic monitoring of land quality, as well as monitoring of indicators for the assessment of the risk of land degradation.
- Article 23 - prescribes water protection, use of water without posing a threat to the natural process and renewal of the quality and quantity of water.

The principles that underpin the environmental legislation are the integration principles, prevention, natural value preservation and sustainable development, polluter's liability, the principles of 'polluter pays' and 'users pay', subsidiary liability of the state authorities when the polluter is unknown or the damage is caused by pollution originating from outside the Republic of Serbia, principles of incentives, public information and participation and protection of the rights to healthy environment and access to justice.

The Polluter-Pays-Principle states that the polluter should bear the costs to avoid or remedy environmental damage. Farmers have to ensure compliance with the mandatory national environmental standards.

The Law on Nature Protection ("Official Gazette of the RS" No. 36/09, 88/10, 91/10 - cor. and 14/16)[11], includes the NATURA 2000 strategy and the protection of special areas for conservation of habitats and species as well as areas under special protection for conservation of habitats and certain species of birds. The Directive on Birds (2009/14/EEC) and the Directive on Habitats (92/42/EEC) have been almost fully transposed in the Law. The Law on Nature Protection governs the protection and conservation of nature and the biological, geological and landscape diversity. Many of these provisions are relevant to agriculture. The law establishes the main principles of protection of forests, water ecosystems and habitats within the agro ecosystems.

The Law on Forests ("Official Gazette of the RS" No. 30/10, 93/12, 89/15)[10] includes operational maps of action in case of fire. These plans are subject of approval by the Ministry of Internal Affairs - the Protection and Rescue Sector. The Law on Forests covers the conservation, protection, planning, cultivation, forest use, management of forests and forest lands, monitoring of the implementation of this law and other issues of relevance to forests and forest land.

B6.4.4 Agri-environmental measures in place

The Law on Subsidies for Agriculture and Rural Development ("Official Gazette of the RS" No. 10/13, 142/14, 103/15, 101/16)[28] prescribes the following list of subsidies: 1) subsidies for preservation of plant genetic resources; 2) subsidies for preservation of animal genetic resources; 3) subsidies for agri-environmental measures, good agricultural practices and environmental protection; 4) subsidies for organic production; 5) subsidies for sustainable use of land; 6) subsidies for sustainable use of forest. The Directorate for Agrarian Payments (MAFWM) is responsible for the payment of the subsidies referred to in point 1) to 4), while the support to the subsidies under point 3), (subsidies for the agri-environmental measures, good agricultural practices and environmental protection), has not started yet.

Table B6.4.4.1.
Overview of paid subsidies in the period 2015-2017.

Subsidies	Disbursed subsidies in dinars, from 2015 to 2017, (RSD)		
	2015.	2016.	2017.
Subsidies for the preservation of plant genetic resources	104,295.00	145,054.00	216,484.00
Subsidies for the preservation of animal genetic resources	47,365,000.00	64,080,000.00	91,063,600.00
Subsidies for organic production	91,984,869.00	75,473,821.00	88,080,459.00

Source: MAFWM

The Directorate for Agricultural Land (MAFWM) is responsible for the subsidy payments for sustainable use of land, while the Forest Directorate is responsible for the subsidy payments for sustainable use of forest (MAFWM).

The Ministry of Agriculture, Forestry and Water Management (MAFWM) has been allocating funds to support agricultural production in 2018 based on the **Regulation on the distribution of subsidies for agriculture and rural development in 2018 ("Official Gazette of the RS" No. 18/2018)**[36]. The subsidies for 2018 are being allocated to the following activities:

1. **direct payments**; the amount of funds for direct payments is *21,068,248,000.00 RSD* (about *177,791,122.00 EUR*);
2. **rural development measures**; the amount of funds for rural development measures is *5,250,778,000.00 RSD* (about *44,310,362.00 EUR*);
3. **credit support in agriculture**; the amount of funds for credit support in agriculture is *800,000,000.00 RSD* (about *6,751,054.00 EUR*);
4. **special subsidies**; the amount of funds for special subsidies is *255,350,000.00 RSD* (about *2,154,852.00 EUR*);
5. **IPARD subsidies**; the amount of funds for IPARD subsidies is *2,434,260,000.00 RSD* (about *20,542,278.00 EUR*), of which the MAFWM budget is *608,565,000.00 RSD* (about *5,135,569.00 EUR*) and *1,825,695,000.00 RSD* (about *15,406,708.00 EUR*) are support from EU funds;
   The rural development measures include support to the following agro-environmental measures:

1. **Improvement of competitiveness** in the amount of *1,428,820,891.00 RSD* (about *12,057,560.00 EUR*), broken down by:

1.1. **Investments in physical assets of agricultural holdings** *1,180,000,000.00 RSD* (about *9,957,805.00 EUR*), distributed based on the following schedule:

1.1.2. **support for improvement of agricultural production** in the amount of 1,000,000,000.*00 RSD* (about *8,438,818.00 EUR*), *400,000,00.00 RSD* of which (about *3,375,527.00 EUR*) for investments in new machines and equipment for improvement of crop production and *250,000,000.00 RSD* (about *2,109,704.00 EUR*) for investments in the procurement of new machines and equipment for improvement of livestock production (*measure to support new machinery for handling, transport and spreading manure from farms*).

2. **Subsidies for the preservation and improvement of the environment and natural resources** in the amount of *204,000,000.00 RSD* (about *1,721,518.00 EUR*), for the following:

2.1. **Organic production** - *110,000,000.00 RSD* (about *928,270.00 EUR*), as follows:

2.1.1. **Organic crop production** -*40,000,000.00 RSD* (about *337,552.00 EUR*);
2.1.2. **Organic livestock production** - *70,000,000.00 RSD* (about *590,717.00 EUR*);

2.2. **Preservation of plant and animal genetic resources** - *94,000,000.00 RSD* (about *793,248.00 EUR*), distributed in the following manner:

2.2.1. **Preservation of plant genetic resources** - *2,000,000.00 RSD* (about *16,877.00 EUR*);
2.2.2. **Conservation of animal genetic resources** - *90,000,000.00 RSD* (about *759,493.00 EUR*);
2.2.3. **Preservation of animal genetic resources in the gene bank** - *2,000,000.00 RSD* (about *16,877.00 EUR*);

In accordance with the objectives of the **Strategy for Agriculture and Rural Development of the Republic of Serbia for the period 2014-2024**[21] and based on the needs, the following measures were identified in line with the IPA II priorities and the IPARD II Programme interventions to encourage the competitiveness of the agri-food sector:

- support to the process of alignment with EU veterinary, phytosanitary, food safety and environmental standards, as well as the sector for restructuring and modernization;
- contribution to the development of sustainable land management practices by supporting organic farming and other agro-environmental practices;
- contribution to sustainable rural development by supporting the diversification of economic activities and strengthening the LEADER approach;
- support efficient programmee implementation, monitoring, evaluation and publicity under the Technical Assistance measure.

Under IPARD II, six (6) measures have been selected to be included in the IPARD II Programme for the period 2014-2020[37]. The overall objective of the agri-environmental-climate and organic farming measure is associated with the introduction of pilot projects for the development of agricultural methods consistent with the protection and preservation of the environment.

Through IPARD II, the Ministry of Agriculture, Forestry and Water Management will support ***Measure 1*** - *Investments in the physical assets of agricultural holdings* and ***Measure 3*** - *Investments in physical assets concerning processing and marketing of agricultural and fishery products*. The Ministry launched the first advertisement for IPARD II, Measure 1 - Investments in the physical assets of agricultural holdings, on 25th December 2017, and on 4th January 2018.

The objective of IPARD II, ***Measure 1,*** is to support investments in the physical assets of agricultural holdings. Through technical improvements and investments in new machinery and technologies, the applicants can increase the productivity and competitiveness of agricultural production. In addition, the farms will also be harmonized with a set of national requirements as well as EU standards for environmental protection and animal welfare.

The objective of IPARD II, ***Measure 3,*** is to support investments in the physical assets related to the processing and marketing of agricultural products and fishery products. This measure will increase the overall performance of the milk, dairy, meat, fruit and vegetable sector,

as well as the products from these Sectors. All these Sectors will contribute to the achievement of the required EU standards. Furthermore, the investments will contribute to the productivity and competitiveness of these Sectors and facilitate the better positioning of products on the market and increase the possibilities for exports.

Linking IPARD and the national measures – the measures are linked to the "Investments in the physical assets related to the processing and marketing of agricultural and fishery products". The national measures under the NPRD (2015-2020) will support small holdings and farms to up-grade to a more competitive agriculture production and to diversify to non-agricultural activities. The IPARD II and NPRD programmes are complementary. The implementation of NPRD will start simultaneously with the implementation of the IPARD II Programme. Demarcation criteria between the New National Programme for Rural Development 2015- 2020 and the IPARD II measures have been done to increase the efficiency of future support to agriculture.

The IPARD II programme will mainly support viable agricultural holdings and private recipients (farmers, small and medium enterprises from the agri-food sectors etc.), while the other national measures are mainly addressed to help smaller agricultural holdings to increase their production and focus on diversification of agricultural and non-agricultural economy, excluding the support to tourism which is foreseen under the IPARD II Programme. Farms/households above the IPARD II limits will be eligible only for investment in manure management or for farm investment in energy production from renewable sources. Large companies are not considered for support neither from the national budget nor from the IPARD II Programme.

Table B6.4.4.2. Discrepancies and complementarity of the IPARD Programme with the NPRD

Measure	Sector	IPARD support	NPRD support
Investments in physical assets of agricultural holdings	Milk sector	Investment in construction and/or in reconstruction and/or in equipment of facilities such as stables for dairy cows, including equipment facilities for milk production like milking machines, on-farm milk cooling and storage facilities on farm premises; in facilities and equipment for waste management, waste water treatment, air pollution prevention measures, in construction and/or in reconstruction of manure storage capacities including specific equipment of facilities for handling and usage of animal feed and manure, like manure reservoirs, specialized manure transportation equipment; Investments on-farm in energy production from renewable sources; Larger specialized dairy farms (more than 300 cows) are only eligible for manure management and benefit i.e. from the support investments related to manure storing and handling standards;	**RECIPIENT** Agricultural holdings with less than 20 cows at the beginning of the investment Investments in construction/ extension/ adaptation /modernization of facilities for handling, storage and processing of manure and/or in machinery/ equipment for handling, storage and application of manure;
	Meat sector	Construction and/or in reconstruction of manure storage capacities and/or in specific equipment and mechanization of facilities for handling and usage of manure; Investments on-farm in energy production from renewable sources; Larger specialized dairy farms (more than 300 cows) are only eligible for manure management and benefit i.e. from the support investments related to manure storing and handling standards;	**RECIPIENT** Agricultural holdings with less than 20 cattle or less than 150 sheep and goats or less than 100 pigs at beginning of investment and facilities with capacities lower than 4,000 broiler chickens. Construction/ extension/ renovation/ modernization of facilities for the handling, storage and application of manure in the case of a closed pasture on the farm and the purchase of equipment/machinery for this purpose;
Investments in physical assets concerning processing and marketing of agricultural and fishery products		Construction/ extension/ modernization of milk collection centers and milk processing enterprises, milk storage and cooling equipment, specialized milk transportation equipment, equipment and technology for improvement and control of quality and hygiene, including simple test equipment to distinguish between poor and good quality milk, physical investments for establishing food safety systems (GHP, GMP, HACCP), IT hardware and software for milk registry and monitoring, control and management, investment in energy saving technologies, environmental protection, equipment and facilities for processing of intermediate products and wastes; treatment and elimination of wastes, specialized milk transport vehicles.	Support to Investments in physical assets concerning processing and marketing of agricultural and fishery products will be provided through the IPARD II Programme.
Agro environment	Organic farming	Support will be provided only to plant production (cereals, oil crops, vegetable, fruit or grape production and production of aromatic/ medicinal plants) that are certified as organic or are in conversion stage;	Animal organic production.

B6.4.5
Agri-environmental indicators

The indicators that quantify the impact of agriculture on the environment and monitor the changes that are made by the interaction between agriculture, the economic sectors and the environment in which agricultural activities take place, are processed and shown by several institutions: the MAFWM, the Ministry of Environmental Protection, the Statistical Office of the Republic of Serbia, the Institute for Nature Protection and SEPA.

The sector for rural development of the MAFWM monitors the result/output and impact indicators for every measure being designed and implemented both under the National Programme for Rural Development or IPARD. The sector for rural development is also entitled to monitor measures of local rural development programmes implemented in the municipalities and Autonomous Province of Vojvodina and all the indicators for monitoring and reporting are collected in the Group for Monitoring and Evaluation of the Sector for Rural Development.

Animal genetic diversity of autochthonous breeds of domestic animals is monitored by the MAFWM. The sector for rural development keeps the Register – database of all breeders and animals of autochthonous breeds and data is available on numbers of animal breeds, strains and populations.

Pursuant to the Article of the Regulation on the contents and methods of management of the environment protection information system, methodology, structure, common bases, categories and levels of data collection, as well as on data content that the public is regularly informed about ("Official Gazette of the RS", No. 112/2009)[38], the Rulebook on the National List of Environmental Protection Indicators ("Official Gazette of the RS", No. 37/2011)[39] was adopted.

The National List of Indicators contains a general description of indicators and indicators of thematic units divided into thematic areas. The general description of the indicators includes: the importance at the national and international level; relevance for reporting using a given indicator; measurability and statistical correctness of indicators; simplicity and ease of understanding; economic justification.

The indicators in the field of agriculture are defined within the National List: areas under organic production; consumption of mineral fertilizers and plant protection products; irrigation of agricultural land; and high nature value farmland. Agri-environmental indicators from the National List are presented in the annual National State of the Environment Report prepared by SEPA and available on-line.

The National List of Indicators also defines indicators in other areas that include the impact of agriculture on the environment:

- Greenhouse gas emissions
- Nutrients in surface and groundwater
- Diversity of species
- Endangered and protected species
- Land use change
- Soil erosion
- Soil organic carbon content
- Water Exploitation Index (WEI)
- Areas of degradated lands
- Final energy consumption by sector

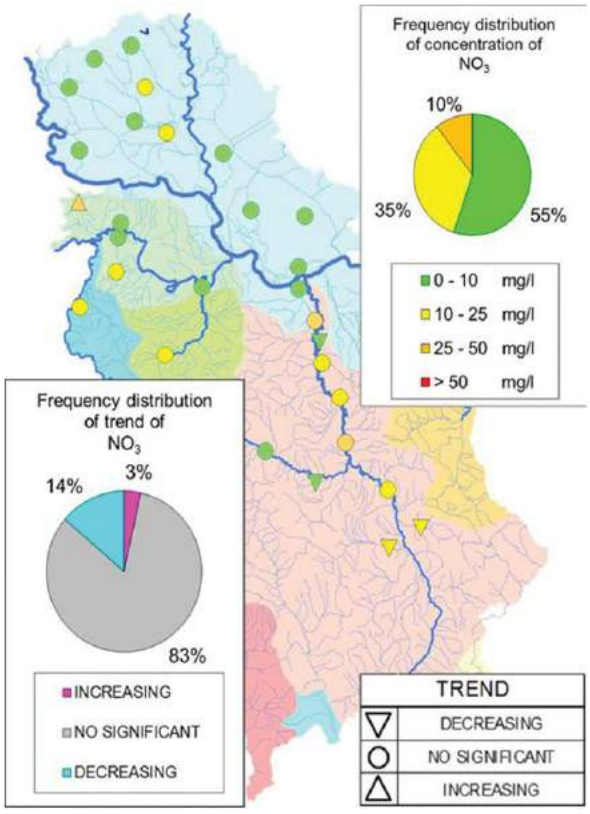


Figure B6.4.5.1. Trend and average of NO_3 concentration in the groundwater monitoring sites of the Republic of Serbia (2007-2016)

Figure B6.4.5.2. Trend of median of NO_3 concentration in the groundwater of the Republic of Serbia (2007-2016)

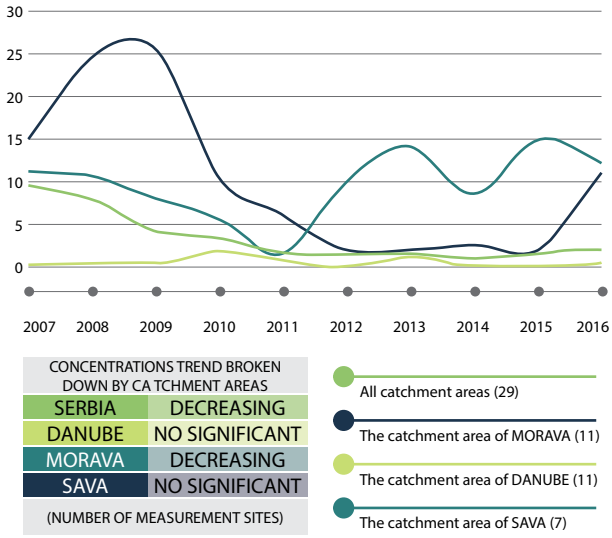
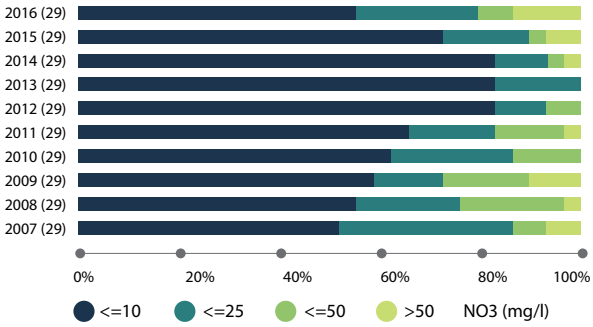


Figure B6.4.5.3. Frequency distribution of NO_3 in the groundwater monitoring sites of Serbia (2007-2016)



Source: SEPA

Based on the available data, SEPA has presented the agri-environmental indicators within the publication "Agriculture and Environment in the Republic of Serbia"– indicators based report[40]. The indicators are presented in a unique and comparable way developed by the European Environment Agency. The methodology for reporting is being constantly improved through collaboration with the European Environment Agency, as the best tool for presenting changes that arise due to different environmental impacts. Part of the indicators shown in the publication are described in the National List of Environmental Indicators, while a certain number of indicators belong to the list of indicators specially developed and recommended by the European Commission in charge of monitoring the impact of agriculture on the environment. The indicators are classified according to the standard DPSIR reporting scheme (Driving-Pressure-State-Impact-Response) used today in the EU countries to show driving forces, pressures, state, impact, and responses of society on the impact of agricultural activities on environmental changes. Numerous professional and scientific institutions and state authorities, which SEPA has cooperation with, are responsible for collecting data and producing indicators.

Table B6.4.5.1. Agri-environmental indicators

Domain	Sub-domain	Nr	Title	*Available*	*Frequency*	*Spatial reference/ resolution*	*Responsible institutions*	*How to access the data*
Responses	Public policy	1	Agri-environmental commitments	NO	-	-	-	-
		2	Agricultural areas under Natura 2000	Yes/national methodology	Yearly	National scale	INC, SEPA	SEPA
	Technology and skills	3	Agri-environmental indicator - farmers' training and environmental farm advisory services	Yes/national methodology	Yearly	National scale	SORS	SORS
	Market signals and attitudes	4	Area under organic farming	Yes	Yearly	National scale	MAFWM	MAFWM, SEPA, SORS

Domain	Sub-domain	Nr	Title	*Available*	*Frequency*	*Spatial reference/ resolution*	*Responsible institutions*	*How to access the data*
Driving forces	Input use	5	Mineral fertilizer consumption	NO	-	-	-	-
		6	Consumption of pesticides	NO	-	-	-	-
		7	Irrigation	Yes	Yearly	National scale	SORS	SORS, SEPA
		8	Energy use	Yes	Yearly	National scale	MME	SEPA
	Land use	9	Land use change	Yes	6 years period	National scale	SEPA	SEPA
		10.1	Cropping patterns	Yes	Yearly	National scale/ regional	SORS	SORS
		10.2	Livestock patterns	Yes	Yearly	National scale/ regional	SORS	SORS
	Farm management	11.1	Soil cover	Yes	Yearly	National scale/ regional	SORS	SORS
		11.2	Tillage practices	NO	-	-	-	-
		11.3	Manure storage	Yes/national methodology	Periodically	National scale	SORS	SORS
	Trends	12	Intensification/ extensification	NO	-	-	-	-
		13	Specialisation	NO	-	-	-	-
		14	Risk of land abandonment	Yes	Yearly	National scale	SORS, MAFWM	SORS, MAFWM
Pressures and risks	Pollution	15	Gross nitrogen balance	NO	-	-	-	-
		16	Risk of pollution by phosphorus	Yes/national methodology	Yearly	National scale	MAFWM	MAFWM, SEPA
		17	Pesticide risk	NO	-	-	-	-
		18	Ammonia emissions	Yes	Yearly	National scale	SEPA	SEPA
		19	Agri-environmental indicator - greenhouse gas emissions	Yes	Yearly	National scale	SEPA	SEPA
	Resource depletion	20	Water abstraction	Yes	Yearly	National scale	SORS	SORS, SEPA
		21	Soil erosion	Yes/national methodology	Periodically	National, no digital map	MAFWM, MEP	MAFWM, SEPA
		22	Genetic diversity	Yes/national methodology	Periodically	National scale	MAFWM, INC	MAFWM, SEPA, INC
	Benefits	23	High Nature Value farmland	Yes (preliminary map)	Periodically	National, digital map	SEPA, INC MAFWM	SEPA
		24	Renewable energy production	Yes	Yearly	National scale	MME	MME, SEPA
State/ Impact	Biodiversity and habitats	25	Agri-environmental indicator - population trends of farmland birds	Yes/national methodology	10 years	National	SEPA, INC	SEPA, INC, NGO
	Natural resources	26	Soil quality	Yes/national methodology	Yearly	National scale	MAFWM	MAFWM, SEPA
		27.1	Water quality - Nitrate pollution	Yes	Yearly	National scale	SEPA	SEPA
		27.2	Water quality - Pesticide pollution	Yes	Yearly	National scale	SEPA	SEPA
	Landscape	28	Landscape - state and diversity	NO	-	-	-	-

B6.5 CONCLUSIONS AND RECOMMENDATIONS

B6.5.1 Conclusions

- The common policies in the area of environmental protection and agriculture in the Republic of Serbia are mainly related to the protection of water and land. The responsibilities are shared and there is a lack of common policy that would integrate the problems and challenges and that would have an ecosystemic approach. Although the status of water has been monitored for many years, problems of system sustainability and adaptation to the requirements of the Water Framework Directive are still present.
- The same problem occurs in the transposition of the Sewage Sludge Directive. Due to the lack of capacity of the state administration, it often happens that the institution responsible for the adoption of certain documents must lead the process without the involvement of the key stakeholders that will implement the process, resulting in inadequate implementation of the legal and strategic documents.
- There is a lack of data, insufficiently defined responsibilities and exchange of data between individual bodies and organisations.
- Although it was enacted at the end of 2015, the Law on Land Protection cannot be implemented because no by-laws have been adopted yet.
- Generally, there is a low level of environmental awareness among farmers.
- Another big challenge and issue is the LPIS system (Land Parcel Identification System) for all the agricultural plots as a major part of the agri-environmental payments.
- The HNVF area in Serbia might be smaller, as expected. The reason is that the large geographical units of Serbia have not been searched so far and unfortunately data for these regions are missing. Finally, due to grassland abandonment and decrease in livestock production and related grassland management and use, big areas of grasslands are being lost and are under succession into shrubby vegetation and forests. It should be stressed that the area of HNVF in Serbia is likely significantly higher, as the approach followed supports the identification of Type 1 HNVF (farmland with a high proportion of semi-natural vegetation) and does not fully capture Types 2 and 3 HNVF (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).
- In recent years Serbia has implemented several Projects (DREPR, ENVAP 2, IPPC farms and DSIP) and has already started with the process of implementation of the Nitrates Directive requirements and good agricultural practices.
- Serbia has designated Nutrient Vulnerable Zones (NVZ) and in the next step of preparation of the Action Programme for further implementation of the Nitrate Directive it will be necessary to make a decision whether to implement the Nitrate Directive on the whole territory or in NVZ.
- The cooperation between the different MAFWM sectors in the process of implementing the Nitrate Directive: water protection, rural development and agricultural land can be improved.
- Big, industrial farms of poultry and pigs are required by law to provide IPPC permit for work according to the request of the IPPC Directive. According to that, farms should prevent pollution of water, air and land.
- Manure management based on data from Agriculture Census 2012 shows that 95% of farms keep manure in a heap in an open space without any protection against leakage to surface waters or groundwater.
- The data of the Agricultural Census 2012 show that mineral fertilizers were used on 67% of agricultural land, manure from livestock farms on 12% and 21% of agricultural land received no fertilization.
- Through the Agricultural Advisory Extension Services in Serbia, farmers (livestock, crop, vegetable and fruit production) can get assistance and support in controlling the fertility of soil and recommendations for fertilizing. Farmers or users of agricultural

land have obligatory measures to control the fertility of agricultural land.

- Fertilization control which is regularly performed does not provide feedback on the amount of used fertilizer and the increased yield per ha. Inspection supervision is not carried out sufficiently due to the insufficient number of inspectors for agricultural land.
- The Agricultural Advisory Extension Services in Serbia have had a very important role in farmer education and implementation of the MAFWM's agro-environmental and rural development measures.
- The regulation of waste water from farms is a sensitive issue. Wastewaters from farms should be collected into septic tanks, but unfortunately this is not the case on many farms and in many cases ("hot spots"). Farms illegally discharge wastewater into rivers and canals (water bodies). A small percentage of farms discharge their waste water into the sewage system or the waste water is collected by the Public Utility Companies.
- The subsidies (IPARD and NPRD) present a good mechanism for support to the implementation of the Nitrates Directive and good agricultural practices, they involve principles of the EU Common Agricultural Policy (CAP) and environment protection through direct support and rural development measures for farmers.
- One of the biggest challenges for farmers during the implementation of the Nitrate Directive will be to fulfil the conditions for manure storage capacity in a 6-month period and mechanization for spreading manure on fields.
- The implementation of the Nitrate Directive and the involving principles of the EU Common Agricultural Policy will require improvement of the coordination within the different MAFWM sectors, as well as development of monitoring and reporting systems.

B6.5.2 Recommendations

- On the basis of the analysis of the state and capacity in the field of agri-environmental policy, the Republic of Serbia should define the priorities for selection and implementation of the agri- ecological measures.
- There are sufficient capacities for the currently implemented national measures, but it would be necessary to increase the capacity for any additional measures.
- For the existing IPARD measures it is necessary to adopt the capacities to the needs of the IPARD programme.
- This report provides an overview of the policies and the further steps should include a more detailed overview of the measures, needs and priorities.
- It is necessary to continue to work on the indicators for monitoring the implementation of policies in this area.
- The next step towards applying the HNVF concept in Serbia involves developing and applying indicators to identify the distribution of HNVF and digitalization of all HNVF in the LPIS system. It is necessary to prevent any further loss of high nature value grasslands and associated species through abandonment, conversion to arable land and other crops, or overgrazing.
- It is necessary to support farmers to plan and implement an appropriate programme of activities to significantly reduce the risk of soil erosion by water and wind.
- It is necessary to support effective nutrient management including the storage and application of livestock manures, as well as waste from slaughterhouses and processing industries.
- It is necessary to prevent further erosion of the 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.
- It is necessary to increase the area under organic production and the number of farms managed according to the standards prescribed by the Law on Organic Production.

- Considering the fact that the awareness about biodiversity conservation in agricultural areas is not sufficiently developed, it is necessary to draft programmeprogrammes and measures in order to change this situation. Linking the governmental and non-governmental sector in the field of conservation of biodiversity, awareness raising and joint action are the methods through which a common environmental and agricultural policy couldbring results.
- The already existing system of soil fertility control and the recommendations for fertilizers application should be improved.
- Education and training of farmers for fertilizers application, including the rate and the uniformity of spreading chemical fertilizer and livestock manure should be improved to prevent nutrient transport into surface and ground waters.
- A field book is already required by law for any leased state land, but it would be recommended for it to be obligatory for all farmers. A very important tool for the implementation of this measure could be the subsidies for farmers.
- The National Agricultural Strategy and legislation should encourage farmers to use organic manure instead of mineral fertilizers. To this end, it is strongly recommended to organize trainings for farmers. The use of organic manure has a lot of advantages, such as improving the mechanical conditions of soil, increasing the level of soil organic matter and increasing crop productivity.
- The Sector for Rural Development can promote agri-environmental friendly measures by using organic manure instead of mineral fertilizers. The subsidies for mineral fertilizers should gradually decrease over the years. With regards to this issue, close cooperation is foreseen between the Sector for Rural Development, the Directorate for Agricultural Land and the Directorate for Agrarian Payments (MAFWM).
- The national legislation should encourage and support farms to reduce the quantities of water consumption for cleaning farms (stables) and equipment. It is preferable for farms to use technical water for cleaning instead of drinking water.
- It is forbidden to mix sanitary waste water and waste water which contains chemicals/ detergent/engine oil after washing stables on farms with organic manure and discharge into manure storage facilities (lagoon or tank). Farms should to avoid these bad agricultural practices of mixing various types of waste water from farms with organic manure. It is recommended to develop a monitoring/ inspection system to prevent this bad practice on farms.
- Uncontrolled discharge of waste water and liquid manure into water bodies should be prevented and controlled by inspectors. It will be necessary to increase the capacities of the present inspectorate services.
- It is recommended to organize education programmes for farmers and promote the following measures:
    - periods when land application of fertilizer is inappropriate;
    - land application of fertilizer to steeply sloping ground;
    - land application of fertilizer to water-saturated, flooded, frozen or snow-covered ground;
    - conditions for land application near watercourses.
- Including nutrient management measures as wider buffer strips around water courses can prevent pollution of water bodies. For this measure it will be necessary to find a way to motivate the farmers by granting subsidies (payments/support).
- SEPA should increase the capacity for reporting according to the requirements of the Nitrate Directive.
- In order to improve the situation in the field of agriculture and rural development, it is necessary to continuously monitor the indicators of the impact of agriculture on the environment and align the monitoring system to the common European framework for monitoring. This would ensure sustainable use of natural resources, primarily land and water, which is a prerequisite for development of the agricultural sector. In order to achieve the necessary goals and bearing in mind the importance of environmental protection to society and to every individual, more efforts should be made at all levels of the community, especially in the upcoming EU accession process where this area is of high priority.

LITERATURE

1. Statistical Yearbook of the Republic of Serbia 2017; Republic of Serbia, Statistical Office of the Republic of Serbia; ISSN 0354-4206; Belgrade 2017, Statistički godišnjak Republike Srbije 2017; Republika Srbije, Republički zavod za statistiku; ISSN 0354-4206; Beograd, 2017 (p 14,63,148,156). http://pod2.stat.gov.rs/ObjavljenePublikacije/G2017/pdf/G20172022.pdf
2. 2011 Census of the Population, Households and Dwellings in the Republic of Serbia – Population, Comparative overview of the number of residents in 1948, 1953, 1961, 1971, 1981, 1991, 2002 and 2011, Data by settlements; Republic of Serbia, Statistical Office of the Republic of Serbia; ISBN 978-86-6161-109-4; Belgrade 2014, Popis stanovništva, domaćinstava i stanova 2011. u Republici Srbiji – Stanovništvo, Uporedni pregled broja stanovnika 1948, 1953, 1961, 1971, 1981, 1991, 2002. i 2011., Podaci po naseljima; Republika Srbije, Republički zavod za statistiku; ISBN 978-86-6161-109-4; Beograd 2014. (p 11) http://popis2011.stat.rs/ http://pod2.stat.gov.rs/ObjavljenePublikacije/Popis2011/Knjiga20.pdf
3. Agriculture in the Republic of Serbia: Census of Agriculture 2012, Prof. Dr. Miladin M. Ševarlić Agricultural land; Republic of Serbia, Statistical Office of the Republic of Serbia; ISBN 978-86-6161-140-7; Belgrade, 2015, Poljoprivreda u Republici Srbiji: Popis poljoprivrede 2012. Prof. dr Miladin M. Ševarlić, Poljoprivredno zemljište; Republika Srbija, Republički zavod za statistiku ISBN 978-86-6161-140-7; Beograd, 2015. (p 66) http://webrzs.stat.gov.rs/WebSite/repository/documents/00/01/74/14/Poloprivredno_zemljiste.pdf
4. Statistical Yearbook of the Republic of Serbia 2011; Republic of Serbia, Statistical Office of the Republic of Serbia; ISSN 0351-4064; Belgrade 2011, Statistički godišnjak Republike Srbije 2011; Republika Srbije, Republički zavod za statistiku; ISSN 0351-4064; Beograd, 2011. http://www.media.srbija.gov.rs/medsrp/dokumenti/SGS2011_cyr.pdf
5. Statistical Yearbook of the Republic of Serbia 2012 - Revised edition; Republic of Serbia, Statistical Office of the Republic of Serbia; ISSN 0351-4064; Belgrade 2012, Statistički godišnjak Republike Srbije 2012 - Revidirano izdanje; Republika Srbije, Republički zavod za statistiku ISSN 0351-4064; Beograd, 2012. http://pod2.stat.gov.rs/ObjavljenePublikacije/G2012/pdf/G20122007.pdf
6. Law on Ministries – ("Official Gazette of the RS", No. 44/2014, 14/2015, 54/2015, 96/2015 – second law and 62/2017), Zakon o ministarstvima – ("Sl. glasnik RS", br. 44/2014, 14/2015, 54/2015, 96/2015 - dr. zakon i 62/2017)
7. Law on Agricultural Land – ("Official Gazette of the RS", No. 62/2006, 65/2008 – second law, 41/2009, 112/2015 and 80/2017), Zakon o poljoprivrednom zemljištu – ("Sl. glasnik RS", br. 62/2006, 65/2008 - dr. zakon, 41/2009, 112/2015 i 80/2017)
8. Law on Land Protection – ("Official Gazette of the RS", No. 112/2015), Zakon o zaštiti zemljišta ("Sl. glasnik RS", br. 112/2015)
9. Water Law – ("Official Gazette of the RS", No. 30/2010, 93/2012, and 101/2016), Zakon o vodama – ("Sl. glasnik RS", br. 30/2010, 93/2012, i 101/2016)
10. Law on Forests – ("Official Gazette of the RS", No. 30/2010, 93/2012, and 89/2015), Zakon o šumama – ("Sl. glasnik RS", br. 30/2010, 93/2012, i 89/2015)
11. Law on Nature Protection – ("Official Gazette of the RS", No. 36/2009, 88/2010, and 91/2010 – corr. and 14/2016), Zakon o zaštiti prirode – ("Sl. glasnik RS", br. 36/2009, 88/2010 i 91/2010 – ispr. i 14/2016)
12. Law on Organic Production – ("Official Gazette of the RS", No. 30/2010), Zakon o organskoj proizvodnji - "Sl. glasnik RS", br. 30/2010)
13. Vidojević, D, Manojlović, M. 2007. Overview of the soil information and policies in Serbia. In: Status and prospect of soil information in south-eastern Europe: soil databases, projects and applications. Hengl T., Panagos P., Jones A. and Toth G. (eds.) Office for Official Publications of the European Communities, EUR 22646EN, Scientific and Technical Research series, ISSN 1018-5593: 87-98.
14. Cooper, T., Pezold, T. (eds.), Keenleyside, C., Đorđević-Milošević, S., Hart, K., Ivanov, S., Redman, M., Vidojević, D. (2010). Developing a National Agri Environment Programme

for Serbia. Gland, Switzerland and Belgrade, Serbia: IUCN Programme Office for South-Eastern Europe. 88pp

15. The State of the Environment in the Republic of Serbia for 2014, Serbian Environmental Protection Agency, 2015.Stanje životne sredine u Republici Srbiji za 2014. godinu, 2015, Agencija za zaštitu životne sredine http://www.sepa.gov.rs/download/Izvestaj2014.pdf
16. EEA, 2015. Serbia country briefing - The European environment — state and outlook https://www.eea.europa.eu/soer-2015/countries/serbia
17. Vidojević, D, Baćanović, N, Dimić, B. 2017. The state of the soil in the Republic of Serbia. Ministry of Agriculture and Environmental Protection – Environmental Protection Agency. Izveštaj o stanju zemljišta u Republici Srbiji, Ministarstvo poljoprivrede i zaštite životne sredine, Agencija za zaštitu životne sredine, ISSN 2334-9913 (Print) ISSN 2466-2968 (Online) http://www.sepa.gov.rs/download/zemljiste/Zemljiste_2015.pdf
18. Biodiversity Strategy of the Republic of Serbia for the period 2011-2018 ("Official Gazette of the RS", No. 13/2011), Strategija biološke raznovrsnosti Republike Srbije za period 2011-2018 ("Sl. glasnik RS", br. 13/2011)
19. Regulation on Ecological Network, ("Official Gazette of the RS", No 102/2010), Uredba o ekološkoj mreži ("Sl. glasnik RS", br. 102/2010)
20. Law on Air Quality ("Official Gazette of the RS", No. 36/2009 and 11/2013), Zakon o zaštiti vazduha ("Sl. glasnik RS", br. 36/2009 i 11/2013)
21. Strategy for Agriculture and Rural Development of the Republic of Serbia for the period 2014-2024. ("Official Gazette of the RS", No. 85/2014), Strategija poljoprivrede i ruralnog razvoja Republike Srbije za period 2014-2024. godine ("Sl. glasnik RS", br. 85/2014)
22. National Programme for Agriculture for the period 2018-2020, ("Official Gazette of the RS", No. 120/2017), Nacionalni programme za poljoprivredu za period 2018-2020. godine, ("Sl. glasnik RS", br. 120/2017)
23. National Environmental Protection Programme ("Official Gazette of the RS" No. 12/2010), Nacionalni programme zaštite životne sredine ("Sl. glasnik RS", br. 12/2010)
24. National Strategy for Sustainable Use of Natural Resources and Goods ("Official Gazette of the RS", No. 33/2012), Nacionalna strategija održivog korišćenja prirodnih resursa i dobara ("Sl. glasnik RS", br. 33/2012)
25. Waste Management Strategy for the period 2010-2019. ("Official Gazette of the RS", No. 29/2010), Strategija upravljanja otpadom za period 2010-2019 ("Sl. glasnik RS", br. 29/2010)
26. Agri-environmental legislative framework in Serbia in light of the harmonization with EU law; this Scientific Paper is the result of the research undertaken at the University of Belgrade, Faculty of Law within the Project '*The development of Serbian legal system and harmonization with EU law: legal, economic, political and sociological aspect*', financed by the Ministry of Education and Science of the RS, in 2013., Tatjana Jovanić, Ph.D., Assisstant Professor, University of Belgrade, Faculty of Law. Economics of Agriculture, No. 2, 2013, Agro-ekološki pravni okvir u Republici Srbiji u svetlu harnonizacije sa pravom EU, Doc. dr Tatjana Jovanović, vandredni professor, Pravni fakultet, Univerzitet u Beogradu, Ekonomija u poljoprivredi br. 2, 2013.
27. Law on Agriculture and Rural Development ("Official Gazette of the RS" No. 41/2009, 10/2013, 101/2016), Zakon o poljoprivredi i ruralnom razvoju ("Sl. glasnik RS" br. 41/2009, 10/2013, 101/2016).
28. Law on Subsidies for Agriculture and Rural Development ("Official Gazette of the RS" No. 10/2013, 142/2014, 103/2015, 101/2016), Zakon o podsticajima u poljoprivredi i ruralnom razvoju ("Sl. glasnik RS" br. 10/2013, 142/2014, 103/2015, 101/2016).
29. Rulebook on the Control and Certification of Organic Production and Organic Production Methods ("Official Gazette of the RS" No. 48/2011, 40/2012), Pravilnik o kontroli i sertifikaciji u organskoj proizvodnji i metodama organske proizvodnje ("Sl. glasnik RS" br. 48/2011); Rulebook on the documentation submitted to the Authorized Controlling Organisation issuing certificates, and prescribing the conditions and manner of sale of organic products ("Official Gazette of the RS" No. 88/2016), Pravilnik o

dokumentaciji koja se dostavlja ovlašćenoj kontrolnoj organizaciji radi izdavanja potvrde, kao i o uslovima i načinu prodaje organskih proizvoda ("Sl. glasnik RS" br. 88/2016).

30. Animal Welfare Law ("Official Gazette of the RS" No. 41/2009), Zakon o dobrobiti životinja ("Sl. glasnik RS" br. 41/2009).
31. Animal Husbandry Law ("Official Gazette of the RS" No. 41/2009, 93/2012, 14/2016)., Zakon o stočarstvu ("Sl. glasnik RS" br. 41/2009, 93/2012, 14/2016)
32. Law on Veterinary Matters ("Official Gazette of the RS" No. 91/2005, 30/2010, 93/2012), Zakon o veterinarstvu ("Sl. glasnik RS" br. 91/2005, 30/2010, 93/2012).
33. Rulebook on veterinary, sanitary conditions of facilities for breeding and keeping ungulates, poultry and rabbits ("Official Gazette of the RS", No. 81/2006), Pravilnik o veterinarsko-sanitarnim uslovima objekata za uzgoj i držanje kopitara, papkara, živine i kunića ("Sl. glasnik RS" br. 81/2006).
34. Rulebook on the method of classification and treatment of the by-products of animal origin, and the veterinary-sanitary conditions for the development of facilities for the collection, processing and disposal of the by-products of animal origin and the requirements for animal disposal locations and landfills ("Official Gazette of the RS", No. 31/2011), Pravilnik o načinu razvrstavanja i postupanja sa sporednim proizvodima životinjskog porekla, veterinarsko-sanitarnim uslovima za izgradnju objekata za sakupljanje, preradu i uništavanje sporednih proizvoda životinjskog porekla, načinu sprovođenja službene kontrole i samokontrole, kao i uslovima za stočna groblja i jame grobnice, ("Sl. glasnik RS" br. 31/2011).
35. Law on Environmental Protection ("Official Gazette of the RS" No. 135/2004, 36/2009, 36/2009 – other low, 72/2009 – other low, 43/2011 – decision of the Constitutional Court and 14/2016), Zakon o zaštiti životne sredine ("Sl. glasnik RS" br. 135/2004, 36/2009, 36/2009 - dr. zakon, 72/2009 - dr. zakon, 43/2011 - odluka US i 14/2016).
36. Regulation on the distribution of subsidies for agriculture and rural development on 2018. ("Official Gazette of the RS" No. 18/2018), Uredba o raspodeli podsticaja u poljoprivredi i ruralnom razvoju u 2018. ("Sl. glasnik RS" br. 18/2018).
37. Republic of Serbia IPARD Programme for 2014-2020, Ministry of Agriculture and Environmental Protection, Republic of Serbia, Belgrade, revised version December 2014, Republika Srbija IPARD programme za 2014-2020. Ministarstvo poljoprivrede i zaštite životne sredine, Republika Srbija, Beograd, revidovana verzija decembar 2014.
38. Regulation on the contents and methods of management of the environment protection information system, methodology, structure, common bases, categories and levels of data collection, as well as on data content that the public is regularly and compulsory informed about ("Official Gazette of the RS" No 11220/09), Uredba o sardžini i načinu vođenja informacionog sistema zaštite životne sredine, metodologiji, strukturi, zajedničkim osnovama, kategorijeama i nivoima sakupljanja podataka, kao i o sadržini informacija o kojima se redovno i obavezno obaveštava javnost («Sl. glasnik RS», br. 112/2009)
39. Rulebook on the national list of environmental protection indicators ("Official Gazette of the RS" No. 37/2011), Pravilnik o Nacionalnoj listi indikatora zaštite životne sredine («Sl. glasnik RS», br. 37/2011)
40. Vidojević, D., edt. 2016. Agriculture and environment in the Republic of Serbia – Indicators based report, Ministry of Agriculture and Environmental Protection – Environmental protection Agency, Poljoprivreda i životna sredina u Republici Srbiji – Indikatorski prikaz. Ministarstvo poljoprivrede i zaštite životne sredine, Agencija za zaštitu životne sredine. ISBN 978-86-87159-11-2 (online) http://www.sepa.gov.rs/download/publikacije/Poljoprivreda_2016.pdf
41. Law on Game and Hunting ("Official Gazette of the RS", No. 18/2010), Zakon o divljači i lovstvu («Sl. glasnik RS», br. 18/2010)
42. Vidojević, D., Manojlović, M., Đorđević, A., Nešić, Lj. and Dimić, B. 2015. Organic carbon stocks in the soils of Serbia. Carpathian Journal of Earth and Environmental Sciences, November 2015, Vol. 10, No 4, p. 75 - 83.

B6.6 ANNEXES

Anex 1. Agri-environmental Indicators - Data

Indicator 1: Agri-environmental commitments NO
Indicator 2: Agricultural areas under Natura 2000
National methodology:

Table B6.6.1. Agricultural areas under protected areas

CORINE LAND COVER (nomenclature)	2000		2006		2012	
	ha	%	ha	%	ha	%
Arable land (2.1.1.)	4,374	1.00	5,964	1.29	9,518	1.85
Vineyards (2.2.1.)	268	0.06	253	0.05	170	0.03
Fruit trees and berry plantations (2.2.2.)	180	0.04	238	0.05	367	0.07
Pastures (2.3.1.)	11,633	2.65	10,451	2.25	12,962	2.52
Complex cultivations patterns and Land principally occupied by agriculture, with significant areas of natural vegetation (2.4.2., 2.4.3.)	46,326	10.55	51,193	11.04	45,049	8.74
Areas under protected areas Total	62,781	14.30	68,099	14.68	68,066	13.21
Protected areas Total (without data for Kosovo*)	439,097	100	463.887	100	515,235	100

Source: Corine Land Cover data base, SEPA

Indicator 3: Farmers' training and environmental farm advisory services
National methodology:

Table B6.6.2: Farmers by level of training and regions in %, 2012

	Only field experience gained through practice (%)	Courses (%)	Agricultural high School (%)	Other High School (%)	Agricultural university or college (%)	Other university or college (%)	Attended courses in 2012 (%)
Republic of Serbia	58.14	0.66	2.47	29.40	1.38	4.85	3.10
Shumadija and Western Serbia Region	60.76	0.51	1.42	29.31	1.15	4.89	1.96
Vojvodina Region	45.12	0.99	5.46	35.29	2.22	5.14	5.78
South and Eastern Serbia Region	64.61	0.60	1.70	24.74	1.05	4.58	2.72
Belgrade region	54.04	0.68	1.12	35.61	1.39	5.14	2.02

Source: SORS

Indicator 4: Area under organic farming

Table B6.6.3. Area under organic farming

Year	Total area (ha)
2012	6,340.00
2013	8,228.00
2014	9,466.87
2015	15,298.02
2016	14,316.88

Source: MAFWM

Indicator 5: Mineral fertilizer consumption
National methodology:

Table B6.6.4. Mineral fertilizer consumption

Year	2012
Total utilized agricultural area (ha)	3,437,423
Farms that have fertilized the agricultural area (%)	84.93
% of utilized agricultural area that mineral fertilizer was applied to	66.86
% of utilized agricultural area that manure was applied to (solid form)	10.87
% of utilized agricultural area that manure was applied to (in liquid form)	0.76
Not applicable (%)	21.51

Source: SORS

Indicator 6: Consumption of pesticides NO
Indicator 7: Irrigation

Table B6.6.5. Irrigated area (ha)

Year	Irrigated area (ha)
2012	52,986
2013	53,086
2014	44,882
2015	54,714
2016	43,486
2017	50,366

Source: SORS

Indicator 8: Energy use

Table B6.6.6. Energy use in the agricultural sector (Mil ten)

	Coal	Oil	Gas	Elec-tricity	Heat energy	**TOTAL**
2010	0.01	0.04	0.01	0.04		**0.106**
2011	0.00	0.07	0.01	0.03	0.00	**0.118**
2012	0.00	0.13	0.02	0.03	0.00	**0.180**
2013	0.00	0.13	0.02	0.03	0.00	**0.180**
2014	0.00	0.11	0.03	0.03	0.00	**0.165**
2015	0.00	0.10	0.02	0.03	0.00	**0.154**
2016	0.00	0.11	0.02	0.03	0.00	**0.161**

Source: MME

Indicator 9: Land use change

Table B6.6.7. Conversion of agricultural land

Years	**Conversion of agricultural land (ha)**						Agricultural areas where conversion to artificial surfaces has been carried out (%)
	To residential areas and sport and leisure facilities	To construction sites	To transport network	To mineral extraction sites and landfill sites	To industrial or commercial units	Total	
1990-2000	3,515	154	6	1,193	393	5,262	0.12
2000-2006	1,609	122	22	1,166	286	3,205	0.07
2006-2012	439	662	28	1,028	742	2,900	0.06

Source: Corina Land Cover database, SEPA

Indicator 10:
Indicator 10.1: Cropping patterns (2016)

Table B6.6.8. Crop production

Crop Production (total)	Areas in ha
Cereals	1,605,215
Oilseeds (Sunflower, Soya, Rape seed)	396,137
Sugar beet	49,237
Tobacco	5,256
Fruits (Apples, Plums, Sour Cherries, Raspberries, Grapes)	147,918
Vegetables (Beans, Cabbage, Kale, Peppers, Tomatoes)	37,451
Potatoes	31,594
Meadows	313,690
Pastures	230,109
Other crops (Lucerne, Clover, Maize for fodder)	152,200
Livestock (total)	Heads Number
Cattle	893,000
Pigs	3,021,000
Sheep and goats	1,865,000
Horses	15,000
Poultry	16,242,000
Other animals (Beehives)	792,000

Source: SORS

Indicator 10.2: Livestock patterns

Table B6.6.9. Livestock breeding

in thousands																
	Cattle				Pigs				Sheep				Poultry			
	Number of heads at the beginning of year	Breeding	Slaughter	Number of heads at the end of year	Number of heads at the beginning of year	Breeding	Slaughter	Number of heads at the end of year	Number of heads at the beginning of year	Breeding	Slaughter	Number of heads at the end of year	Number of heads at the beginning of year	Breeding	Slaughter	Number of heads at the end of year
Livestock balance																
REPUBLIC OF SERBIA [1]																
2013	921	374	318	913	3,139	5,822	5,684	3,144	1,635	1,608	1,537	1,616	18,234	59,416	64,552	17,860
2014	913	381	320	920	3,144	5,668	5,657	3,236	1,616	1,646	1,387	1,748	17,860	58,197	64,390	17,167
2015	920	374	302	916	3,236	5,763	5,654	3,284	1,748	1,702	1,493	1,789	17,167	56,964	61,133	17,450
2016	916	350	324	893	3,284	5,824	5,853	3,021	1,789	1,600	1,630	1,665	17,450	55,020	61,397	16,242
2017	893	349	284	899	3,021	5,725	5,706	2,911	1,665	1,674	1,552	1,704	16,242	52,077	56,168	16,338
[1] Since 1999 without data for Kosovo*																

Source: SORS

Table B6.6.10. Number of livestock units (LSU)

in thousands	
	Livestock units (LSU)
Number of livestock units (LSU)	
REPUBLIC OF SERBIA [1]	
2013	1,839
2014	1,916
2015	1,902
2016	1,829
2017	1,790

[1] Since 1999 without data for Kosovo*

Source: SORS

Indicator 11:
Indicator 11.1: Soil cover

National methodology: according to the Corine Land Cover database

Indicator 11.2: Tillage practices NO
Indicator 11.3: Manure storage

National methodology:

Table B6.6.11. Number of farms according to the method of manure disposal (solid form) (%)

Open stocks	Construction with roof	Construction without roof	Combined mode
95.04	0.77	3.13	1.06

Table B6.6.12. Number of farms according to the method of manure disposal (liquid form) (%)

Covered tank	Open tank	Combined mode	Open lagoon	Covered lagoon
21.06	18.74	1.07	29.48	29.65

Indicator 12: Intensification/extensification NO
Indicator 13: Specialisation NO
Indicator 14: Risk of land abandonment YES
Indicator 15: Gross nitrogen balance NO
Indicator 16: Risk of pollution by phosphorus

National methodology

Table B6.6.13. Pollution by phosphorus

Categories of agricultural land (2015-2016)	Total number of samples	Accessible phosphorus (>50 mg/100g) Number of samples, %		Accessible phosphorus (>100 mg/100g) Number of samples, %	
Arable land	107,020	1,893	1.77	524	0.49
Fruit plantations	22,853	232	1.02	49	0.21
Vineyards	3,040	13	0.43	5	0.16
Meadows	17,733	223	1.26	64	0.36
Pastures	478	12	2.51	2	0.42

Source: MAFWM – Fertility control programme, SEPA

Indicator 17: Pesticide risk NO
Indicator 18: Ammonia emissions YES
Indicator 19: Greenhouse gas emissions

Table B6.6.14. Total emissions from agriculture (kt)

Gas	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
CH4	161.9518	153.8218	140.9218	145.6818	129.5318	142.2318	140.6418	138.7818	135.0018	135.6918
CO	92.4396	92.4396	92.4396	92.4396	92.4396	92.4396	92.4396	92.4396	92.4396	92.4396
CO2	32.181	22.401	17.453	13.2	25.667	13.2	37.84	53.167	34.54	34.1
N2O	6.6913	7.2841	5.9971	6.18	5.886	6.424	6.172	6.4534	6.0983	6.1637
NMVOC	24.3006	23.2997	21.5359	21.9166	19.9092	21.8467	21.4528	21.285	20.8557	20.8626
NOx	9.1658	8.9774	8.4021	8.6497	8.1567	8.6777	8.6002	8.4837	8.3094	8.3356
SOx	0.693	0.693	0.693	0.693	0.693	0.693	0.693	0.693	0.693	0.693

Source: SEPA

Gas	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
CH4	132.4118	124.5118	120.8218	116.9418	117.2718	115.4818	115.9618	113.3796	109.2854	103.5925
CO	92.4396	92.4396	92.4396	92.4396	92.4396	92.4396	92.4396	95.0832	97.9736	95.7613
CO2	35.053	91.813	123.7991	83.91	168.07	132.83	126.21	131.27	139.37	142.74
N2O	5.4969	5.7502	5.590422	5.1668	5.7169	5.6382	5.6309	5.2196	5.3603	5.2882
NMVOC	20.1826	19.1215	18.79217	17.9808	17.8064	18.3694	18.2655	17.8952	16.7792	16.8316
NOx	8.2085	7.8643	7.785968	7.7264	7.6529	7.618	7.713	7.6942	7.6185	7.4125
SOx	0.693	0.693	0.693	0.693	0.693	0.693	0.693	0.7128	0.7344	0.7179

Source: SEPA

Gas	2010	2011	2012	2013	2014	2015
CH4	98.0935	97.3874	96.1746	94.1015	96.0928	95.3828
CO	94.5313	97.0911	81.1959	82.2404	86.6951	86.6951
CO2	97.475	94.463	91.45	88.438	85.425	132.59
N2O	5.1624	5.0339	4.6688	4.9223	5.2644	5.2474
NMVOC	15.6554	15.6213	15.0303	14.4314	14.8806	14.8514
NOx	7.1501	7.1744	6.7618	6.6856	6.9894	6.9607
SOx	0.7086	0.7278	0.6087	0.6165	0.6499	0.6499

Source: SEPA

Indicator 20: Water abstraction

Table B6.6.15. Annual freshwater abstraction by source and by sector (million m^3)

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Total surface and groundwater	4629.3	4690.691	4633.794	4418.639	4749.961	4402.549	4708.541	3934.805	4689.088	4706.525
Public water supply	691.839	690.784	684.725	666.76	672.904	681.245	657.522	627.044	644.805	634.255
Agriculture, forestry, fishing	760.184	731.164	552.41	593.067	559.997	624.461	632.28	630.861	722.454	634.525
of which: - Irrigation	92.391	48.409	43.477	65.452	66.092	110.328	87.775	50.563	88.451	45.287
- Aquaculture*	631.689	647.771	475.436	494.939	462.638	484.259	515.639	550.673	604.322	561.019
Mining and quarrying	7.959	5.659	7.933	8.612	9.3	9.508	11.148	8.628	8.142	8.341
Manufacturing industry	142.836	136.858	119.43	117.428	130.129	111.386	100.915	94.048	107.458	105.294
of which: industry-cooling	102.491	93.583	77.408	75.465	91.868	66.387	51.626	44.473	51.348	56.968
* Production of electricity (cooling)	2973.658	3070.937	3217.919	2986.432	3327.481	2929.81	3263.698	2533.776	3148.128	3244.167
* Construction and other industrial activities	0.192	0.198	0.184	0.164	0.174	0.194	0.146	0.196	0.171	0
* Services	0	0	0	0	0	0	0	0	13.859	27.967

Indicator 21: Soil erosion

National methodology

Table B6.6.16. Categories of soil erosion

Category	I	II	III	IV	V
Range of coefficient value	Z>1.0	0.71<Z<1.0	0.41<Z<0.7	0.20<Z<0.4	Z<0.19
Mean value of the coefficient	Z=1.25	Z=0.85	Z=0.55	Z=0.30	Z=0.10
The qualitative name of the category of erosion	Excessive	High	Medium	Low	Very low

Source: SEPA

Table B6.6.17. Areas affected by erosion

Category	km²	% of total area affected by erosion	
		2009.	1971.
I	513.5	0.67	1.16
II	2,918.96	3.82	13.21
II	14,750.19	19.32	12.67
IV	21,764.42	28.51	18.16
V	36,407.35	47.68	41.19
Total	76,354.43	100	86.39
Sediment accumulation	12,024.71		13.61
Total	88,379.14		100

Source: SEPA

Note: The indicator is calculated according to the national methodology – Gavrilovic. It is not possible to give the soil loss rate in tons per ha per year. There is an initiative to create a new Soil erosion map.

Indicator 22: Genetic diversity NO
Indicator 23: High Nature Value farmland

Table B6.6.18. Areas of High Nature Value farmland (2010)

	ha	km²	% of the total agricultural area	% of the total territory
The approximate area of HNV farmland in Serbia	1,187,220	11,872.20	18.71%	13.44%
The total agricultural area in Serbia	6,346,671	63,466.71		
Total territory of Serbia	88,36,100	88,361.00		

Source: SEPA

Indicator 24: Renewable energy production

Table B6.6.19. Renewable energy production

Republic of Serbia (without data for Kosovo*)	physical units	2015	
		physical units	Mil ten
Renewable energy production			
Gas	Mil m³	573	0.456
Hydro power **	GWh	10,080	0.867
Geothermal energy	TJ	257	0.006
Biomass	1000 t	-	1.102
Biogas	Mil m3	-	0.006
Solar power	GWh	11.4533	0.001
Wind power	GWh	0.4167	0.000
Landfill and sewage gas	Mil m3	-	

Source: MME

Indicator 25: Population trends of farmland birds

National methodology

Table B6.6.20. Population trends of meadow birds

Species		Quality of assessment	Trend (2000-2012)	The direction of the trend	Quality of assessment
Latin name	English name				
Falco tinnunculus	Kestrel	M	- 10% : + 10%	S	M
Vanellus vanellus	Lapwing	M	- 10% : + 10%	S (F)	M
Streptopelia turtur	Turtledove	M	(-) 0-9%	SD	M
Columba palumbus	Woodpigeon	M	0-9%	SI	M
Coturnix coturnix	Quail	M	(-) 0-9%	SD	M
Athene noctua	Little Owl	M	- 10% : + 10%	S	M
Hirundo rustica	Swallow	M	- 10% : + 10%	S	M
Alauda arvensis	Skylark	M	(-) 0-9%	SD	M
Motacilla flava	Yellow Wagtail	M	- 10% : + 10%	S	M
Lanius collurio	Red-backed Shrike	M	- 10% : + 10%	S	M
Passer montanus	Tree Sparrow	P	- 10% : + 10%	S	P
Saxicola rubetra	Whinchat	M	(-) 0-9%	SD	M
Sturnus vulgaris	Starling	M	- 10% : + 10%	S	M
Sylvia communis	Whitethroat	M	- 10% : + 10%	S	M
Pica pica	Magpie	M	- 10% : + 10%	S	M
Corvus cornix	Carrion Crow	M	- 10% : + 10%	S	M
Corvus monedula	Jackdaw	M	- 10% : + 10%	S	M
Carduelis chloris	Greenfinch	M	0-9%	SI	M
Carduelis carduelis	Goldfinch	M	(-) 0-9%	SD	M
Carduelis cannabina	Linnet	M	- 10% : + 10%	S	M
Emberiza schoeniclus	Reed Bunting	M	- 10% : + 10%	S	M
Emberiza citrinella	Yellowhammer	M	- 10% : + 10%	S	M
Miliaria calandra	Corn Bunting	M	- 10% : + 10%	S	M

Source: INC, SEPA

Legend

Quality of assessment - P- poor, M - medium, G - good; the direction of the trend: SI - slow increase, SD- slow decrease, F- fluctuation, S – stabile

Note: The methodology is not the same as the Eurostat methodology

Indicator 26: Soil quality

Table B6.6.21. Soil quality (average value of soil quality parameters)

Categories of agricultural land (2015-2016)	pH (in KCl) (number of samples)	Carbonates (%) (number of samples)	Humus (%) (number of samples)	Accessible P_2O_5 (mg/100g) (number of samples)	Accessible K_2O (mg/100g) (number of samples)	Organic carbon (%) (number of samples)
Arable land	5.77 (106,055)	2.14 (101,395)	3.16 (107,026)	15.87 (107,020)	26.65 (107,011)	1.83 (107,026)
Fruit plantations	5.27 (18,654)	0.86 (19,405)	3.46 (22,855)	15.19 (22,853)	28.08 (22,853)	2.01 (22,855)
Vineyards	5.68 (2,056)	1.71 (1885)	2.77 (3,041)	14.50 (3,040)	24.10 (3,041)	1.60 (3,041)
Meadows	5.45 (17,714)	0.95 (17,659)	3.45 (17,737)	13.93 (17,733)	25.88 (17,738)	2.00 (17,737)
Pastures	5.34 (466)	0.43 (465)	3.71 (478)	12.06 (478)	43.80 (478)	2.15 (478)

Source: MAFWM – Fertility control programme, SEPA

Indicator 27.1: Water quality - Nitrate pollution

Table B6.6.22. Groundwater nitrate concentration classes (mg NO_3/l) and number of groundwater monitoring stations in each concentration class per year

Year	≤ 10	10 < … ≤ 25	25 < … ≤ 50	> 50	Total
2007	15	10	2	2	29
2008	16	6	6	1	29
2009	17	4	5	3	29
2010	18	7	4	0	29
2011	19	5	4	1	29
2012	24	3	2	0	29
2013	24	5	0	0	29
2014	24	3	1	1	29
2015	21	5	1	2	29
2016	16	7	2	4	29

Source: SEPA

Table B6.6.23. Groundwater nitrate concentration classes (mg NO_3/l) and proportion of groundwater monitoring stations in each concentration class per year

Year	≤ 10	10 < … ≤ 25	25 < … ≤ 50	> 50	Total
2007	51.7	34.5	6.9	6.9	100
2008	55.2	20.7	20.7	3.4	100
2009	58.6	13.8	17.2	10.3	100
2010	62.1	24.1	13.8	0	100
2011	65.5	17.2	13.8	3.4	100
2012	82.8	10.3	6.9	0	100
2013	82.8	17.2	0	0	100
2014	82.8	10.3	3.4	3.4	100
2015	72.4	17.2	3.4	6.9	100
2016	55.2	24.1	6.9	13.8	100

Source: SEPA

Table B6.6.24. Annual average nitrate concentration in groundwater (mg NO_3/l) 2007 – 2016

year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
average	15.03	14.99	16.21	9.62	12.13	6.07	4.6	6.81	10.17	20.43
median	9.7	8.1	4.43	3.54	1.77	1.77	1.77	1.24	1.77	2.21

Source: SEPA

Table B6.6.25. National proportion of groundwater bodies in various trend categories for nitrate concentration (%), (2007-2016)

	Total amount of groundwater bodies	Amount of completed groundwater bodies	Amount of not completed groundwater bodies	Trend (amount of groundwater bodies)				
				Significant negative	Nearly significant negative	No trend	Nearly significant positive	Significant positive
RS	153	18	135	0	2	15	1	0

Source: SEPA

Table B6.6.26. Trend categories for nitrate concentration in groundwater bodies (%), (2007-2016)

Trend (%)				
Significant negative	Nearly significant negative	No trend	Nearly significant positive	Significant positive
0	11.11	83.33	5.56	0

Source: SEPA

Table B6.6.27. River water nitrate concentration classes (mg N/l) and number of river water monitoring stations in each concentration class per year

Year	< 0.8	0.8 ≥ … < 2	2 ≥ … < 3.6	3.6 ≥ … < 5.6	5.6 ≥ … < 11.3	≥ 11.3	Total
2007	13	33	3	1	0	0	50
2008	14	29	7	0	0	0	50
2009	19	30	1	0	0	0	50
2010	27	21	2	0	0	0	50
2011	27	23	0	0	0	0	50
2012	24	26	0	0	0	0	50
2013	19	30	1	0	0	0	50
2014	23	27	0	0	0	0	50
2015	22	28	0	0	0	0	50
2016	16	34	0	0	0	0	50

Source: SEPA

Table B6.6.28. River water nitrate concentration classes (mg N/l) and proportion of river water monitoring stations in each concentration class per year

Year	< 0.8	0.8 ≥ … < 2	2 ≥ … < 3.6	3.6 ≥ … < 5.6	5.6 ≥ … < 11.3	≥ 11.3	Total
2007	26	66	6	2	0	0	100
2008	28	58	14	0	0	0	100
2009	38	60	2	0	0	0	100
2010	54	42	4	0	0	0	100
2011	54	46	0	0	0	0	100
2012	48	52	0	0	0	0	100
2013	38	60	2	0	0	0	100
2014	46	54	0	0	0	0	100
2015	44	56	0	0	0	0	100
2016	32	68	0	0	0	0	100

Source: SEPA

Table B6.6.29. Annual average nitrate concentration in 50 river monitoring sites (mg N/l) (2007 - 2016)

year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
average	1.264	1.192	1.052	0.898	0.8516	0.8804	1.0188	0.857	0.9076	0.9938
median	1.125	1.05	0.965	0.745	0.76	0.805	0.955	0.875	0.865	0.955

Source: SEPA

Table B6.6.30. National proportion of river water bodies in various trend categories for nitrate concentration (%), (2007-2016)

	Total amount of groundwater bodies	Amount of completed groundwater bodies	Amount of not completed groundwater bodies	Trend (amount of groundwater bodies)				
				Significant negative	Nearly significant negative	No trend	Nearly significant positive	Significant positive
RS	493	49	444	2	3	43	0	1

Source: SEPA

Table B6.6.31. Trend categories for nitrate concentration in river water bodies (%), (2007-2016)

Trend (%)				
Significant negative	Nearly significant negative	No trend	Nearly significant positive	Significant positive
4.1	6.1	87.8	0	2

Source: SEPA

Indicator 27.2: Water quality - Pesticide pollution

Table B6.6.32. Exceeded Limit of Quantification (LOQ) and maximum concentrations of individual pesticides in groundwater monitoring stations, 2012-2016

Pesticides	Stations < limit of quantification	Stations > limit of quantification	Stations total	Maximum concentrations (µg/l)
Atrazine	36	35	71	0.322
Desethylatrazine	40	31	71	0.061
Terbuthylazine	45	26	71	0.036
Simazine	58	13	71	0.015
Prometryn	60	11	71	0.148
DDE, p,p'	66	5	71	0.003
Isodrin	68	3	71	0.039
Desisopropylatrazine	68	3	71	0.043
Propazine	68	3	71	0.002
Chlorpyrifos	69	2	71	0.018
DDD, p,p'	69	2	71	0.004
Gamma-HCH	69	2	71	0.002
Chlorfenvinphos	70	1	71	0.01
Aldrin	70	1	71	0.001
Dieldrin	70	1	71	0.002
Endrin	70	1	71	0.005
Alpha-HCH	70	1	71	0.001
Beta-HCH	70	1	71	0.001
Isoproturon	70	1	71	0.001
Trifluralin	70	1	71	0.001
DDT, p,p'	70	1	71	0.001
Alpha-Endosulfan	70	1	71	0.005
Beta-Endosulfan	70	1	71	0.005
DDT, o,p'	70	1	71	0.001
Alachlor	71	0	71	< LOQ
Diuron	71	0	71	< LOQ
Terbutryn	71	0	71	< LOQ
Linuron	71	0	71	< LOQ

Source: SEPA

Indicator 28: Landscape - state and diversity NO

Climatic data:

Table B6.6.33. Main meteorological stations

Meteorological station	longitude (° ' E)	latitude (° ' N)	altitude (m)
Palic	19 46	46 06	102
Sombor	19 09	45 46	88
Novi Sad - Rimski Sancevi	19 51	45 20	84
Kikinda	20 28	45 51	81
Zrenjanin	20 25	45 22	80
Sremska Mitrovica	19 33	45 06	82
Beograd	20 28	44 48	132
Loznica	19 14	44 33	121
Valjevo	19 55	44 19	176
Kragujevac	20 56	44 02	185
Pozega	20 02	43 51	310
Smederevska Palanka	20 57	44 22	121
Veliko Gradiste	21 31	44 45	82
Crni Vrh	21 57	44 07	1037
Negotin	22 33	44 14	42
Zlatibor	19 43	43 44	1028
Sjenica	20 00	43 17	1038
Kraljevo	20 42	43 42	215
Kopaonik	20 48	43 17	1710
Cuprija	21 23	43 56	123
Krusevac	21 21	43 34	166
Nis	21 54	43 20	202
Zajecar	22 18	43 53	144
Dimitrovgrad	22 45	43 01	450
Leskovac	21 57	42 59	230
Vranje	21 55	42 33	432

Source: RHS

Table B6.6.34. Monthly and annual means of temperature (°C) for the period 1981 – 2010

Meteorological station	January	February	March	April	May	June	July	August	September	October	November	December	annual
Palic	-0.4	1.3	6.0	11.6	17.3	20.4	22.3	21.7	16.8	11.4	5.4	0.8	11.2
Sombor	-0.1	1.4	6.2	11.6	17.1	20.2	21.9	21.3	16.5	11.3	5.4	1.1	11.2
Novi Sad - Rimski Sancevi	0.2	1.6	6.4	11.8	17.3	20.1	21.9	21.6	16.9	11.8	5.9	1.5	11.4
Kikinda	-0.2	1.4	6.3	11.9	17.3	20.3	22.3	21.7	16.9	11.6	5.6	1.1	11.3
Zrenjanin	0.1	1.6	6.4	12.0	17.4	20.3	22.2	21.8	17.1	11.9	6.0	1.4	11.5
Sremska Mitrovica	0.1	1.6	6.4	11.8	17.2	19.9	21.5	21.2	16.6	11.7	5.8	1.4	11.3
Beograd	1.4	3.1	7.6	12.9	18.1	21.0	23.0	22.7	18.0	12.9	7.1	2.7	12.5
Loznica	0.8	2.4	6.9	11.8	17.0	20.0	21.8	21.4	16.8	11.9	6.3	2.2	11.6
Valjevo	0.6	2.0	6.6	11.6	16.8	19.9	21.9	21.4	16.8	11.7	6.1	1.9	11.4
Kragujevac	0.9	2.3	6.6	11.7	16.7	20.0	21.9	21.5	16.9	11.9	6.4	2.1	11.6
Pozega	-1.6	0.4	5.3	10.2	15.2	18.3	20.0	19.5	15.1	10.2	4.1	-0.4	9.7
Smederevska Palanka	0.7	2.1	6.5	11.8	17.0	20.1	22.0	21.6	16.8	11.7	6.2	1.9	11.5
Veliko Gradiste	0.1	1.5	6.2	11.8	17.0	19.9	21.9	21.5	16.8	11.7	6.0	1.4	11.3
Crni Vrh	-3.5	-3.0	0.8	6.2	11.7	14.7	16.9	17.0	12.2	7.3	1.6	-2.3	6.6
Negotin	0.3	1.9	6.6	12.2	17.7	21.3	23.5	22.8	17.6	11.6	5.5	1.1	11.8
Zlatibor	-2.1	-1.3	2.4	7.2	12.3	15.4	17.2	17.5	13.1	8.8	3.2	-1.2	7.7
Sjenica	-3.6	-2.7	1.8	6.5	11.5	14.7	16.5	16.2	11.9	7.8	2.2	-2.1	6.7
Kraljevo	0.3	2.3	6.8	11.8	16.7	19.8	21.8	21.5	16.8	11.8	6.0	1.6	11.5
Kopaonik	-4.6	-5.1	-2.2	2.0	7.3	10.6	12.7	12.8	8.7	5.0	0.0	-3.5	3.6
Cuprija	0.2	1.6	6.1	11.5	16.7	19.7	21.5	21.3	16.5	11.4	5.8	1.5	11.1
Krusevac	0.2	2.0	6.6	11.8	16.8	20.0	21.8	21.5	16.8	11.6	5.9	1.6	11.4
Nis	0.6	2.4	7.0	12.2	17.1	20.4	22.5	22.3	17.4	12.3	6.4	2.1	11.9
Zajecar	-0.2	1.2	5.9	11.4	16.8	20.4	22.4	21.7	16.6	10.8	4.8	0.7	11.0
Dimitrovgrad	-0.7	0.6	5.0	10.1	14.9	18.2	20.1	19.8	15.3	10.5	5.0	0.8	10.0
Leskovac	0.0	1.7	6.4	11.4	16.4	19.7	21.6	21.2	16.3	11.2	5.5	1.4	11.1
Vranje	-0.1	1.8	6.4	11.2	16.0	19.5	21.6	21.6	16.9	11.8	5.7	1.2	11.1

Source: RHS

Table B6.6.35. Monthly and annual means of precipitations (mm) for the period 1981 – 2010

Meteorological station	January	February	March	April	May	June	July	August	September	October	November	December	annual
Palic	33.4	30.3	33.9	44.0	55.5	80.5	57.4	52.2	49.7	39.6	48.1	46.5	571.1
Sombor	37.3	29.9	36.4	45.2	60.0	81.5	66.2	53.1	54.4	47.3	53.7	47.4	612.4
Novi Sad - Rimski Sancevi	39.1	31.4	42.5	49.2	63.0	91.4	64.3	57.5	53.8	52.7	53.8	48.8	647.3
Kikinda	34.3	26.8	33.1	43.8	53.9	75.5	56.1	49.6	50.4	41.1	45.2	46.5	556.3
Zrenjanin	35.9	30.0	37.2	43.2	55.4	88.8	60.0	45.4	50.2	43.9	47.8	45.3	583.2
Sremska Mitrovica	37.9	29.2	40.4	48.4	56.2	84.4	61.6	52.8	50.3	54.6	52.8	45.6	614.2
Beograd	46.9	40.0	49.3	56.1	58.0	101.2	63.0	58.3	55.3	50.2	55.1	57.4	690.9
Loznica	59.3	46.0	65.7	62.8	78.2	108.5	85.2	75.2	69.5	73.5	74.4	69.6	868.0

Meteorological station	January	February	March	April	May	June	July	August	September	October	November	December	annual
Valjevo	49.9	44.6	57.9	59.9	72.1	110.2	71.0	70.7	65.3	62.9	62.7	60.6	787.7
Kragujevac	37.9	37.0	42.3	53.9	58.7	76.4	57.7	58.6	51.6	48.9	49.5	45.8	618.5
Pozega	42.7	41.9	45.8	58.0	74.8	88.4	76.3	59.6	65.8	57.1	63.5	52.3	726.4
Smederevska Palanka	42.4	39.2	43.6	50.1	54.3	78.7	60.5	58.9	56.4	51.2	50.0	51.8	637.2
Veliko Gradiste	45.0	42.2	41.5	57.2	59.8	81.6	61.4	55.9	57.5	51.8	48.4	50.7	653.0
Crni Vrh	47.6	46.0	50.2	69.8	77.4	93.0	68.5	61.3	67.8	66.5	61.7	59.4	769.1
Negotin	41.8	44.1	47.6	53.5	50.8	59.2	49.4	47.5	45.4	49.5	58.4	66.4	613.6
Zlatibor	65.4	68.5	73.4	79.0	94.4	110.2	96.3	78.8	98.3	78.2	92.3	82.6	1017.3
Sjenica	46.3	47.4	46.4	55.7	71.5	79.1	66.9	62.0	75.6	62.4	74.1	62.2	749.5
Kraljevo	45.1	45.4	52.9	62.6	71.2	92.2	76.8	64.9	59.1	57.3	56.6	56.1	740.3
Kopaonik	60.3	65.9	74.9	88.7	110.6	107.1	91.2	80.3	85.6	67.8	78.3	73.8	984.4
Cuprija	46.1	45.4	45.1	60.6	64.1	80.2	57.0	46.6	52.2	50.6	53.8	56.5	658.2
Krusevac	40.3	39.2	48.4	56.6	56.9	71.2	55.0	49.8	50.0	49.3	56.2	55.1	628.1
Nis	38.8	36.8	42.5	56.6	58.0	57.3	44.0	46.7	48.0	45.5	54.8	51.5	580.3
Zajecar	38.4	39.8	40.6	53.2	52.4	58.1	56.3	43.9	44.3	48.0	52.3	54.0	581.4
Dimitrovgrad	39.5	38.1	40.2	54.3	67.2	70.0	61.1	52.5	51.8	50.2	52.8	46.9	624.7
Leskovac	42.2	45.7	45.9	60.5	55.8	64.1	44.2	47.3	51.4	51.1	61.9	55.2	625.4
Vranje	35.4	38.3	38.2	52.0	56.3	63.2	44.7	43.2	46.7	52.4	57.4	50.5	578.3

Source: RHS

Table B6.6.36. Soil groups according to the WRB classification

Reference Soil Group Code		Area	
		ha	%
AT	Anthrosol	11,519	0.15
AR	Arenosol	55,836	0.72
CL	Calcisol	27,284	0.35
CM	Cambisol	2,168,581	27.99
CH	Chernozem	1,369,962	17.68
FL	Fluvisol	586,221	7.58
GL	Gleysol	484,545	6.25
HS	Histosol	442	0.01
LP	Leptosol	1,231,952	15.90
LV	Luvisol	219,583	2.83
PH	Phaeozem	72,840	0.94
PL	Planosol	429,472	5.54
PZ	Podzol	34,313	0.44
RG	Regosol	168,689	2.18
SC	Solonchak	25,022	0.32
SN	Solonetz	85,858	1.11
UM	Umbrisol	130,593	1.69
VR	Vertisol	644,689	8.32
Total		**7,747,401**	**100.00**

Source: Vidojevic et al, 2015 [42]

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