



NATIONAL ACTION PROGRAM

FOR

**SUSTAINABLE LAND MANAGEMENT AND COMBATING
DESERTIFICATION IN BULGARIA**

(UPDATE FOR PROGRAMMING PERIOD 2014-2020)

National Action Program for Sustainable Land Management and Combating Desertification in the Republic of Bulgaria¹ (Update for Programming Period 2014-2020)

Contents

List of Abbreviations

Introduction

Part I. Objectives of sustainable land management and the UN Convention to Combat Desertification. Essence and approaches in developing the National Action Program for sustainable land management and combating desertification.

Part II. Analysis of degradation and land management in Bulgaria.

1. Analysis of the status of land resources (soil, water, plants and animals). Factors determining the degradation processes.
2. Legislation, policies and strategies related to land management and combating desertification.
3. Role, participation and responsibilities of local government.
4. Role, participation and responsibilities of business organizations and associations.
5. Scientific and informational security and international cooperation for the purposes of sustainable land management and combating desertification. The role of education.
6. Role, participation and responsibilities of NGOs. Informing and involving the public.
7. Role, participation and responsibilities of owners and users of agricultural lands in the process of sustainable land management and combating desertification.

Part III. Strategic objective and strategic sectors of the National Action Program for sustainable land management and combating desertification.

Strategic objective: *Limiting land degradation and combating desertification for maintaining and developing the capacity of ecosystems to achieve a clean, safe and attractive environment, economic stability and improved quality of life.*

Strategic sectors:

I. Improvement of national legislation and policies for sustainable land management and combating desertification

1

The National Action Program 2007-2013 on sustainable land management and combating desertification (NAP), developed entirely in the context of the philosophy and principles enshrined in the OP 15 of the Global Environment Fund for sustainable land management (SLM) and within the United Nations Convention to Combat Desertification (UNCCD), ratified by Bulgaria in 2001. It is based on the analysis of the state of land resources and causes for their degradation, and the socio-economic characteristics of the country's development over the past 15 years. It is developed within the joint project of the Ministry of Environment and Water (MEW), Ministry of Agriculture and Food (MAF), and the United Nations Development Programme, funded by the Global Environment Fund.

Programs:

1. Improving and supplementing the national legal framework for sustainable land management and combating desertification.
2. Improving and integrating policies and strategies with respect to sustainable land management and combating desertification.
3. Strengthening the institutional capacity and building mechanisms for coordination, communication and partnership.
4. Development of national and local programs and participation in international processes on sustainable land management and combating desertification.

II. Preservation and improvement of the potential of land resources and their sustainable use

Programs:

1. Limitation of erosion processes.
2. Restoration of irrigated agriculture and conservation of water resources.
3. Sustainable use of land resources in disadvantaged areas.
4. Environmentally sound storage and use of biomass waste from agriculture and forestry.
5. Sustainable management of lands with high natural value.
6. Application of agroforestry systems as models for sustainable land use.
7. Restoration and conservation of landscape diversity in forest areas by implementing sustainable practices.
8. New practices for recovery and efficient use of land resources in the damaged areas.

III. Science and education in support of policies for sustainable land management and combating desertification

Programs:

1. Development and incorporation of educational programs for sustainable management of land resources at all levels of the education system.
2. Scientific, informational and applied ensuring of security measures for sustainable land management.
3. Participation in international processes of sharing knowledge, know-how and best practices for sustainable land management.

IV. Integration and implementation of policies for sustainable land management at local level

Programs:

1. Review and inclusion of measures for sustainable land management in the municipal development plans and programs.
2. Management and use of land resources that are municipal property in accordance with the principles of sustainable land management.

3. Strengthening the role of municipal administrations for transfer of policies, options and best practices for sustainable land management.

V. Improving information exchange and public participation in the processes of decision-making for sustainable land management and combating desertification

Programs:

1. Information support for sustainable land management at national and local level.
2. Building networks of NGOs in support of sustainable land management.
3. Developing and organizing public campaigns to raise public awareness regarding sustainable land management.
4. Strengthening the capacity of NGOs in the implementation of policies for sustainable land management.
5. Promoting public-private partnerships to implement measures for sustainable land management.

Part IV. Resources, economic mechanisms and schemes to support implementation of the National Action Program for sustainable land management and combating desertification

Part V. Monitoring / supervision and evaluation of the implementation of the National Action Program for sustainable land management and combating desertification

Information sources

Appendixes

List of abbreviations

AA	Agricultural Academy
ALA	Agricultural Land Area
ASA	Agency for Social Assistance
BAS	Bulgarian Academy of Science
BD	Basin Directorate
BOD	Biochemical Oxygen Demand
CAP	Common Agricultural Policy of EU
CD	Combating Desertification
CL	Concentration Limit
COD	Chemical oxygen demand
DH	Directorate “Hydro Melioration”
EA	Ecosystem Approach
EAHM	Executive Agency for Hydro Melioration
EBRD	European Bank for Reconstruction and Development
EFA	Executive Forest Agency
EMEPA	Enterprise for Management of Environmental Protection Activities
EU	European Union
ExEA	Executive Environment Agency
FAO	Organization of the United Nations for Food and Agriculture
FEE	Fund Energy Efficiency
FI	Food Industry
GAEC	Good agricultural and environmental conditions
GDP	Gross Domestic Product
GEF	Global Environment Fund
HS	Hydrometeorological station
ISPPA	Instrument for Structural Policies for Pre-Accession
LAG	Local Action Groups
LAPI	Law on Access to Public Information
LPRIT	Land properties, register and information technology
LSP	Law on Spatial Planning
MAF	Ministry of Agriculture and Forestry
MC	Ministry Council
MDP	Municipal Development Plan
MEE	Ministry of Economy and Energy

MES	Ministry of Education and Science
MEW	Ministry of Environment and Water
MF	Ministry of Finance
MLSP	Ministry of Labor and Social Policy
MR	Mineral Resources
MRDPW	Ministry of Regional Development and Public Works
MT	Ministry of Transport
NAP	National Action Program
NAPE	National Action Plan for Employment
NASEM	National Automated System for Environmental Monitoring
NEDP	National Economic Development Plan
NFPS	National Forest Policy and Strategy
NGO	Non-governmental Organization
NIMH	National Institute of Meteorology and Hydrology
NSI	National Statistical Institute
NSSM	National System for Soil Monitoring
NTEF	National Trust Ecofund
PHARE	Instrument for strengthening administrative and institutional capacities of the countries of Central and Eastern European candidates for EU accession
PPP	Public Private Partnerships
PRD	Program for Rural Development
RES	Renewable energy sources
RFD	Regional Forestry Directorate
RIEPW	Regional Inspectorate for Environmental Protection and Water
RSAF	Regional Service for Agriculture and Forests
SAPARD	Special Accession Programme for Agriculture and Rural Development
SB	State Budget
SG	State Gazette
SIF	Social Investment Fund
SLM	Sustainable Land Management
SPP	Small Projects Programme
TPP	Thermal power plant
UAA	Utilized Agricultural Area
UNCCD	UN Convention to Combat Desertification
UNDP	United Nations Development Program

UWTP	Urban wastewater treatment plant
WB	Water bodies
WB	World Bank

Introduction

Land resources of Bulgaria, harmoniously complemented by favorable physical and geographical location, are the most precious natural resource, which can build the future of the country. Planning and land use management are essential for environmental protection.

The National Action Program 2007-2013 (NAP) is developed in accordance with Part III, Section 1, Article 9 and 10 of the UN Convention to Combat Desertification (UNCCD). The member-states of the Convention within their Annex for use at a regional level, taking into account their particularities, undertake to develop National Action Programs. These action programs reflect strategies and introduce the integrated approach to physical, biological and socioeconomic aspects of desertification processes. They include measures to combat land degradation, based on existing and implemented plans and programs, and subregional and regional action programs, consistent with national policies for sustainable development.

NAP is a key instrument through which the principles and objectives of UNCCD and sustainable land management (SLM) are transformed into specific actions and are bound to those of the administration. The aim is to create a functional institutional framework for its implementation. NAP aims to clarify the reasons causing instability in land management and desertification, and to determine the practical measures for SLM and Combating Desertification (CD), as well as and the necessary resources for implementation of specific actions. NAP should ensure effective participation at local, regional and national level and pre-determine broad commitment – of the government, of local communities and organizations (branch, NGOs), the scientific community and individual land users and stakeholders.

NAP is the instrument which will contribute to achieving environmental benefits and will help to overcome the conflicts in policies on land management and the ones between key production activities. It will integrate the efforts of various institutions linked to land management and will support the improvement of national legislation relating to land management. It is a harmonious addition and, simultaneously, it will have an upgradeable function in certain aspects with regard to the National Environment Strategy, the National Strategy for the Development of the Water Sector in Bulgaria, the National Strategy for the Development of the Forestry Sector in the Republic of Bulgaria for the period 2013-2020, the Strategic Plan for Biodiversity, and the National Regional Development Strategy.

Part I. Objectives of Sustainable Land Management and the UN Convention to Combat Desertification. Essence and Approaches in Developing the National Action Program for Sustainable Land Management and Combating Desertification.

The objective of the Convention is to combat desertification and mitigation of drought by taking effective measures at all levels, combined with arrangements for international cooperation and within the framework of an integrated approach, consistent with Agenda 21 and aimed at achieving sustainable development in the affected areas.

The objectives of the Convention and the SLM are closely interrelated and the prerequisite for achieving positive results within their implementation is the integration of measures. Combining purposes is a factor for greater reliability and complexity for solving the problems of socio-economic and environmental issues in Bulgaria.

SLM planning, the implementation of which in practice covers the objectives of the Convention, is based on the ecosystem approach (EA), whose main features are summarized as follows:

- EA adopts the functioning of ecosystems as complete units – they can not and should not be managed in parts;
- EA focuses on the protection and conservation of ecosystems in their entirety. Their management is successful only if it preserves or develops the capacity of an ecosystem to create diversity of raw materials / products and services continuously over time, and not focus only on its productivity;
- EA includes people by integrating social and economic information with environmental information about the ecosystem;
- EA applies cross-sectoral analysis on the use of land resources in a given local context and is based on the relationships between these sectors;
- EA harmonizes the additional but often conflicting objectives of production and environmental protection;
- EA is scientifically justified;
- EA is based on socio-cultural, institutional, economic and environmental aspects of sustainable development (progress in all directions and at different organizational levels);
- The results of the implementation of the EA are intended not only for the present but also for future generations.

SLM aims at utilizing slowly renewable land resources – soils, water, plants and animals – for production of raw materials / products and provision of services to meet the constantly changing and growing human needs by providing long-term productive potential of these resources and maintaining their productive, physiological, environmental and cultural functions.

SLM is a balance between agricultural production and environmental protection and its objectives are a component of the overall goal of sustainable development. SLM attempts to resolve conflicts between production and environmental protection and to agree on a consensus between the demands at local, regional, national and international level. The main question is not how to preserve nature in its primary state but how to jointly maintain the functions of the land resources for the benefit of society in a sustainable way.

SLM is based on the “*five pillars of sustainability*” - *productivity* (to maintain or increase services), *security* (to reduce the level of production risk), *protection* (to protect natural resources and limit their degradation), *economic viability* and *social acceptability*. The two main aspects of the results achieved by the implementation of SLM are limiting global land degradation and poverty alleviation.

Part II. Analysis of Degradation and Land Management in Bulgaria.

1. Analysis of the situation of land resources (soil, water, plant and animal). Factors determining the degradation processes.

1.1. Analysis of the situation of land resources

Functions of land resources (soils, water, plants and animals) are interconnected and interdependent. Fertile and unpolluted soil, clean and sufficient quantities of water, well maintained pastures and meadows provide normal feeding conditions for plants and animals, and therefore high quality plant and animal production. Crop and animal waste provide high quality organic fertilizer that improves soil fertility. A real expression of this interdependence in nature are the bio-geochemical cycles and the transfer of substances and energy along the “soil – plant – animal – soil” chain. The loss of biodiversity is associated with the degradation processes and changes in the landscape (incl. stubble burning, which destroys the entomofauna and flora, and disturbs the soil microbial equilibrium) that lead to loss of natural habitat of many plant and animal species. The improvement of the condition of each of the elements results in an improvement of the others and vice versa – the disturbance of any of them adversely affects the normal functioning of the rest. Therefore, the measures that are needed are most often complex and lead to limitation of degradation processes in all land resources.

Under the Common Agricultural Policy (CAP), the aspects of soil protection are part of the requirements for good agricultural and environmental conditions. Efforts are focused on limiting erosion, retaining and improving organic matter, and avoiding compaction.

1.1.1. Soil resources

Soil cover in Bulgaria is characterized by a great variety due to the considerable diversity of soil forming factors (soil forming rocks, strongly uneven relief, different bio-climatic conditions and anthropogenic activity), and has a mosaic structure. It includes 42 soil varieties classified in 16 soil types

Agricultural territories cover 5 782 thousand ha, and represent 52.1% of the country's territory (11 099 thousand ha), of which 48-50% are managed as fields, 31% - as pastures, 7-8% as fallow lands, approximately 4% as perennials, while uncultivated land is approximately 8% [1,2]. Arable lands² in 2004 are 3 263 thousand ha and represent 61.2% of the utilized agricultural area³ (UAA). For comparison, the area of arable lands during the period 1939-1960 was about 85% of the managed land. By 1990 it decreased to 75% and by 2000 it was only 60%.

For the period 2007-2014 the structure of utilized land in Bulgaria is variable. In 2014, the agricultural land area (ALA)⁴ is 5 192 940 ha, which represents 46.8% of the country's territory. The utilized agricultural area (UAA)⁵ amounted to 4 976 815 ha, which is 0.4% less compared to the previous year 2013, and represents 44.8% of the area of the country.

2

Areas included in crop rotation, temporary meadows and fallow lands.

3

Arable lands, perennials, constantly grassed areas, greenhouse areas.

4

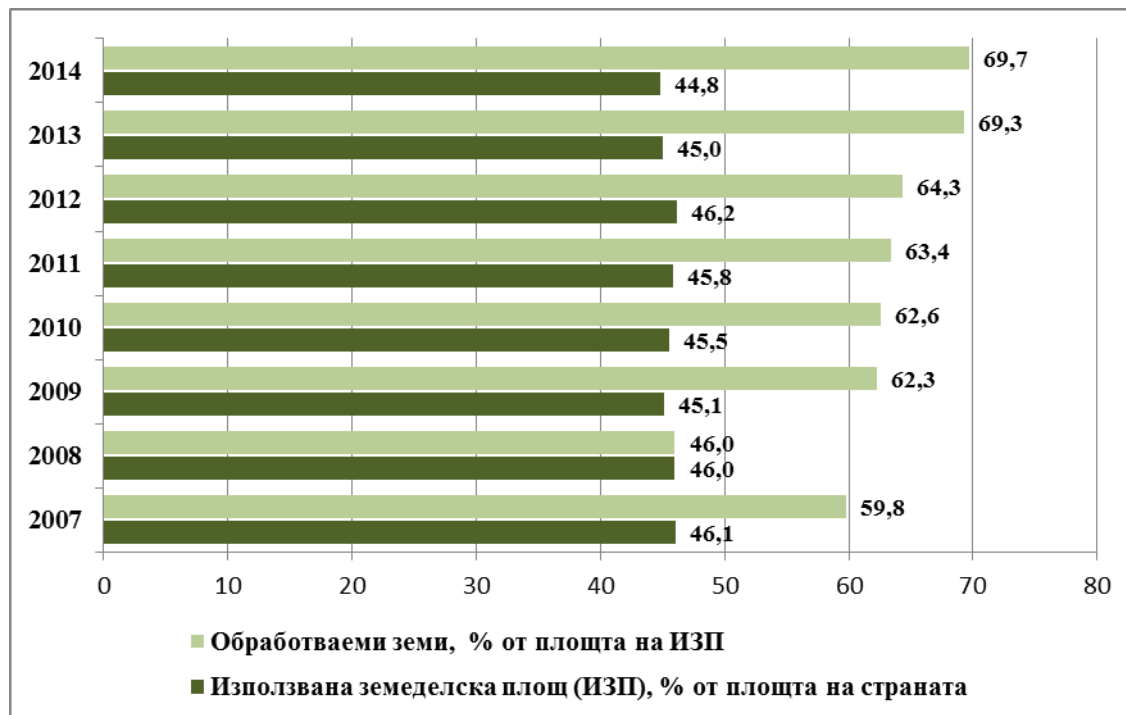
ALA is formed by arable land, permanent crops, permanent grassland for agricultural use (including alpine pastures and grassy surfaces with a weak productive potential), family gardens and farmlands uncultivated more than three years

5

UAA includes: arable lands, perennial crops, permanent grassland, greenhouse areas and family gardens.

Uncultivated lands⁶ occupy 4.2% of the territory of the country, and decline by 18% compared with the previous year. Arable land increase by 0.2% compared to 2013, occupying 3 469 388 ha and representing 69.7% of the UAA (Figure 1, Table. 1)

Fig. 1. Utilization of agricultural land, %



Arable lands, % of UAA area

Utilized agricultural area (UAA), % of the area of the country

Category	2007	2008	2009	2010	2011	2012	2013	2014
Utilized agricultural area (UAA), % of the area of the country	46,1	46,0	45,1	45,5	45,8	46,2	45,0	44,8
Arable lands, % of UAA area	59,8	46,0	62,3	62,6	63,4	64,3	69,3	69,7

Source: MAF; Agriculture and Regional Policy General Directorate, Agrostatistics department, Bulgarian Poll for Monitoring the Agricultural and Economic Situation: Employment and land use in 2014.

For agriculture the most important are deep soils located in plain and lowland areas, occupying about 53.2 percent of the country's territory [32]. These include chernozems, dark gray, gray, light gray and cinnamon forest soils, smolnitsa, part of alluvial soils, pseudopodzolic and saline soils. The most naturally fertile of them are the soil varieties of

6

Uncultivated land: land not included in the crop rotation during the respective year and not used for agricultural production for more than two years .

the types: chernozem, smolnitsa, dark gray-brown forest soils, cinnamon forest soils, alluvial-meadow soils. These soils, combined with favorable climatic conditions, are very good prerequisites for growing a large number of crops. Among them, the most widespread and most important for agricultural production are the chernozems (about 21% of the total area of the country). Shallow and underdeveloped soils (including cinnamon, gray, yellow podzolic soils, brown, dark colored forest and mountain-meadow soils) occupy 39.3% of the territory of the country, and the rock-covered territories – 7.49%. Despite the small capacity of the soil profile, specific composition and properties, part of the shallow soils (rendzinas, brown forest soils and some alluvial soils) provide good and sometimes the only suitable conditions for growing certain crops.

The area of forest areas as to 31.12.2014 amounts to 4 202 015 ha. Of these, 3 835 905 ha (91.3%) are forests. The area of treeless forest areas is 366 110 ha.

Soil resources in Bulgaria, having generally high potential of productive, regulatory and buffer functions, are subjected to natural and anthropogenic degradation, which adversely affects the functioning of the natural and artificial ecosystems.

Degradation Processes in Soil Resources

Soil functions – despite their fundamental role for ecosystems and the economy, and unlike air and water – are taken for granted and it is believed that they abound. Degradation of the soil is usually not noticed since it is a slow process, which rarely exhibits immediate dramatic consequences. For these reasons, raising awareness about soil poses a particular challenge.

Land degradation – in its various forms – is a major and permanent problem. This is also a problem for global development, as soil degradation, poverty and migration are complementary, which is often considerably neglected, as the observed effects are gradual. Soil degradation caused by human activity contributes to climate change.

Desertification, land degradation and drought affect over 1.5 billion people in more than 110 countries, 90% of whom live in areas with low income.

According to the United Nations Environment Program (UNEP), up to 50,000 km² are lost annually due to land degradation, mainly due to soil erosion. Each year, the planet loses 24 billion tons of topsoil. Over the past two decades it has lost soil sufficient to cover all the arable land of the United States. Desertification costs the world annually more than USD 40 billion expressed in lost productivity.

Soil erosion (water, wind and irrigation) as area distribution is the most serious degradation process in the country.

Soil erosion is a phenomenon related to the separation and transfer of soil particles by wind, rain and irrigation water during natural and/or anthropogenic processes. Erosion leads to reduction of the amount of nutrients, depth of the root layer, soil moisture and organic matter, loss of biodiversity, degradation of soil structure and a number of other negative soil processes.

The susceptibility of soils to erosion is entirely dependent on climatic conditions, land use and agricultural practices.

Water erosion occurs in both lands for agricultural use (pastures, fields, perennial crops) and in lands for forest use.

About 65% of the arable land area is affected by water erosion and about 24% - by wind erosion. Strongly eroded is 11.8% of the territory of the country. The average annual rate of water erosion in agricultural areas varies depending on the type of land use – from 2.69

t/ha y for rangeland, and 4.76 t/ha y for cropland to 12.65 t/ha y for perennials. The highest risk of experiencing water erosion of the soil belongs to the agricultural lands in Razgrad, Ruse and Burgas (with an average forecast intensity of 12 to 15 t/ha y), followed by Dobrich, Silistra, Kardzhali, Gabrovo, Lovech, Sofia (10-12 t/ha y), Sliven, Haskovo, Targovishte, Veliko Tarnovo, and Varna (7-10 t/ha y), and Blagoevgrad, Pazardzhik, Smolyan, Pleven, and Yambol (5-7 t/ha y) [32]

To 2012 there is a change in the average intensity of water erosion on agricultural land, which is 7,26 t/ha. Evaluation of annual erosion during the year was 53.8 mln. tons, manifested in different degree and intensity. The average annual rate of water erosion of land for agricultural use varies depending on modes of land use: 6,25 t/ha/y for rangeland; 6,77 t/ha/y for cropland; 20,40 t/ha/y for perennials, and in the areas occupied by other crops it is 7,24 t/ha/y. *Source: ExEA*

Of those areas (without the forests) in 2012, 3,718,359 ha have a weak erosion risk; moderate risk – 1,690,206 ha, and high risk – 550 246 ha.

To 2012, water erosion in the farmland areas of the regions of Lovech, Kardzhali and Gabrovo have a high intensity, respectively 14,45 t/ha/y, 10,77 t/ha/y, and 10,19 t/ha/y. The regions of Kyustendil, Razgrad, Sofia, Sliven, Ruse, Targovishte have a moderate intensity between 5,03 t/ha/y, and 8,7 t/ha/y.

In arable lands the trend from previous years is preserved, in which the areas with slight erosion risk are increased by 27 664 ha, while the areas with moderate and high risk are decreased respectively by 20 621 ha and 7 043 ha. Losses of soil are also decreased by 662,057 tons – compared to previous years.

Unlike water erosion that is characteristic of the mountainous and hilly areas, wind erosion occurs mainly in large and open plains – largely deforested.

The highest relative risk of occurrence of wind erosion is the territory in the regions of Dobrich and Pleven (60-75% of the areas), followed by Ruse, Silistra, Razgrad, Yambol, Vratsa (50-60% of the areas), and Vidin, Montana Varna, Targovishte, Shumen, Veliko Tarnovo (40-50% of the areas). For areas in the croplands of Dobrich region, there is a risk of deflation with intensity of 11 t/ha, in Sofia and Burgas – from 5 to 10 t/ha, while in Varna, Yambol and Sliven – from 3 to 5 t/ha. The risk of irrigation erosion is negligible as it affects irrigated lands with slopes over 3°, most of which have not been irrigated since 1990.

To 2012 the trend in recent years toward limitation of area distribution of wind erosion in the country is impaired. Areas with low risk are reduced at the expense of those with moderate and high risk. An important fact is that the loss of soil remained in the same range.

In 2012, wind erosion preserves a relatively stable area of distribution. 34% (3,816,613 ha) of arable land in the country are at risk of wind erosion – in varying degrees by an average intensity of 0,2 t/ha/y. Unlike the previous year, when areas with high risk of wind erosion were not reported, whereas in 2012 they were 364,421 ha.

Affected areas with high erosion risk are 288 344 ha, with moderate – 449 091 ha, and with low – 3,001,710 ha. Croplands in the areas: of Dobrich (187 131 ha), Burgas (120 713 ha), Yambol (14 007 ha), Silistra (5480 ha), and Sliven (1156 ha) are at a highest risk of wind erosion. Soil losses are greatest in the areas of Dobrich, Burgas, Varna, Ruse and Haskovo, followed by Silistra, Yambol, Shumen and Stara Zagora.

The highest is the risk of irrigation erosion in the gravitational irrigation of furrows.

In forest areas, the total area of land affected by erosion at the end of 2004 (classified in five stages) is about 291,838 ha. The largest areas affected by erosion are on the territory of the Regional Forestry Directorates (RFD) of Blagoevgrad, Kardzhali, Kyustendil, Sofia

and Smolyan. The largest percentage of area affected by erosion is in the RFD of Kyustendil, Blagoevgrad, Kardzhali and Smolyan. More than 25% from the territories of the forestries of Parvomai (Bl), Gotse Delchev, Breznik, Zlatograd, Slaveyno, Tsaparevo, Kirkovo, Momchilgrad and Nova Zagora has eroded to varying degrees.

To 2012 the soil losses in the forests are 1 083 114 tons, i.e 2% of those nationwide.

The total area of new forests created in 2012 is 1 204,1 ha, of which 1 118,8 ha in areas under the control of state enterprises under Art. 163 of the Law on Forests (25% less compared to 2011), and 85,3 ha – in municipal forest territories. During the year no are afforestation has been reported in private forest areas. Due to insufficient funding, during the year no other activities have been carried out with regard to protection of forest areas against erosion, besides anti-erosion afforestation on 356,0 ha.

Dehumification. The reduction of soil organic matter in arable lands, compared to virgin lands, is between 10 and 40% for the majority of soil [32]. It is mainly related to the removal of topsoil by water and wind erosion, oxidation of organic carbon due to high aeration at intensive cultivation and degradation of soil structure at soil compaction. Dehumification is connected to other degradation processes and occurs as a result of secondary acidification and salinization of the soil. Another reason for dehumification is the widely applied in Bulgaria stubble burning, which, besides the loss of soil fertility, also leads to water and biodiversity loss.

Salinization. Bulgaria has registered about 35 500 ha of arable land affected by salinization processes, and 252 ha are salted with normal soda and chlorides. These processes affect mainly the regions of Burgas, Varna, Veliko Tarnovo, Pleven, Plovdiv, Sliven, Stara Zagora and Yambol. A large part of the saline soils are croplands that are not processed due to severely reduced soil fertility. The main threat is that the salinized areas are in the form of spots in the midst of fertile soils, and there is a risk of their area expansion. Anthropogenic salinization in urban areas tends to increase. About 250 ha of agricultural lands are salinized from industrial activity. More vulnerable to salinization are soils of heavier mechanical composition. Salinization adversely affects vegetation, very often leads to alkalinity of the soil and dehumification and is thus a prerequisite for the development of erosion.

To 2012 the total area of salinized soils in the country is estimated at 33 310,027 ha. Depending on the content and type of water-soluble salts, typically salinized soils are divided into: *solonets*, *solonchaks* and *solonets-solonchak* (14 186,047 ha). More widespread are soils with low salinity or salinity in depth according to the soil profile (*solonchak-like* and *solonets-like*), the area of which is 19 123,98 ha.

Acidification. The scope of agricultural areas with high susceptibility to acidification (pH <5.0) encompasses soils that cover more than 4.3 million ha [32]. About 1.5 million ha of arable land in the plains and hilly areas, and 1.2 million ha in the mountains are acidified [32]. Up to 4.5% of acidified soils in agricultural lands have a soil acidity that is harmful to plants [11]. Recently, there has been a lasting tendency to neutralize the exchangeable acidity in the anthropogenically acidified soils with reduced consumption of hydrolytic acid mineral fertilizers. In terms of active manifestation of erosion processes and fertilization with acid mineral fertilizers, however, there is a tendency to modify the acid-alkaline balance in the soil, associated with increased content of exchange hydrogen and aluminum and severe reduction of basic elements.

Soils with a high risk for occurrence of harmful acidity in rural areas are light gray (pseudopodzolic) forest, luvic and pseudopodzolic cinnamon forest, yellow-podzolic, brown forest, mountain-forest dark soils and mountain-meadow soils formed in the mountainous area, non-carbonate alluvial and deluvial soils and others. Forest soils – brown forest (Dystric / Eutric Cambisols), dark (Umbric Cambisols), mountain-meadow

(Modic Cambisols) and luvic (Luvisols) – gray forest (Gray Luvisols) and cinnamon forest (Chromic Luvisols), in the most part some are genetically slightly to highly acidic, with a pH lower than 5.5, and are vulnerable to further acidification due to anthropogenic pressure [15]. In all mountainous regions of the country there are changes in the acidity of the soil, which are divided into two types. Areas dominated by processes of lowering the soil pH (acidity) are the Eastern Balkans, Osogovo, Kraishte, Western slopes of Rila, Vitosha, Western Balkans – Barzia, Mezdra, mountains in southwestern Bulgaria. Areas dominated by processes of raising the pH (alkalinity) of soil are the northern and southern slopes of the Central Stara Planina, Rhodopes, western slopes of Rila.

By 2012 the rate of acidification in the monitoring stations was retained. V₃% remains relatively high, which requires application of ameliorative activities and good agricultural practices, tailored to the specific soil conditions

Secondary soil compaction. Despite the lack of systematic observations, there is evidence of a lasting trend to structural degradation of Bulgarian agricultural soils. The negative impact of compaction results in reduced soil aeration connected with a violation of water-air, and its heat balance, reduction in water permeability, and, ultimately, decrease in soil fertility. Compaction of the soil leads to a reduction potential of the surface runoff, thereby increasing the intensity of water erosion and the risk of flooding.

Seasonal surface waterlogging. About 10% of agricultural lands are undergoing seasonal surface waterlogging. [32] In Bulgaria these are the heavy loamy chernozems (about 100,000 ha) and pseudopodzolic soils (about 350,000 ha).

Technogenic pollution. There are two types of soil pollution: *diffuse* (mainly from agricultural practices) and *local* (mining sites and industrial enterprises). As a result of local and diffuse soil contamination, changes occur in soil composition and quality of the production.

Contaminated lands with heavy metals and metalloids from industrial activities cover an area of 44 900 ha, with 61.3% of them being close to industrial enterprises, of which 8 160 ha are polluted five times above the concentration limit [11, 32]. The lands in the three-four km zones around big industrial sites have been affected the hardest. With natural radioactive elements from uranium mining have been contaminated 1 000 ha. There are almost 130 ha contaminated by petroleum products.

After 1994-1996 there were no recorded statistically significant in view of area new polluted areas from industrial activity. Values measured in 2004 in 97% of cases are below concentration limits. In over 85% of cases, concentrations of zinc and arsenic are commensurate with the background ones. The same is true for lead contamination (more than 90% of cases), copper (over 94% of cases) and cadmium (over 97% of cases)

During the period 2005-2012, soils in the country were in good ecological status in respect of contamination with heavy metals, metalloids and persistent organic pollutants (polyaromatic hydrocarbons, polychlorinated biphenyls and chlorinated organic pesticides).

For the period 2005-2012, the number of points exceeding the maximum concentration is 6.55%, with 3.02% for agricultural lands and 3.53% for permanent grassland.

In agricultural lands, pollutants are mainly arsenic and copper. In permanent grasslands pollution comes mainly from nickel and lead. Concentrations of contaminants in arable lands exceed 1.1 to 2 times the permitted concentration in the topsoil, from 1 to 3.2 times in sub-topsoil. While in uncultivated areas exceedances are respectively from 1 to 3 times the concentration limit in the top layer and 1 to 2.5 times in the sub-topsoil layer.

In some points exceedances of the maximum admissible concentration of more than one element have been registered.

There are exceedances of values in the districts of Smolyan, Pazardzhik, Sofia, Montana, Kardzhali, Haskovo, Blagoevgrad and Burgas.

There is a tendency to restrict the processes of pollution due to reduced use of fertilizers and plant protection and conducting programs for environmental-friendly agriculture and organic production.

Warehouses for storage of prohibited and expired plant protection products as a source of local pollution of soils: For the period 2000-2012, there were found positive trends in the overall management of warehouses for prohibited and expired products for plant protection and the areas around them.

From local sources, posing a threat to the state of soil, surveys were carried out in relation to warehouses storing prohibited plant protection products. Warehouses with obsolete pesticides are subject to an annual inventory of the ExEA/MEW, BFSA/MAF and Ministry of Interior / Directorate "Fire Safety and Population Protection". According to the commonly agreed national classification locations, these locations are divided into three types – central municipal warehouses, warehouses for obsolete pesticides and BB cubes. In relation to the presence of warehouses with obsolete and/or prohibited plant protection products, areas/sites near them – places where pollution of adjacent areas is expected due to leaking roofs, broken buildings or exposure of products to the weather, are further inspected.

By 2012, on the territory of the country were registered 303 warehouses for banned and unusable pesticides, 1965 cubes and 75 centralized warehouses located in 304 settlements.

The total quantity of banned and unusable pesticides for 2012 is estimated at 14 400 tons (compared to 11 943 t in 2003, when the annual inventories began, and 13 737.44 tons in 2011), and 53.8% of them permanently disposed of in 1965 BB cubes, and 31.1% re-packed and stored in 75 central warehouses, and only 15.1% of the pesticides stored in abandoned (unprotected) warehouses. The largest number of unsafe warehouses is in the districts of Lovech (41), Pleven (53) and Stara Zagora (37).

In 2012 were established lasting positive trends in the overall management of the warehouses for prohibited and expired plant protection products and the areas around them as a result of:

- transposition of EU legislation and its implementation in the country for reducing the existing and preventing future contamination;
- Financing the development and implementation of programs/projects to address issues related to obsolete plant protection products in order to reduce the negative impact of warehouses and products contained therein on the environment and human health;
- Repackaging and moving to central municipal warehouses and rehabilitation of the liberated areas in order to limit the negative impact of warehouses and preparations contained therein on the quality of the environment and human health by
- Maintaining a full register of sites with prohibited and expired plant protection products at national (in ExEA) and regional (RIEW) level with annual monitoring of such sites;
- Providing access to available information to the general public, according to LAPI.

In forest areas in the last 15 years there has been a trend towards reducing the pollution of soils with the heavy metals copper (Cu), lead (Pb), and zinc (Zn). Exceeding the CL for Cu, Pb and Zn is established only in certain areas within the enterprises of the ferrous and nonferrous metallurgy, mining and processing.

Persistent organic pollutants: For 2012 were carried out 4284 analyzes from 119 points from the base network. Concentrations were determined of PAH, PCB and organochlorine pesticides in soil samples. The values were assessed by MCL under Ordinance No. 3 on

standards for acceptable content of harmful substances in the soil, in effect as of 12.08.2008.

During this period, soil pollution with persistent organic substances was not reported, mainly due to changes in Bulgarian agriculture in recent years, with reduced use of chemicals and fertilizers, with the exception of one point, the result of contamination in the past.

The contents measured in the period 2005-2012 were times lower than the maximum permissible concentrations. PCB were below the limit of detection, and 98.9% of PAH – under MCL.

Soil fertilization: The main pressure on the supply of the soils with biogenic elements comes from agriculture, and, in particular, the unbalanced *use of fertilizers*.

In 2012, the areas fertilized with nitrogen fertilizers are 11% more than in 2011. With phosphate fertilizers there is an increase of enriched areas in 2012 by 35% compared to 2011.

In 2012, the reported increase in the amount of manure used in the production of plant produce is 36% more than in 2011, and the areas fertilized with manure are 37% more.

Use of mineral fertilizers: According to the NIMH and MAF, average annual (for the period 1991-2010) values are set on the dates of beginning and end of fertilization to comply with Directive 91/676 of the Council of Europe and Ordinance RD 09-4272010 of the Minister of Agriculture and Food for the prevention of soil pollution caused by unbalanced fertilization.

The terms of crops fertilization comply with the conditions of temperature and photosynthetic activity of autumn crops, taking into account periods of intense moistening and drying of soils. Temperatures have a restrictive role due to the fact that the introduction of macro- and micro fertilizers in the soil should be done only after the autumn crops have resumed their growth in the spring. Earlier introduction of these fertilizers does not lead to their uptake by plants, which are in relative peace, and they fall through the internal soil horizontal and vertical flow in the groundwater, which is the reason for their pollution, mostly by nitrates, but also with other soluble forms of fertilizers.

According to the Bulgarian Food Safety Agency, in 2014 in the country were used: 322 004 tons of nitrogen fertilizers (N); 64,459 tons of phosphate fertilizers (R_2O_5), and 32 295 tons of potassium fertilizer (K_2O). In 2014, areas enriched with nitrogen are 24% more than in 2013. A tendency toward increase of the areas fertilized with phosphorus and potassium fertilizers is observed

Use of manure: Manure contains all the important nutrients for the plants as well as trace elements, stimulants (auxins, vitamins, hormones, etc.), and carbohydrates (cellulose, sugars, etc.) that improve both soil fertility and plant nutrition.

In 2014 were used a total of 511 945 tons of manure, and fertilized crops covered an area of 34 765 ha. In 2014 increased the amounts of used manure (to 511 945 tons from 451 654 tons in 2013), and the amount of fertilized areas (up to 34 765 ha in 2014 compared to 30 758 ha in 2013).

Disturbed lands. In Bulgaria the areas affected by mining and industrial waste depots form 0.29 percent of the country's territory, the areas affected by industry and energy production – 0.59% and 1.86% are physically damaged soils for construction of transport networks (road, air, boats, etc.) [6]. The areas of urban territories account for 3.14 % of the country's territory, and recreational zones – 0.44%. A negative nuance is introduced by the fact that among the physically damaged lands in Bulgaria there are prime agricultural soils, which should not be allowed to continue.

Soil sealing: This indicator is part of the list of the EEA with key environmental indicators (EEA Core set of indicators, CSI 014) - “loss of lands”

Soil sealing is associated with permanent coverage of the soil surface with an impermeable material due to construction and/or building of infrastructure.

Soil sealing blocks part of the soil functions that are important to ecosystems and biodiversity.

In the period 2000-2006, sealed soils represented about 4.9 percent of the total territory of the country, but there were areas where this percentage was considerably higher. The process is more pronounced on the Black Sea coastal and mountain resorts, where construction marks a very high growth. It is expected that in coming years the process will be even more pronounced because of the realization of planned infrastructure projects. Increased seizure of land for urbanization occurs mainly at the expense of agricultural land. In recent decades, soil sealing is assessed as a substantial threat of destruction of soils in Bulgaria. The same trends are typical for other European countries, where the growth rate of the sealed soil for the period (2000-2006) increased on average by 9% compared to the period (1990-2000).

In 2012 the Commission for agricultural lands viewed a total of 742 proposals for the establishment of platforms and/or routes for design, and 496 proposals for change of use of agricultural land by ordering decisions to change the land use of 1 147 ha. Commissions to the regional Agriculture directorates examined 1 108 proposals for change of use of agricultural land, and have enacted decisions for 498 ha.

Throughout the year were carried out commissions for acceptance of reclaimed land, and a reclaimed area of 35.9 ha was accepted. The designated areas for reclamation amounted to 220.3 ha.

Landslides: Landslides are due to natural and anthropogenic factors. These are geological and tectonic characteristics of the area, fault lines, earthquakes, fluctuations in the groundwater level, intense rainfall, erosion and dynamic effects as a result of human activities: deep excavations, road construction, extraction of resources, overloading the upper landslides from embankments and new construction. The occurrence of landslide activity is mainly in spring after snowmelt and after heavy rains.

For the period 2005-2010, there was a trend of increasing landslides. For the period 2000-2010, the country registered 1 625 landslides with a total area of 20 692 ha.

In 2010, there were 68 new landslides with a total area of 170 ha. Landslides have been registered in areas where no project studies have been carried out and therefore no reinforcement activities have been implemented.

In 2011 no monitoring was conducted on landslide and abrasion processes in the country. Therefore, no changes were recorded compared to 2010. Nevertheless, the implementation of activities to prevent and limit the risk of landslides, including control of construction in landslide areas and implementation of reinforcement, drainage and coast protection events on areas affected by landslides, erosion and abrasion processes, continued.

1.1.2. Water resources

Notwithstanding the trend in recent decades to reduce the amount of fresh water received through the natural hydrological cycle in the country, the permanent resource of fresh water (95% security) with long-term average annual data for the period 1974-2006 was estimated at 71.245 billion m³ or 9419 m³ per person in a population of 7 563 710 people as to 31.12.2009, and 24 560 m³ per household (2 900 800 households in 2009). In this

situation, Bulgaria is not a country with limited water resources, as the long-term average annual water resource available per person is 5000 m³.

In 2010 Bulgaria included in the calculation of its fresh water resources the external flow of the Danube in the amount of 88.679 billion m³ (the value is for the flow of the river Danube to the measuring section of the state border at Novo Selo – 833.600 km). Although the resources of the river Danube are large (88.679 billion m³), the usability of the Danube and the Black Sea region is still limited due to lack of adequate infrastructure. However, in future droughts the Danube remains one of the main sources for the Danubian and Black Sea region. Due to the still missing infrastructure for the use of the inland Danube waters, for the security of water consumption for the previous period were taken into account mainly seized/used inland waters and the impact of climate change (rainfall) on the land territory of the country.

Total resources of fresh water without the river Danube are 19.5 billion m³ obtained based on the long-term average annual rainfall data for the period 1974-2006 – 68.598 billion m³, actual evapotranspiration for the period 1974-2008 – 50.513 billion m³, internal flow for the period 1974-2008 – 18.085 billion m³, actual external inflows for the period 1974-2008 – 0.462 billion m³ and 1 billion m³ flow of groundwater in northeastern Bulgaria.

Bulgaria has a good groundwater quantitative status – all groundwater bodies in the Black Sea, the East-Aegean and West-Aegean region and 86% of those in the Danube region. Available groundwater accessible for use throughout the year are 3.404 billion m³, as the feeding of the aquifer is estimated at 6.022 billion m³ according to the long-term average annual data for the period 1974-2008.

According to data of “Dams and Cascades” with NEC EAD, in early 2009, the available volume in the dams managed by the company was 2353 million m³, which is about 72% of the total volume in the dams. At the end of 2009 the maximum volume is 2753 million m³ and is about 84% of the total volume. In 2009 a total inflow was realized of 5 610 244 thousand m³, which is 32% more than the previous and drier 2008, i.e there is a direct correlation between rainfall and the total inflow to the reservoirs. The consumption of water from the dams in 2009 was 5 871 656 thousand m³ and it is distributed as follows: submitted water for hydroelectric plants – 5 282 265 m³ or 89.96% of total expenditure; submitted irrigation water – 33 641 thousand m³ or 0.57% of total expenditure; submitted water supply – 210 025 thousand m³ or 3.58% of total expenditure; discharged water for watering of the river beds – 59 604 thousand m³ or 1.025% of the total expenditure; evaporation, filtration and omissions – 212 190 m³ or 3.61% of total expenditure; water lost in the conduct of the annual technical inspection and preventive activities – 58 171 thousand m³ or 0.99% of total expenditure, and overflowing waters through spillways – 14 573 thousand m³ or 0.27% of the total expenditure.

Mineral waters are an integral part of water resources. Most often they are characterized by deep circulation, with long water exchange cycle and low vulnerability to anthropogenic impacts. They can be used in the field of therapeutic and prophylactic activity, in the bottling industry, the production of hydro geothermal energy and of valuable substances for supply of various sites with warm water, drinking water in the absence of alternatives, recreation, sports, and for other purposes.

In Bulgaria are identified and explored more than 200 deposits and manifestations of mineral waters. The country's resources of mineral waters have varied chemical composition (content of dissolved minerals from 0,150 to 100-150 g/l), physical (temperatures up to 100⁰C) and healing properties, and have a flow rate of more than 5600 l/sec. The wide range of useful properties makes much of Bulgarian mineral water high-and-wide technological through schemes of complex use simultaneously in several directions.

Since Bulgaria's water resources (surface and groundwater) are fed primarily by rainfall, their runoff is distributed too unfavorably by seasons. For the analysis of water consumption for the period 1999-2009 in our modern climatic conditions, a variety of public sources of weather and climate data were used: European Climate Atlas; Climate Atlas of FAO; climatic directories, monthly newsletters and atlases NIMH-BAS; statistical yearbooks; databases of centers as IPCC DDC, ATEAM project, PRUDENCE database, DIVA climatological database and others.

When discussing possible changes in climate over the next 25 years, various scenarios for change are considered, based on different models and perceived changes in the factors on which they depend. Most models include as a factor the human activity. Many processes in nature are not yet included in climate models. For example, the impact of cloud systems on the greenhouse effect is not considered, or the absorption of carbon dioxide by the oceans. For this reason for Bulgaria are applied the models and approaches that are closest to our terms for different types of scenarios.

For the short period until 2015 is accepted the contemporary climate (1961-1990), as drier years (2008) and very dry years (2000) should not be overlooked as possible.

For the mid-term (2021) and long term (2035) of the strategy are developed scenarios for change of the most important for the water resources and water sector climate indicator – rainfall.

According to the three prepared scenarios (optimistic, realistic and pessimistic) for the expected rainfall in the short (2015), medium- (2021) and long term (2035) perspective for the country, a steady trend of shortage of natural surface and groundwater resources is not expected. At the same time, however, the increasingly observed fluctuation is a very alarming indication of the future – as in years with extremely low rainfall (2000 and 2008) to years of extremely high levels of rainfall that has led to flooding of large areas of the country (2005), in addition to the uneven distribution of water resources in the country.

Water quality

The usability of a water source and the provision of continuous water supply depends on water quality.

Analytical studies were carried out to establish:

- the availability of water resources with good or bad water quality, and
- the reasons for the deterioration of water quality,

by following the chemical and ecological status of surface and groundwater bodies (WB) in the 4 pools for water management.

Particularly important for water quality protection is the need of establishment of sanitary protection zones around water sources and facilities for drinking water supply and around sources of mineral waters used for therapeutic, prophylactic, drinking and hygiene purposes and subsequent compliance with the prohibitions and limitations on the use of land in those areas.

The aim is achieved through Art. 10 of Chapter One of Ordinance No. 3 of 16.10.2000 on the terms and conditions for surveying, designing, approval and operation of sanitary protection zones around water sources and facilities for drinking water supply and around sources of mineral waters used for healing prophylactic, drinking and hygiene needs of the Minister of Environment and Water, the Minister of Health and the Minister of Regional Development and Public Works, prom. SG. 88 of 27.10.2000, in compliance with:

(1) In belts II and III are prohibited, restricted or limited activities, as necessary, listed in Annexes No. 1 and 2.

(2) If, during water use, it is found that any of the restricted activities under Annexes No. 1 and 2 deteriorates the quantity and/or quality of acquired water, this activity is prohibited by the body under Art. 37 that has established SPZ.

(3) The implementation of the ban under para 2 is controlled by the basin directorate.

To compare water quality in river flows in Bulgaria and other European countries is used the average value of biochemical oxygen demand (BOD₅) determined in several measuring points for each country.

The biological oxygen demand of river waters is one of the three indicators for sustainable development of fresh water resources.

The other two indicators are:

- seized surface and groundwater as a percentage of the corresponding available resources, and
- the percentage of population with biological or other purification of waste water, providing decrease of BOD₅ at least 70%, and of chemical oxygen demand (COD) – at least 75%.

All 39 groundwater bodies in the West-Aegean region, and 64% of 50 underground WB in the Danube region are in good chemical condition. This percentage is respectively 60% of the 48 underground WB in the East-Aegean region and 57% of 40 underground WB in the Black Sea region. Data for the indicated quantitative status of groundwater in the River Basin Management Plan have been prepared by an expert assessment, showing that 96% are in good quantitative condition. The quantitative status of groundwater bodies in the Danube region is 86% due to the built shaft wells. Of all groundwater bodies, 56% have a good chemical status.

In the East-Aegean region basin management, the major pollutants in groundwater bodies are nitrates, sulfates, manganese, iron, phosphate, calcium, magnesium, ammonium, hardness (total) and permanganate oxidation. The elevated levels of nitrates are mainly related to over-fertilization of crops in the past, the development of environmentally unfriendly farming (lagoons, liquid waste) and lack of wastewater treatment plants in many settlements. Phosphate pollution is mainly due to uncontrolled use of fertilizers and industrial activity. The high iron content is also the result of corrosion of the casing of the water intake facility and less due to the chemical-mineralogical composition of aquifers. The greatest impact on the poor quality of groundwater in the East-Aegean region for basin water management are settlements without sewage and landfills. They emit ammonia and nitrates as a result of poor management of landfills or absence of lower liner screens.

In the Danube basin for water management, assessment of the chemical status of groundwater WB shows that 18 ground WB (36%) have a poor chemical status as the greatest is the nitrate pollution (in 14 ground WB), manganese (in 4 ground WB), iron (in 1 ground WB), phosphates (in 1 ground WB), and chromium (2 ground WB). The main factors for contamination of groundwater bodies are related to pollution from diffuse sources: agriculture, old and unregulated landfills and settlements without WWTP. The assessment of groundwater bodies at risk shows that 44% are at risk from diffuse sources and land use, while 10% are at risk from point sources of pollution. It was established that 21 groundwater bodies are “at risk” by the load of land use due to the large share of arable land (> 75%) within these bodies.

In the Black Sea region of diffuse sources of pollution of groundwater, most important are agricultural activities (agriculture and livestock), and settlements without sanitation that emit nitrates and ammonia. The significant impact of diffuse sources on groundwater is found in bodies of Quaternary, Neogene, Upper Cretaceous and Lower Cretaceous aquifers.

In the West-Aegean region for basin management, the status of all groundwater bodies is defined as good, there is no data for exceeding of the set standards. Episodic exceedances are incorporated in groundwater bodies in terms of nitrates, nitrites, phosphates, pesticides from intensive agriculture; ammonia, nitrates, nitrites, phosphates from settlements without WWTP and without sanitation.

The ecological status of surface water bodies is worse, where biological elements determine their status. In very good condition are 9% of the surface WB in the Black Sea region, 6% in the East-Aegean region and 1% in the West-Aegean and Danube region.

For the East-Aegean region, the most common reason for the poor condition of surface WB are loads from point sources (for 106 WB), followed by diffuse sources (for 78 WB), management of the river bed (for 44 WB) other significant loads (for 31 WB), flow regulation (for 14 WB), and the rarest reason is water abstraction (for 16 WB).

1.1.3. Vegetation resources

Agricultural territories

In Bulgaria there is a historically established specialization of agricultural production, expressed in the dominant share of grain – 30-33% of the utilized agricultural area (UAA), which represents about 58% of arable land. There follow the industrial crops (oleaginous and non-oleaginous) – 12-14% of the UAA, vegetable production 2-3%, horticulture and viticulture – about 4%, etc. [1,2]. This structure is generally retained throughout the years, with some fluctuations, according to market demand.

Pastures in Bulgaria, representing about 31% of agricultural land areas (ALA), occupy the most degraded and least productive lands. One could say that desertification in Bulgaria starts from pastures. They are least cared for or not cared for at all, and 40% of them are threatened by plowing or abandonment. Their botanical composition and nutritional value are unsatisfactory and their yields – low. Uneven grazing and trampling of the grass liquidates the grassy cover, which is a prerequisite for the development of soil erosion and reduction of its fertility.

At the same time natural pastures contain about 70% of the grasslands in the country. Grassland ecosystems and wetlands are the most vulnerable and endangered habitats in the country. Around 350 000 ha of semi-natural grasslands in Bulgaria are important for biodiversity conservation. These include various types of meadows and pastures distributed in the lowlands, hilly parts of the country and in mountainous regions. These are grasslands with high nature value, including 51.5% of the flora of Bulgaria. A total of 198 plant species, occurring in these meadows and pastures, are of national conservation significance. [6]

The agricultural land in 2014 was 5 192 940 ha, which represents about 50% of the country's territory.

The utilized agricultural area (UAA) is formed by arable land, perennial crops, grassland and family gardens. In 2014 it amounted to 4 976 815 ha, which is 0.4% less compared to the previous year and represented 44.8% of the country's territory.

Arable lands are areas that are included in crop rotation, temporary meadows with grasses with wheat and leguminous plants, fallow lands and greenhouses. In 2014, arable lands occupied 3 469 388 ha or 69.7% of the utilized agricultural area. There was an increase of 0.2% over the previous year.

Artificial meadows with wheat and legumes in 2014 increased by 5.4% compared to 2013 to 87 715 ha, which represents about 2.5% of arable land. *Fallow* lands are arable lands, which in the year of observation were not harvested. Processed or not, the areas remain in

this category for not more than two years. In 2014, fallow lands decreased by 23.9% compared to 2013 and occupied 174 110 ha, which represents 5.4% of the arable land and 3.5% of the UAA of the country.

Orchards in 2014 represent 1.3% of the UAA of the country, and the areas occupied by them remained unchanged compared to the previous year. *Mixed perennials* are 0.1% more than in 2013.

Vineyards – pure culture, in 2014, has over 53 521 ha, which is 11.5% less compared to 2013. Vineyards occupy 1.1% of the UAA of the country during the year.

Permanently productive meadows, alpine pastures, grassy surfaces with a weak productive potential, and meadows-orchards in 2014 occupied 1 363 984 ha or 27.0% of the UAA of the country.

Family gardens in 2014 occupy an area of 17 072 ha or 0.3% of the UAA of the country. An increase of 1.9% is observed compared to the previous year.

Fallow land includes abandoned perennial crops and arable land. These lands have not been used for agricultural production for more than two years and their operational recovery is possible with minimal resources. In 2014 uncultivated lands occupy about 4.2 percent of the country's area, decreasing by 18.0 percent compared to the previous year

1.1.3 Forest territories

Bulgarian forests perform multiple economic, environmental and social functions essential for sustainable development. They are a key factor in the formation and maintenance of environments, and to 31.12.2014 occupy 4.2 million ha or 37.8% of the territory of Bulgaria. At the end of 2014, the total area of forest areas was 4 202 015 ha. Of these 3 835 905. ha (91.3%) are forests. The area of treeless forest areas is 366 110 ha. Since 2005 the total forest area in the country has increased by 125 551 ha. Key factors that favor the dynamics of this process are self-afforestation of treeless forest areas and newly arranged forests. State ownership of forest areas is prevalent, which to 31.12.2014 was 73.5% of their total area. Non-state-owned forest areas represent 26.5%, including municipal – 13.2%, private individuals and legal entities – 11.3%, religious organizations – 0.5%, and forests established on former agricultural lands – 1.5%.

According to the latest data (2010), forested areas of forests with protective functions are 438 901 ha, of which with anti-erosion functions 172 276 ha, with water protection functions – 229 442 ha, and with ameliorative functions – 37 183 ha. In 2015, by a government resolution, another 103 000 ha were declared as protected forests, in order to protect water resources and against erosion.

The composition of forests in Bulgaria is very diverse. In the distant past, part of coniferous forests was destroyed and naturally replaced by deciduous forests. A substantial change in the composition of forests occurs in the second half of the last century as a result of afforestation with predominantly coniferous species.

Forests in Bulgaria do not contribute significantly to the development of the national economy (contribution to gross domestic product (GDP) – 0.5%), but they provide financially valuable ecological functions that are hard to evaluate, such as regulation of the water regime in the territories, restricting water erosion, reduction of air pollution. They have recreation functions that are important for people and tourism, and provide considerable variety of raw materials and products that can immediately be used to meet the needs of people, and, on the other hand, form opportunities for diversified livelihood.

The water-regulation and soil protection effect of forest vegetation assign it an indispensable place in the system of anti-erosion activities. It contributes to the restriction

or complete halt of erosion, retaining about 30% of the precipitation and improving the soil. The dead forest litter formed in the woods absorbs and slowly transfers water to the soil, thus further neutralizing the effects of intense rains. In many regions, however, the vegetation has reduced water regulating and soil conservation opportunities, and the land is strongly eroded. Due to the fragmentation of forest areas, especially in the hilly and low-mountain belt, erosion is predetermined by the processes occurring in the surrounding arable lands. Abandonment of croplands on degraded lands and their natural grassing, has a positive effect to curb erosion. The influence of forest vegetation to reduce surface runoff, however, is weaker, resulting in considerable amounts of water which continue to concentrate in the hydrographic system.

The forest cover of the country is assessed as adequate (about 33%). The achieved significant improvement of the anti-erosion possibilities of forests has a lasting beneficial effect on limiting the risk of erosion and torrential flooding. Of course, deforestation should not be allowed, as the positive effect of vegetation to maintain the functions of the land resources is undeniable.

Regarding the health of the forests, the largest share of damage to forests belongs to abiotic factors, followed by attacks by insects and fungal pathogens. The summary results for all tree species showed that deterioration in the status is reported in 51.6% of trees, no overt trend is observed in 3.1%, while in 45.3% improvement was registered.

1.1.4. Animal resources

Animal resources are the sum of all the animals in the biosphere. Usually they include domestic animal resources (such as cattle, horses, sheep, pigs, donkeys, mules, camels, birds, rabbits and other precious fur animals), water resources (such as fish stocks, marine mammals and whales, etc.) and wildlife resources (such as wild animals and birds, etc.).

The state of animal resources will be discussed primarily in the context of sustainable land management – namely, strengthening the functions of the land resources.

In the years of transition to a market economy there has been a negative trend in relation to the number of livestock, expressed in their serious decrease. Compared to 1990 (the start of the reform), at the end of 2004, the number of all species, with the exception of goats, has decreased by several times. The number of cattle has decreased by 2.3 times, sheep – by 4.8 times, pigs – by 4.6 times, birds – by 1.7 times. Only the number of goats has increased by 1.7 times. There is stabilization in poultry, where in the last three years the number of birds has increased, but it remains lower than in 1990. The decrease of the number of animals is accompanied by a decline in productivity and quality of output. The reasons are the deteriorated housing conditions, unbalanced diet, impeded veterinary services. The modern selection of animals is also impeded, advanced technologies for growing and realization of the genetic potential of the animals are not applied, there is a risk of increased morbidity [33]

In 2014 farms keeping cattle, sheep and pigs have decreased by 34.0% compared to the reported farms in 2013 to 113.0 thousand. The farms, which grow up to 10 cattle have increased by 1.7%. Farms with sheep have decreased by 26.6% and farms with goats – by 36.6%. Only 4.3% of pigs are reared in farms with 1-2 animals. In 2014, 85.6% of pigs were grown in farms with 1000 or more pigs.

The number of animals has decreased in almost all species for 2013 – cattle by 4.0%, sheep by 2.5% (ewes have decreased by 3.8%). Pigs are 5.7 percent less, but sows weighing over 50 kg have decreased only by 0.4%. The total number of goats has increased by 1.2%, while doe goats have decreased by 6.9%.

In 2014 the positive trend in raising cows for meat has continued, as they are 23.8% more than the previous year, while ewes for meat production have decreased by 10.5%. In the total number of birds a growth of 10.6% is reported, the total hens and pullets have increased by 3.4%, and chickens for meat – by 21.3%

The process of concentration and specialization of farms to meet the EU hygiene requirements for raw materials and foodstuffs of animal origin continues during the year. Compared to 2013, the greatest is the increase in the average number of animals per farm for pigs in total – by 152%, and sows – by 71.8%. Consolidation of farms is a prerequisite for achieving high efficiency and economic stability.

With regard to representatives of wildlife, significant influence is rendered by the development of agro-ecosystems, affecting mainly populations of predators, rodents and insects – mostly through massive use of plant protection agents and other poisons. Fires destroy game, beneficial insects, including soil micro-organisms that contribute to the formation of humus and are an important factor for the fertility of the soil, earthworms and others, having a crucial role in the ecological balance. Maintaining the populations of several threatened species of birds depends on the performance of semi-natural grasslands of high nature value.

In connection with the growing interest and increasing demand for fish and fishery products, questions will arise about the quality and quantity of fish stocks, which are directly dependent on the purity of the water and are still not discussed in detail. For now, the focus is on poaching.

1.2. Factors determining the degradation processes

1.2.1. Natural factors

1.2.1.1. Climate

The territory of Bulgaria falls into two climatic zones – European-continental and Continental-Mediterranean. There are five distinct climate zones – temperate, transitional, continental-Mediterranean, Black Sea and mountain. For the first three areas the main factor is latitude, for the mountain one – the relief, and the Black Sea one is formed under the influence of the Black Sea (Fig. 1).

- **Region with moderate continental climate.** Covers the Danubian hilly plain, the lower parts of the Pre-Balkan, and the high valleys of Central Western Bulgaria. The average January temperature is -1.5 to -3,0 °C, and the average July temperature – 20-24 °C. The maximum temperature reaches 38-40 °C. The annual amount of precipitation is 500-700 mm, with a minimum in February and maximum in June;
- **Region of transitional continental climate.** It covers the entire Upper Thracian plain, the low sub-Balkan valleys, the northern part of the Tundzha hilly and lowland area, and the Eastern Balkans. The average January temperature is from -1.5 to + 1 °C, the average July temperature – 22-24 °C, and the maximum summer temperatures reach 40 °C. The annual rainfall is similar to the climate in the moderate continental climate region, with more pronounced minimums and maximums;
- **Region of continental-Mediterranean climate.** This area includes the Struma river valley (south of Kyustendil) and Mesta, the Eastern Rhodopes and the Strandzha mountain. Typical is the prevalence of winter rains. Winter is mild, with an average January temperatures of 1-2 °C, spring comes earlier and summer is hot with average July temperatures of 24-25 °C;

- **Region of Black Sea climatic influence.** It occupies a narrow strip of sea coast. The influence of the Black Sea is expressed mainly in a decrease in temperature amplitude. The average air temperature in January is 0-3 °C, and in July – 22 to 23 °C. Strong winter frosts in this area are less frequent and autumn temperature is higher than spring temperature. Rainfall is relatively equal throughout the seasons, and the typical country minimums and maximums are preserved;
- **Mountain climate region.** It covers areas with altitude above 1000 m. Characterized by lower air temperatures and significantly higher rainfall than other climates. This area is of less importance for the crop production in the country.

As a result of the circulation conditions, significantly influenced by orography, precipitation in Bulgaria varies from 550-600 mm in the lowest parts to 1000-1100 mm in the highest parts of the country (Figure 2). Variability of rainfall characteristics is significant both in time and in space. The typical climate of Bulgaria is characterized by insufficient rainfall, which is a prerequisite for the existence of a tendency to frequent droughts. The average annual rainfall for the Danube plain is about 560 mm, and for Upper Thracian plain – 540 mm. Both major agricultural areas are characterized by insufficient soil wetting or dry climate. The regionalization of droughts showed greatest frequency during the year on the Black Sea coast, the Upper Thracian Plain, Dobrudzha, and the middle part of the Danube plain. This frequency in winter increases in Eastern Dobrudzha, the Upper Thracian Plain, and the northwestern part of the Danube plain (around Lom, Oryahovo), in spring and summer – on the Black Sea coast and the Upper Thracian Plain, and in the fall – in the Upper Thracian Plain, the Black Sea and Northern Bulgaria [4].

Annual fluctuations of the main meteorological elements tend to warming, accompanied by increased moisture loss from evaporation. There are tendencies to increase of winter precipitation and a decrease of summer rainfall in southern Bulgaria, and an increase in summer precipitation in Northern Bulgaria [4, 34]



Fig. 1. Climatic regions in Bulgaria (source: Agronet, 2006)

Continental, Transitional-continental, Transitional-Mediterranean, Mountain, Black Sea

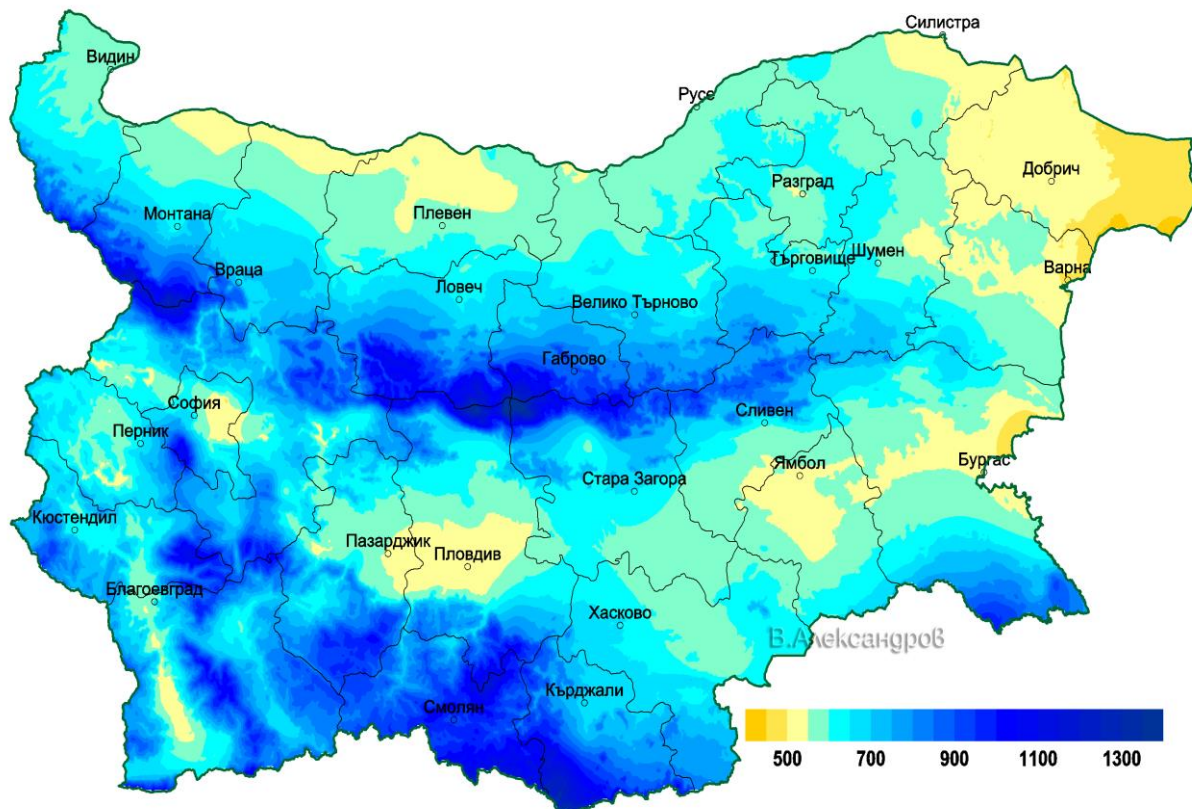


Fig. 2. Spatial distribution of annual rainfall (in mm) in Bulgaria

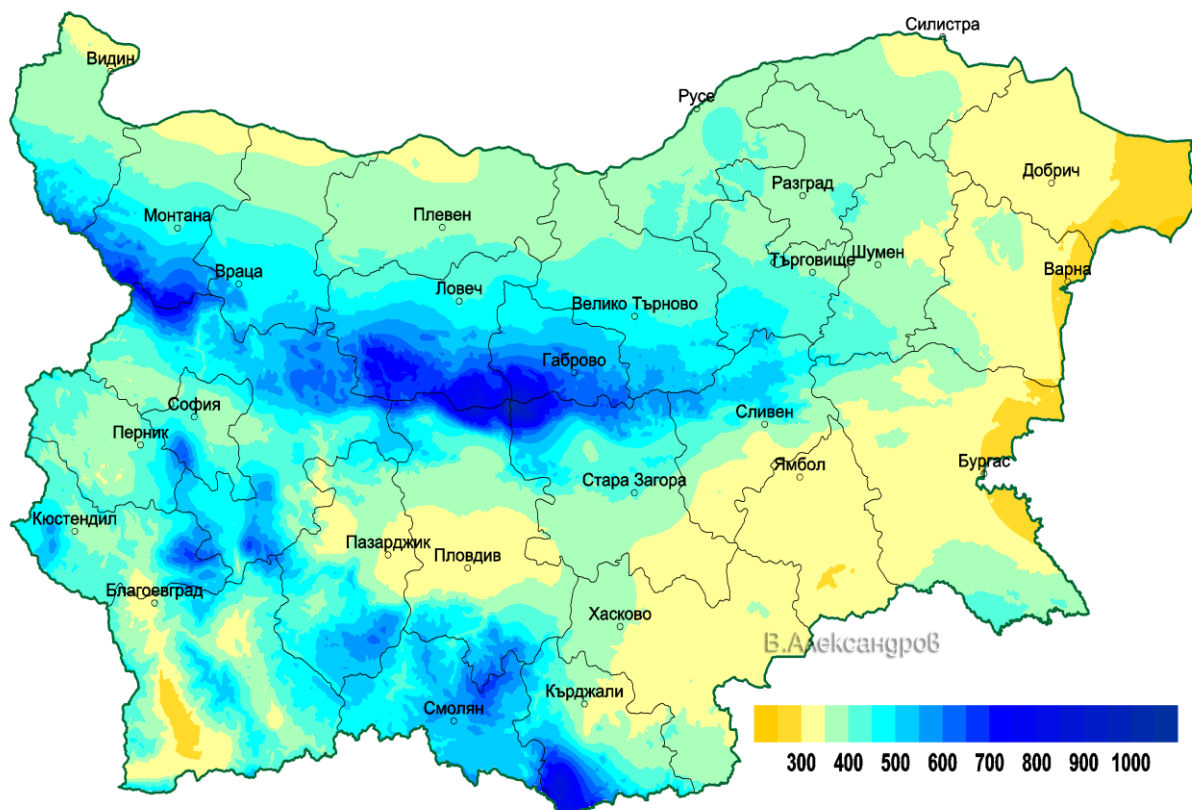


Fig. 3. Spatial distribution of rainfall (in mm) during the warm half of the year (April-September)

Fig. 4. Municipalities with atmospheric drought conditions during the warm half of the year due to the spatial distribution of rainfall during this period

To climatic conditions that contribute to the development of degradation processes of land resources in Bulgaria can be attributed:

- Rainfall amount during the warm half of the year (April-September) is below 300 mm; it is insufficient and hinders agricultural production in the country, the most endangered areas are in Southeast Bulgaria, Eastern Dobrudzha, and the valley of the Struma River. (Figure 3 and 4);
- Intense rains – a prerequisite for deepening erosion. In the country from April to October each year there is an average of about 70 intense rainfalls [34]. Nearly 14% of intensive rainfalls are erosion rainfalls. The average annual number of erosion rains in various parts of the country is from 2 to 10. The index for rainfall erosion (USLE-EI₃₀) is in the range of 600-1000 MJ mm/ha h for 51.2% of the territory, and exceeds 1000 MJ mm/ha h for 12.3% of it (Figure 5) [13, 32];
- The erosive winds index (WEQ-C) is with a value of 3-4 for 23% of the territory, and more than 5 for 15% of the country (Figure 6) [10, 32]

Figure 5. Distribution of the territory of Bulgaria according to classes of rainfall osivity.

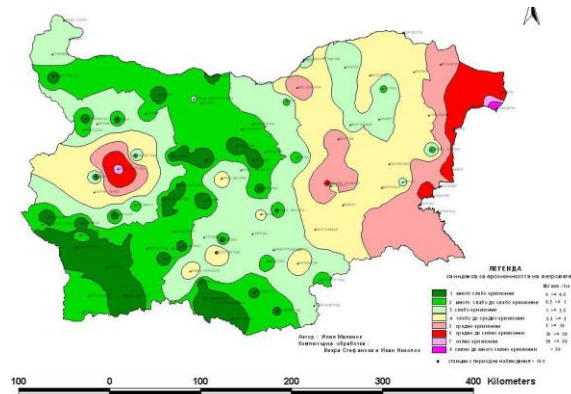


Figure 6. Distribution of the territory of Bulgaria by classes of wind erosivity

Most climate scenarios [4] for Bulgaria in the coming decades anticipate warming and reduction of annual precipitation amounts. It is envisaged for winter precipitation in Bulgaria to increase by the end of this century, but precipitation in the warm half of the year and especially during the summer is expected to decrease significantly.

Decreased precipitation amounts will lead to a change in water resources. River flow is expected to decline to 40-50% if the most pessimistic scenarios for the future [4] come true. High air temperatures combined with precipitation deficit during the summer will lead to higher rates of transpiration and evapotranspiration. All this will increase the risk of all types of drought – atmospheric, soil, soil and atmospheric, hydrological. In recent years we have seen a trend of increasing frequency of extreme natural events, including floods and droughts. Drought has been and will be part of the climate cycle on the Balkans, including Bulgaria. Therefore, we can not hope for a better quantity and quality yields, if we do not restore irrigation in the country. Other adverse effects are associated with increased risk of dry winds due to global warming, reduction of rainfall and the change in their manifestation (more intense rainfall, combined with longer dry periods). When there is Sukhovey (dry wind) the upper layer of the soil quickly dries up, thus worsening soil drought and increasing the risk of wind erosion.

1.2.1.2. Relief

The relief of Bulgaria is characterized by a great morphographic variety. Its main forms alternate from north to south: the Danubian hilly plain with an area of 31 522,6 km² and average altitude of 178 m; the Balkan mountain chain system with an area of 25 986,2 km² and average altitude of 523 m; the transitional mountainous-valley zone with strongly differentiated orography, which is a complex mosaic of block-fractured mountains, hills and valleys with an area of 30 707,4 km² and average altitude of 402 m; the Rila and the Rhodopes zone with an area of 22 771,6 km² and average altitude of 896 m. The hilly lands predominate – 41 %, the plains occupy 31,4 %. About ¼ of the country territory lies between 600 and 1600 m above sea level, where the belts of the low mountainous (15,3 %) and middle-mountainous (9,8 %) lands are found. The area of the high mountainous belt is the smallest – over 1600 m – 2,5 %. The relief of Bulgaria is among the natural factors, which seriously contribute to the development of the degradation processes of erosion (about 84 % of the lands have a slope of more than 5,2%, and 49,1 % have a slope of 10,5-32,5%), and surface over-wetting (the relief forms without any run-off with a slope below 3 %), resulting in loss of humus, increase of saltiness, technogenic pollution (for instance valley fields).

1.2.2. Anthropogenic activity (incl. Some socio-economic activities)

1.2.2.1. Agriculture

In the years of transition to market economy, agriculture in the country was characterized by a broken structure with polarized production units – on the one hand, very large cooperative and lease farms (0,2 %) over 10 ha work on 67 % of the arable land [6], and on the other hand, many small farms producing mainly for in-house consumption (those to 0,2 ha constitute 52 % of the total number of the private farms covering only 3 % of the arable land in the country). The main problem of the sustainable use of the land lies in the small scale and the disunion of the estates. The average dimensions vary from 0,27 to 2,03 ha.

According to data from Census 2010, the number of farms is 370.5 thousand. In comparison with 2007 they have decreased by 25%, mainly due to a large decline in farms with UAA to 5 ha. Agricultural structure is bipolar. The share of farms with less than 5 ha UAA is very high (91%), but they have a very small share in the UAA (5.2%) and standard output (8.7%). In recent years, there has been a favorable trend for increase in the average agricultural and economic size of farms, but also an increasing concentration of land in the largest farms with more than 100 ha, which in 2010 managed 82.4% of it. The number of farms in size from 5 to 50 ha grows quickly, but the relatively low share of these holdings in UAA (7.9%) remains.

These facts determine the impossibility to apply advanced level of environmentally friendly technologies and measures to limit the degradation of land resources.

The small, fragmented and primitive agriculture determines a quality of agricultural products, which does not meet the high requirements and standards of the EU. Manufacturers have difficulty in complying with good agricultural practices and this is a highly restrictive condition for SLM. The concentration of agricultural land in large farms, managing mostly land they don't own and for a short time, affects too adversely the stability of the production structures in agriculture, leading to unsustainable development and destabilization of the sector as a whole. This is one of the reasons that the main production in Bulgarian agriculture is grain and the share of high-yield crops such as perennial crops and vegetables is reduced to smaller sizes. The situation of almost total separation of management and ownership is not a motivation for SLM, particularly in conditions of the short-term nature of the lease and the rent on the land. They do not comply with agro-technical requirements for crop rotation and the sowing rotation applied (for 2004 on 72% of arable land) is often irrational. Fertilization is unbalanced, still dominated by nitrate fertilizers. In 2004 nitrogen fertilizers were imported on 93.4% of the crops, and combined only on 6.5%. As a result, the nutritional balance of the soil is disturbed, dehumification is increased, weeds, diseases and pests are disseminated, thus lowering the efficiency of the fight against them and leading to instability. Plant residues from crop rotation are not used in an environmentally sound and rational way (burning stubble is still often seen in practice).

As a result, the nutritional balance is disrupted, the same biogenic elements are extracted from the soil, the same weeds, diseases and pests are disseminated. This reduces the effectiveness of the fight against them and leads to unsustainable land management.

Low demand of manure, its low prices, the lack of requirements and sanctions for their violation, of knowledge among breeders etc. resulting in contamination of water and soil.

Most of the events related to the fight against erosion and other degradation processes require large and compact areas. Until 1989, they were made in watersheds covering large areas – all kinds of lands for permanent use (fields, meadows and pastures). By restoring ownership of agricultural land, the situation changed.

In recent years we have witnessed the collapse of irrigated agriculture. The hydro-meliorative fund build up to the start of the socio-economic changes, which is large-scale for the country, is partially destroyed or unsupported – 40% of the national irrigation system has a low efficiency, and 80% of the internal canal network is practically destroyed (according to the Ministry of Agriculture and Food). This led to significant changes in the structure of growing irrigated crops.

The technical condition of a large part of the already built anti-erosion, roads and other public utilities is poor due to lack of funds for their ongoing maintenance. In recent years there has been destruction of anti-erosion structures. With land division plans and putting in possession, there arises the need for new ways to have transport accessibility to each property. Construction of roads is hampered by the fact that the first land division plans were not compliant with the requirements for the construction of technical infrastructure.

Mountain agriculture is under enormous economic pressure. Many villages are threatened by depopulation, and with it disappears the care for pastures. Unsustainable management of meadows and pastures is observed with the start of the land reform. As a result of the sharp reduction in the number of animals and their abandonment without care, the pastures are systematically undergrazed, leading to the emergence of aggressive grasses, shrubs and trees. This is especially harmful to pastures with high natural value. Undergrazing is typical of lowland and semi-plain areas where the proportion of agricultural land is large. The opposite is observed in mountain areas where the farmland is small and livestock is the main occupation. There are bred mainly cattle, sheep and goats, which feed primarily by grazing, which is why there is overgrazing.

Agriculture and agribusiness are an important part of the economy of Bulgaria. They generate income for farmers, creating opportunities for private sector investment and are a driving force for many related industries. If stored and developed wisely, natural resources of Bulgaria also can bring many economic benefits to the country. Headline targets in the field of agriculture and the environment must be the promotion of competitiveness, contemporary Bulgarian agriculture and sustainable development and environmental management.

1.2.2.2. Animal husbandry

Animal husbandry in Bulgaria is a traditional industry with major benefits arising from favorable natural conditions, farming culture and ancient traditions. This predetermines the conditions for the development of many branches – breeding of cattle, buffalo, poultry, pigs, sheep, goats, horses, rabbits, fish farming, sericulture and beekeeping. Of these, the most important for the economy and sustainable land management are cattle, poultry, pig, sheep and goats.

The main hurdle to the progress of Bulgarian livestock is its fragmentation, leading to its low efficiency and technological level. At present more than 90% of the volume of livestock production is carried out by small producers and small part – by professional farms. Product quality and environmental protection (environmental pressures from animals and mainly from waste products derived from them) are closely related to the ability for their control, which can be done only in large farms with modern equipment. Livestock waste is a serious risk to the environment (and especially for water and soil).

According to data from the Agricultural Census in 2010 (MAF, “Agricultural Statistics” department), the number of farms with a specialized facility for storage of manure (solid dung, liquid manure, compost facilities and compost pools) is 5 294, with only 565 in 2003. The data show that there are no conditions for storage and utilization of manure in nearly 12% of livestock farms (in 2003 this share was above 20%).

Against this background, over the last 10 years the private sector has been rapidly developing, and today it gives almost 100% of production in the industry. However, some

of the negative trends regarding changes in the number of animals, the structure of herds, animal productivity and total livestock production are yet to be overcome, which is why the prices of basic products are still significantly high. A positive fact in the development of the sector in recent years is the stabilization in the volume of livestock production and increase of the productivity of animals, which is a consequence of increased motivation and attention from private producers for their breeding.

1.2.2.3. Forestry

The following could present a risk for land degradation: excessive use of wood, especially in areas with high erosion risk; improper conduct of clear felling; the use of inappropriate technologies for logging; unregulated pasture of animals; non-performance of planned activities in forest management plans and programs.

Using a number of important public functions (protection of soil, anti-erosion, water storage, etc.) requires limiting the rights of use for which the owners, including the state do not receive any compensation and benefits.

As a result of economic activity in which human impact is accelerated compared to natural factors, the natural state of forest areas is disturbed and in many cases it is the cause of degradation of forest lands.

Unregulated economic activity in the country in the past, related to the destruction of forests by fire, logging and grazing, lead to the development of soil erosion on a significant part of the territory of Bulgaria. For the degradation of forest soils, deterioration, and hence of their productive potential, heavy metal pollution, soil acidification and changes as a result of forest fires are also to blame.

For about half a century in our country were carried out large-scale erosion control measures by forest departments on a significant portion of forest areas. Erosion problems, however, are still relevant.

1.2.2.4. Territorial Urban Structure and Infrastructure

Among the reasons contributing to the degradation of land resources is the too big compaction of the territories and the territorial growth of large cities, which leads to conquering of other, mainly agricultural land. An accompanying fact is the continuing pollution and over-consumption of water resources. At the same time exacerbation is observed of the problems of peripheral areas such as depopulation, which provokes ineffective land use and loss of productive land. The unsupported and abandoned industrial zones illustrate the anthropogenic degradation, which, besides the ecological functions of the landscape, strongly violates its visual qualities. The state of urban ecosystems is seriously impaired due to a decline in investments for their maintenance. Reduction of green areas is one of the eloquent evidence for this.

There are serious problems in waste management.

One of the reasons for soil contamination is the construction and operation of landfills serving settlements, and improper disposal of solid waste near settlements.

The analysis is based on an adopted at European level category “local soil contamination”, which includes sites for landfill / waste disposal. Questions that seek an answer are related to the overall process of managing contaminated sites: identification-study-remediation.

By definition adopted in the EU Member States “*soil contamination with harmful substances from local sources is such places (territories) where, due to human activities the environment is polluted with implications for human health*”. There are two groups – old deposits and old industrial sites.

Management of local soil contamination (contaminated sites) is a phased process⁷ and is finalized with remediation (cleaning) of the places when negative effects to the environment and human health are removed and potential harm is minimized.

Since 2007, information on local soil pollution as a whole has not been collected and published – neither by the ExEA nor by any other public and/or business organization.

Identification and inventory of local soil contamination is done by sources of pollution.

According to the methodology of the European Environment Agency, categorization of local sources is carried out according to economic sectors and activities:

1. Industry: accidents, dust, tailings, storage.
2. Mining industry: the risk is most often associated with storage or transfer of the raw material, the acid drainage of the use of different chemical elements. Contamination of groundwater is most often associated with these processes.
3. Waste management.
4. Traffic: through emissions (oil, gas, TIR tires, losses, accidents and other particles).
5. Other: products used on or in the soil, private and commercial facilities, sewage systems, etc.

In 2003, the ExEA began building a National Register of local pollution and sources of those contaminants. In 2007 it was suspended in order to bring the activities according to the Law on Soil and the Regulation on inventory and study of areas with damaged soils.

Suspected case of local pollution. Landfills or sites suspected that currently or in the future may constitute a danger to human health, public safety and order or the environment and/or suspected that can significantly impair the function of protected sites soil, water and air as natural sites or living environment.

Landfills. Operating or closed facilities for disposal of waste by disposal or deposition, dumps of mining and processing of natural resources, and unregulated storage of any kind, which may cause harmful changes to the environment or create hazards for humans, flora and fauna.

Sites:

- 1 Production areas or lands on which there are or have been closed plants and equipment using substances capable of causing permanent changes in the quality of the environment. Sites for radioactive substances are excluded.
- 2 Production areas or lands on which activities involving environmentally hazardous substances have been carried out. Excluded are: sites for radioactive substances, collection of waste water, deposits (alluvium) from surface water, and the collection and use of fertilizers and plant protection preparations.
 - Production areas and lands on which are situated transmission lines and sewage systems that are no longer used.

Management (inventory) of local soil contamination (contaminated sites) is a phased process⁸ and ends with taking relevant measures of influence, where the negative effects to the environment and human health are removed and potential harm is minimized.

To 31.12.2007 are set around 1 438 areas with suspected pollution at a “Preview” stage. Minor part of them have gone full cycle of study (privatized sites / sites under privatization, mining sites under Decree No. 74, 140 and 195). Accurate statistics will be

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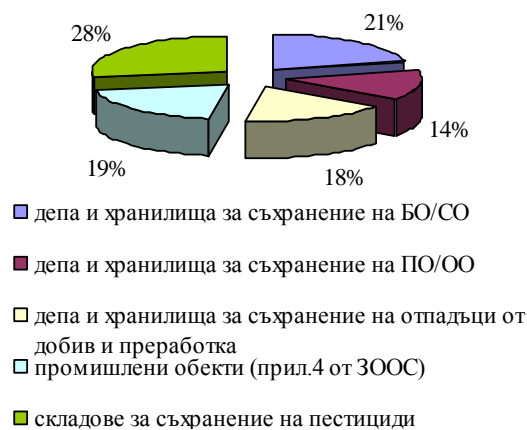
Draft International Standard ISO/DIS 10381-5

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Ordinance on the inventory and studies of areas with contaminated soil, the necessary remedial measures and maintenance of realized restoration activities SG No. 15 / 2007

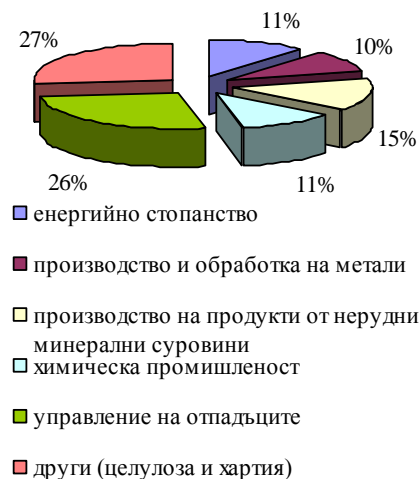
possible after the development and implementation of an Inventory Method under Article 13 of the Decree⁹.

Figure 1. Distribution of areas suspected of contamination according to categories identified potential sources of soil contamination in 2007



Source: ExEA

Figure 2. Distribution of sources of local soil contamination according to categories of industrial activity, 2007



Source: ExEA

* 307 sites have been included in Annex 4 of the EPA

Depots and warehouses for the storage of household waste / SM; Depots and warehouses for the storage of industrial waste / hazardous waste; Depots and warehouses for storage of waste from the processing of extraction and processing of industrial sites (Addendum 4 of the EPA); Warehouses for the storage of pesticides.

Energy economy; Production and processing of metals; Manufacture of non-metallic mineral raw materials; Chemical industry; Waste management; Others (pulp and paper).

According to the latest data (aerial photographs-2011) in 54 municipalities were filmed 1762 sites with a total area 11 097 402.73 ha, but no subsequent study has been carried out on their classification according to the Ordinance on inventory.

The number of landfills for non-hazardous waste has decreased significantly in the period 1999-2013 – with more than 70%. There was a tendency to reduce their number in 2009-2012, when the country took significant steps to closure of municipal landfills for non-hazardous waste with regard to the country's commitments upon accession in the EU – from 567 units in 1999 to 129 in 2012.

National legislation is incomplete and contradictory. Under the Law on Soil, Chapter IV, and the Regulation on inventory and study of areas with damaged soils, restoration of disturbed functions of soils, reclamation of damaged terrains (Prom. SG. Issue 15 of 16 February 2007). ExEA should develop a methodology and maintain a register of the areas with damaged soils, which contains information about the location, the source of damage, type and area of damage, risk assessment and the funds spent on research and recovery (Article 21 of the LS).

This has not been done and as a result no studies have been conducted and no data has been published

⁹

The growing fleet of vehicles is the cause of increased load of noise, vibrations. Easements of transport corridors are threatened by erosion, technogenic pollution and salinization. Air pollution and subsequent contamination of water and soil is the most serious environmental problem that transport gives rise to, especially in big cities. There is a growing need for new areas for transport infrastructure (for increasing the dimensions and/or construction of new car tracks). At the same time, railway transport, featuring a more favorable environmental performance (consumption of productive land, environmental pollution) in Bulgaria has an extremely low competitiveness due to the poor condition of the railway infrastructure and its low attractiveness for passengers compared to automobile transport.

1.2.2.5. Industry (including mining) and energy development

The key sectors that contribute to a number of degradation processes of land resources and mainly cause their technogenic pollution (incl. technogenic salinization) in Bulgaria are mining (ore and coal), manufacturing (chemical and metallurgic industry), production of thermal energy – TPS with solid fuel and cement industries. Technogenic pollution has two manifestations – diffuse and local. From industrial activities, the greatest contribution to local pollution belongs to the active enterprises of the mining industry, chemical and metallurgical industries, averages and incidents as a result of activities related to the disposal and storage of waste materials (industrial, waste from the mining industry, warehouses for pesticides) and others, and the main pollutant are the landfills of industrial waste (256 landfills for industrial and hazardous waste and 1100 – from extraction and primary processing). According to proven risk and specific priority group are offered remediation measures and are examined different technical solutions. Undertaken legislative action will result in the coming years to reduction of the negative impact. The secondary use of waste from the extraction and primary processing of natural resources, is however limited, mainly due to lack of technology and interest [24]

Mining causes “significant” anthropogenic impact on the geological base and “significant” to “hazardous” impact on groundwater and surface water. After liquidating the mine sectors, impact on groundwater remains “significant” to “hazardous”. The impact on surface water, water intakes from the hydrographic network where the deposits are – and after them, ranges from “negligible” through “slightly above permissible” to “significant” and “hazardous”. The impact on the geological base, groundwater and surface water has a significant territorial range, it is lasting and continuous. It is imperative to implement measures to reduce the negative environmental impacts from mining where it is “significant and “hazardous”. Due to the need for substantial financial resources for the implementation of appropriate measures in the coming years, the negative impact will continue.

Besides technogenic pollution of soil, water, and hence – along the food chain and plants and animals, mining activity in the country has led to the expropriation of land from agricultural, forest areas and the settlements fund, to violation of the balance of the lands of different funds, disruption of natural landforms and landscapes through the formation of technogenic forms (quarries, waste dumps / heaps and / or tailings).

There are significant consequences for biodiversity because of serious violations of the abiotic environment – partial destruction or disturbance of vegetation, expulsion of the fauna from its natural habitats. Risk to human health is increased. This leads to a change in the living conditions of the local population and the formation of new settlements and / or displacement of existing residents. There is a risk of change in the micro climate.

Another issue, important for SLM and immediately connected with the production activity, is the one of the used energy sources in the country. In Bulgaria the share of renewable energy sources is satisfactory (~ 7%), but has a very uniform profile, including mainly the

use of hydropower. The still missing links in this group are biofuels and biogas. To achieve European standards for SLM (achieving a 12% share), we should take advantage of the wealth of ecosystem services of our land resources through the production of biofuels.

All these anthropogenic impacts lead to disruption of ecosystem functions and limitation of ecosystem services: **productive** (changes in nutrient levels of the soil and groundwater; denitrification; danger of swamping / drainage, soil erosion, soil compaction from heavy machinery; heavy pollution with heavy and / or rare metals and toxic elements), **regulating** (water-protecting, changes in the level and quality of groundwater); **supportive** (environment forming – loss of land resources; the formation of embankments; landslides of rocks; denudation processes, change in morphology of the ground surface and river currents, dust from traffic; **cultural** (loss of cultural and historical values, conflicts arise due to land use, disrupted recreation zones). There is a violation of biodiversity.

In the context of SLM natural processes in the landscape are extremely important for maintaining ecosystem functions and for ensuring and securing the needs of people with raw materials, products and services (food, water, materials, energy). Central role is played by the processes related to soil and water resources, and, therefore, measures relating to their management must be a major part of NAP for SLM and CD. Of course, serious attention should be paid to the existing socio-economic conditions within the anthropogenic factors, which, as discussed, have a significant contribution to the instability of land management and the problems of desertification in Bulgaria at present.

2. Legislation, policies and strategies related to land management and combating desertification

The main task at this stage is to achieve synergy in terms of the interaction of sectoral policies and to upgrade actions to achieve a more integrated effect in the overall land management and combating desertification.

2.1. Existing legal framework and national policies and strategies

2.1.1. Legislative Framework¹⁰

Legislative environment that has a direct or indirect relation to sustainable land management in Bulgaria is determined by a combination of legislation and sub-legal acts, which include the Property Law, the Law on State Property, the Law on Municipal Property, the Regional Development Act, and the Law on Spatial Planning, governing the acquisition, management and disposition of state land, municipal land or private property land, as well as the sustainable development of the national territory as a whole, the Forest Act, which regulates the ownership and disposition of property, when it represents a forest area, Ordinance No. 4 of 19.02.2013 on the protection of forest areas against erosion and floods and the construction of fortifications (Prom. SG. 21 of 01.03.2013), and Ordinance under Art. 18, para. 1 of the Forest Act.

Among the regulations relating to the conservation and use of components of the environment and control, prevention and limitation of their pollution (including of land resources) are the Environment Protection Act, the Law on Soil, the Law on Waste Management and the Law on Protection from the Harmful Effects of Chemical Substances and Mixtures. Important for soil protection are also the adopted regulations in Bulgaria as

10

See Appendix 1 for the nomenclature of laws and regulations relating to sustainable land management and combating desertification.

a result of harmonization of the national with European environmental law, as Directive 91/676/EEC on the protection of waters from pollution by nitrates from agricultural sources. In accordance with current regulations, MEW identifies the vulnerable areas and develops action plans to curb water pollution by nitrates, approves technical projects for the use of sludge in agriculture.

Wide-reaching is the legislative framework on agricultural land in Bulgaria. Regulations that are directly related to the sustainable management and protection of agricultural lands are the Law on Protection of Agricultural Land, the Implementing Regulations of the Law on Protection of Agricultural Land, the Law on Ownership and Use of Agricultural Land, the Rules for the Implementation of the Law on Ownership and Use of Agricultural Lands Ordinance No. 26 for recultivation of disturbed terrains, improvement of low productivity lands, removal and utilization of the humus layer, Ordinance No. 3 on the admissible content of harmful substances in the soil, the Law on Protection of Agricultural Property, the Rules implementing the Law on Protection of Agricultural Property, the Instruction of the Ministry of Agriculture and Food to determine the type and degree of contamination of agricultural lands according to land areas and modes of their use.

By Ordinance No. RD 09-431 / 22.08.2005, the Minister of Agriculture and Food established rules of good agricultural practice. They are designed to meet the requirements of Regulation No. 2 of 16.10.2000 on protecting waters from pollution by nitrates from agricultural sources. For farmers whose farms are within a sensitive / vulnerable zone, the application of rules of good agricultural practice is mandatory as part of a program to mitigate and eliminate pollution in the sensitive / vulnerable zones.

Ordinance No. 2 of 2000 was repealed by Ordinance No. 2 from 2007, according to which with No. RD 09-799 from 11.08.2010 year, the Minister of Agriculture and Food, established new rules of good agricultural practice. By Ordinance No. RD 09-157 / 14.03.2014 of the Minister of Agriculture and Food, and Ordinance No. RD 267 / 01.04.2014 of the Minister of Environment and Water is established a program of measures to reduce and prevent pollution with nitrates from agricultural sources in vulnerable areas. The program is designed to meet the requirements of Ordinance No. 2 of 13.09.2007 on protecting waters from pollution by nitrates from agricultural sources. The program is mandatory for all farmers of all nitrate vulnerable zones in the country.

The national legislative framework related to overall sustainable management and conservation of natural resources and ecosystems, is governed by the Protected Areas Act, the Biodiversity Act, the Forest Act, the Water Act, the Act to limit climate change, Prom. SG issue 22 of 11.03.2014, effective from 11.03.2014, the Law on Waste Management, the Law on protection from the harmful effects of chemical substances and mixtures.

Here we should pay attention to the Regional Development Act, which regulates the sustainable development of regions, strategic planning and programming, following the principles of sustainable integrated development, as well as the Law on Spatial Planning, which regulates the social relations associated with territorial planning, investment planning and construction in the Republic of Bulgaria and sets restrictions on ownership for development purposes.

With the accession of Bulgaria to the European Union, our country went through a process of harmonization of national legislation with Community law. This is a largely positive factor regarding the overall improvement of our national legal framework for sustainable development and protection of the environment for present and future generations. Achievements of the Community (acquis) include about 200 legal acts covering horizontal legislation, pollution of water, air, soil, forests, landscape, waste management and chemicals. The process of harmonization of national legislation with EU law effectively ended in 2004 and at that stage yet a more serious problem stands before us – the

application of harmonized legislation relating to environmental protection and its components.

2.1.2 Challenges and perspectives regarding the legislative environment

Although legislation related to sustainable land management is largely in place and Bulgarian legislation provides a variety of legal mechanisms for the protection and management of land, a clearly defined relationship between the objectives and the specific provisions of these laws is still missing. One of the main weaknesses observed in this regard is insufficient normative regulation of the requirements for prevention and control and early warning systems.

Under the Law on Soils were adopted three new regulations – Ordinance No. 3 of 1 August 2008 on the admissible content of harmful substances in the soil (SG. 71 of August 12, 2008), which repealed Ordinance No. 3 of 8.05.1979 (SG 36 of 8.05.1979). Ordinance on inventory and studies of areas with contaminated soil, the necessary remedial measures, as well as maintenance of the realized restoration measures (adopted by Decree of the Ministry Council No. 30 of 2007) and Ordinance No. 4 for soil monitoring (Prom. SG. 19 of March 13, 2009), which regulates the procedure for conducting soil monitoring, by creating a national system for soil monitoring (NSSM).

By Ordinance No. 619/15.09.2009 of the Minister of Environment and Water were approved schemes for soil monitoring and indicators for assessing the condition of the soil in accordance with Art. 10, para. 1 and Art. 11, para. 1 of the Ordinance on soil monitoring.

The Law on Protection of Agricultural Land, the Law on Ownership and Use of Agricultural Land, as well as the relevant regulations thereto are good legal basis for the protection of agricultural land and increase of its productivity, although they do not provide a sufficient framework and rules relating to fertilization, development and implementation of national policy in the field of preservation of soil fertility and preservation of ecologically clean agricultural lands.

Another deficit we see in the existing legal framework is related to the lack of adequate preventive measures in respect of the lands affected by degradation processes or affected by degradation to a minor degree. In our country we are to begin implementing the standards harmonized with the EU requirements for early prevention and monitoring of desertification processes.

In Bulgarian legislation with the exception of the Regional Development Act, there is no legal obligation for certain authorities to implement the activities related to the management, organization and coordination of all aspects of sustainable management of land resources of national importance.

With accession to the EU began the implementing of regulations harmonized with the EU requirements for early prevention and monitoring of desertification processes

2.1.3 National strategies and policies relating to sustainable land management and combating desertification

In order for the National Action Program to be operational and adequate, it is necessary to make a review and analysis of existing country policies and strategies relating to the problems of land degradation and their sustainable management and seek the intersection of their scope to take a more integrated approach to its future realization

The leading strategic and program document, which specifies the objectives of the development policies of the country to 2020 is the National Development Program: Bulgaria 2020 (NDP BG2020), adopted by Decision No. 1057 of 20.12.2012 of the Council of Ministers. NDP BG2020 is an integrated document for socio-economic development of Bulgaria by 2020, showing the relationship between the EU's priorities in the context of the Strategy “Europe: 2020” and the national priorities of Bulgaria. It covers

the full range of government actions in the field of socio-economic development, while identifying measures to achieve national objectives whose realization is enshrined in the National Reform Program, the Convergence Program and all relevant strategic and programming documents.

Among the priorities of the NDP BG2020 is *Sub-priority 3.5 Creating conditions for protecting and improving the environment in the regions, adaptation to the coming climate changes and achieving sustainable and efficient use of natural resources* (to Priority 3, related to regional development) and *Sub-priority 4.5 Sustainable use and management of natural resources* (to priority 4, connected with the development of the agricultural sector), providing a framework of policies which contribute to the conservation of lands and combat desertification.

Objectives to achieve sustainable development of the regions and municipalities in the country and reporting on the impact on environmental components as a result of investment and human activities are an integral part of the policy for integrated regional and local development. The need for environmental protection and a sustainable development path should be a top priority in the development policy and the cohesion of regions in the country, as well as approaching the average indicators of the development of EU regions. Environment policy and its integration into other policy areas are becoming increasingly important, which needs constant work for the achievement of maximum efficiency, cost-effectiveness and transparency. Environmental policy is the driving force of future structural changes in the economic and social spheres i global, national and regional levels. This implies new responsibilities, risks and opportunities.

The implementation of the NRP BG2020 is secured by the implementation of action plans in the process of implementing the Three-year action plan for the implementation of the National Development Program: 2020 Bulgaria in the period 2015-2017.

The national instrument with the help of which are planned the strategic priorities in the field of environment and are provided the funding and operational performance under the EU Structural Funds for the period 2014 – 2020, is the Operational Programme “Environment” 2014 – 2020. The main strategic objective of the Operational Programme is the improvement, preservation and restoration of the natural environment and development of environmental infrastructure¹¹

Specific objectives of the program include the protection and improvement of water resources, reducing the amount of landfilled municipal waste, improving the conservation status of species and habitats of the Natura 2000 network, enhancing the protection of the population against floods, prevent and reduce the risk of landslides and reduce air pollution by lowering the levels of FDP₁₀/NO_x. The realization of these goals will lead to improving the quality of life of the population and will increase investment opportunities in the economy. Measures related to the prevention and management of the risk of flooding and landslides will contribute to safeguarding the economic situation of the region by creating disaster resilience and prevent negative consequences resulting from floods / landslides, and for the protection of human health. The planned investment are expected to contribute directly to climate change, in particular to reduce vulnerability to the impacts of climate change.

Agro-ecological policy of Bulgaria and the European Union: priorities for development until 2020. The integration of the policy for environmental protection in all EU policies is an important principle set in the development strategy of the EU “Europe 2020”. Agro-

11

See Appendix 2 for a brief description of the measures envisaged under the Operational Programme “Environment” 2014-2020, which is still being negotiated with the European Commission.

ecology is a key element for the integration of the concept of environmental protection to the common agricultural policy (CAP). Agro-policy in the field of environmental protection is one of the most established mechanisms of the policy within the CAP. Initially (after 1987) it was aimed mostly at mitigating the environmental impact resulting from the intensification of agriculture and the perception of the positive effects of extensive agriculture.

The Program for Rural Development 2014-2020, is also among the major national papers, forming the politics of our country in terms of sustainable rural development. The main objective within the RDP 2014-2020, which corresponds with the objectives of the NAP 2014-2020 and provides an integrated approach to sustainable land management, is “Conservation of ecosystems and sustainable management, use of natural resources in agriculture, forestry and food industry, climate change prevention and adaptation. This objective is aimed at implementing good agricultural practices leading to biodiversity conservation in agricultural lands with high natural value and the Natura 2000 areas, sustainable management of water and soil, maintaining the traditional extensive farming practices, prevention of erosion processes in the soil and preservation of soil fertility“.

The third National Action Plan on Climate Change for the period 2013-2020 provides for specific measures to reduce greenhouse gas emissions in all sectors, as these measures are consistent with the country's policy in the field of climate change, and consequently with the potential of the national economy for reducing emissions. The overall effect of the measures will ensure implementation of the commitments and achievement of the European objectives that are legally binding for the country. In the agricultural sector measures are connected on one side with the increase of the knowledge of farmers on the application of appropriate practices, reducing emissions from the sector and the introduction of practices such as encouraging the use of appropriate crop rotation, especially with nitrogen-fixing crops, promoting extensive pasture rearing of animals, and on the other, with the technical support of farms for soil/stubble processing, biological recultivation with typical grassland species of degraded agricultural lands. In order to reduce emissions from the livestock sector, it is important to build and improve facilities for the storage and application of manure, to introduce low-carbon practices for processing manure, such as composting, processing into biogas in anaerobic conditions. Encouraging extensive farming and maintaining optimal density of livestock depending on natural, climatic and soil conditions provides good ecological status of meadows and pastures and maintaining a permanent grass cover, leading to preservation of the carbon reserves in the soil.

Over the past 21 years the absorption of greenhouse gases from the forest sector compensates between 11.35% -19.9% of the total greenhouse gas emissions in Bulgaria. The greatest role in absorbing and storing carbon (94-95% of the total absorption for the sector) are the territories occupied by forests. This feature makes them a factor in the fight against climate change. Hence the need for expansion of forest areas, the rapid restoration of forestry potential, and improvement of the sustainability and environmental value of forest ecosystems.

Restoration and maintenance of forest (shelter) belts in northeastern Bulgaria contributes to the increase of forested areas, absorbing carbon. They also contribute to the prevention of soil erosion in some of the most fertile agricultural land in Bulgaria. Windbreaks are not well maintained and are located in areas that are most vulnerable to climate change. The degraded locations need to be re-vegetated, and for the locations in a process of degradation, activities should be undertaken in their support.

Abandoned agricultural lands are mostly low fertile and afforestation is a way of protecting them against erosion and complete degradation.

The National strategy for development of the forestry sector in the Republic of Bulgaria for the period 2013 – 2020, adopted with a Report No. 48.1 of the Council of Ministers of 27/11/2013, is the basic document that defines the strategic framework of the government policy to achieve long-term and sustainable management of viable and productive multifunctional forests, and increasing competitiveness of the forest sector as a basis for better living standards, especially in mountainous and rural areas. A prerequisite for sustainable development of forest areas are the three levels of forest planning regulated with the Law on Forests – national, regional and local, duly reflected in the National Strategy for development of the forest sector, Strategic Plan for the development of the forestry sector, regional plans for development of forest territories and forestry plans and programs. The strategic document reflects the European and national policies and strategic documents related to forests and the forest sector in Bulgaria, basic principles, analysis of the forestry sector in Bulgaria, vision, mission and objectives, priorities and measures, sources of funding to achieve the objectives of the Strategy and monitoring of its implementation.

Another aspect that we could look at in conjunction with existing national policies and strategies for sustainable land management is the strategic planning of regional development, balanced and integrated development of the regions in the country. The concept of sustainable urban development promotes integrated approaches, reflecting both the needs and potential of urban areas, and the recognized need for environmental protection and efficient use of land. The main documents that determine the national policy in this regard are the National Strategy for Regional Development of the Republic of Bulgaria for the period 2012-2022, and the Operational Program “Regions in Growth” 2014-2020. The significant negative impact of urbanization and transport services on sustainable land use and soil degradation, as a slowly renewable resource, necessitates the consideration of the policy for territorial and regional development, development of urban centers and transport management with the principles of sustainable development.

Since 2001, the country runs a National Program for the necessary measures in terms of tendency to drought, aimed at overcoming the crisis in drinking water supply of the population and protection of water resources.

By Decision No. 1057 of the Council of Ministers of 20.12.2012 was adopted a “National Development Program: Bulgaria 2020 (NDP BG2020)”. Bulgaria 2020 is the leading strategic and program document, which specifies the objectives of the development policies of the country by 2020. The vision, objectives and priorities of the NDP BG2020 are defined on the basis of a drafted for the purpose socio-economic analysis. Formulated objectives of government policies will ensure the achievement of accelerated economic growth and raise living standards of Bulgarian citizens in the medium and long term.

NDP BG2020 is a document on national decisions for growth. It is in line with Bulgaria's commitments at European and international level, but embodies the aspirations of the country to choose a national way forward.

The three-year action plan for the implementation of the National Development Programme: 2020 Bulgaria in the period 2015-2017 was adopted by Decision No. 794 of the Council of Ministers of December 2, 2014.

Sub-priority 3.5 Creating conditions for protecting and improving the environment in the regions, adapting to the coming climate change and achieving sustainable and efficient use of natural resources

Objectives to achieve sustainable development of the regions and municipalities in the country and considering the impact on environmental components as a result of investment and human activities are an integral part of policy for integrated regional and local development. The need for environmental protection and a sustainable development path

should be a top priority in development policy and cohesion regions in the country, as well as getting closer to average indicators of the development of EU regions. The significance of environment policy and its integration into other policy areas are becoming increasingly important, which requires continuous work to achieve maximum efficiency, economic rationality and transparency. Environmental policy is the driving force of future structural changes in the economic and social spheres on a global, national and regional levels. This implies new responsibilities, risks and opportunities. Risk reduction and integrated management of disasters and fires are critical components in the context of sustainable growth.

2.1.4 Challenges and gaps in the effectuation of national strategies and implementation of the legislative framework

From the general review of existing national strategies and sectoral policies, we can conclude that the country has created the common strategic framework, which regulates the protection of the environment and its components, offers a set of actions through which to ensure the achievement of objectives and the indicative allocation of necessary financial resources.

There is a visible tendency to create national strategies and programs that begin to actively work on sustainable and environmentally friendly land management only in recent years. In practice, this means a lack of strategic and integrated approach back in time, especially with regard to sustainable land management and combating desertification.

Unfortunately Bulgaria currently has no developed and adopted programs and strategies for the protection of soil as a natural resource at regional and local level.

Another shortcoming is the lack of clear commitment of national programs and plans for sustainable development with the UN Convention to Combat Desertification and some of its basic principles. To some extent there are established relationships and inclusion of basic obligations of our country to the Convention in the strategy document, but it is apparent only at the national level – regional and local strategic and operational levels remain beyond the requirements of the Convention.

Essentially, the drawn up national strategies and documents represent a step towards sustainable development of land resources, but unfortunately there is no adequate institutional coordination and clearly defined financial resources to achieve the goals they set themselves.

Often the lack of openness and transparency in the preparation of these national strategies leads to limit their effectiveness and isolation of stakeholders, which largely depends on the application and implementation of activities, strategies and programs.

2.1.5 Improving the regulatory and legislative framework relevant to SLM

During the development of regulations and legislation in the field of SLM, it is necessary to establish an effective mechanism for coordination, partnership and consultation in order to take into account the views and interests of all stakeholders, the stage of development and discussion when they actually can make useful suggestions and become involved with matter that they regulate.

To increase confidence in the legislative framework, regular and frequent changes should not be allowed. They cause uncertainty and lack of confidence among business circles that seek to minimize their risk. SLM measures are usually associated with large investments, for some of which the effect can be expected or will become visible in the longer term. For these reasons, the business needs and requires greater security and stability.

Improving the regulatory and legislative base may be sought in the direction of legalization of incentives for SLM activities in a longer-term perspective. It is necessary to take concrete legislative measures to ensure the long-term rights arising from the investments in

conservation measures – long-term contracts for the use of natural resources, preferential usage fees, preferential taxes, advantage in renting or buying land, concessions of dams, irrigation and drainage pumping stations, canals, etc., against obligations to invest in improving infrastructure, management and quality of services that will interest the private sector.

The emphasis in the legislative framework dealing with issues of SLM and desertification is to fall on a preventive basis measures, not on penalties after an adverse event has already occurred.

It is necessary to minimize the “wishful” nature of a large part of the laws and regulations through clearly defined incentives and penalties for performance or misconduct. Otherwise, their strength is lowered and large part of the regular performances are pointless. The majority of laws related to agricultural land state that it should be managed with care and forethought, but if this requirement is not observed, there are no consequences. There are many such examples in various areas concerning the sustainable land management.

3. Role, participation and responsibilities of local government

The role and responsibilities of the municipalities related to sustainable land management can be traced mainly in several aspects – the municipalities as a local authority which adopts and implements policies for the development of the local community; municipalities as owners of land whose management and use should be carried out in accordance with modern requirements, and municipalities as partners of the central and regional government structures.

3.1 Responsibilities of municipalities as a local authority which determines the strategy for the development of the local community.

In the modern Bulgarian society there is a constantly increasing role of local government in all spheres of activity. Local authorities are closest to people and their problems, and also closest to the solutions. The Municipal Council as a legislative body at a local level adopts strategies, forecasts, programs and plans for development of the municipality, adopts plans of the territory, defines requirements for the activity of natural and legal persons in the municipality, arising from environmental, historical, social and other features of settlements, and the status of engineering and social infrastructure. Planning the development of a municipality reflects local priorities and needs of the population, but also bends the national policy. Sustainable land management is a relatively new approach that has not yet been adopted by the municipalities in Bulgaria and is not integrated into the main program documents that they develop and implement.

3.1.1 Municipal Plan for Development

In 2005, in accordance with the requirements of the Regional Development Act, municipalities have developed their development plans for 2007-2013. They set out the objectives and priorities for the development of the municipality and annual programs were created for realization of the City Development Plan. Currently, the process of preparation of these strategic documents locally is complete, as many of them have been updated for 2014-2020. The Bulgarian municipalities already have their development plans, but the issues of sustainable land management are treated indirectly. Detailed analyzes have been made of the state of agriculture and forestry in the respective regions, the strengths and weaknesses in the development of these sectors are displayed. Activities for the development of organic and alternative agriculture are planned, to promote the use of uncultivated land, erosion control and other measures for rational use and protection of

land resources. Overall, however, the issues of land degradation are not sufficiently integrated in these documents and do not reflect the approach of sustainable land management.

3.1.2 Municipal Program for Environmental Protection

In the period 2001-2004, the municipalities developed their own programs to protect the environment in accordance with the Law on Environmental Protection. They analyzed the status of components and factors of environmental impact. The emphasis in these programs was to reduce the content of harmful substances in components of the environment (air, water, soils) below the limit values. In municipalities where there are registered salinization, acidification of soils or contamination by nitrates, pesticides, heavy metals, oil, etc., activities are planned to restore damaged soils. Often, however, these activities are not prioritized as their impact on human health is indirect, along the food chain. Much more weight is given to activities to reduce air pollution and water through which soil pollution also occurs. These programs are not paying attention to the need to preserve the long-term productive potential of land resources and the maintenance of their ecological functions. As part of the municipal program for environmental protection or independently were also developed:

- program for the management of ambient air quality;
- program for waste management;
- management plans for protected areas and action plans for priority plant and animal species;
- section “Medicinal Plants”.

These programs also provide a number of measures whose implementation will be beneficial for the condition of land resources. On one side, the chemical pollution of the soil will be reduced, and on the other – with the elimination of unregulated dumps, the cleaning of lands polluted with household and construction waste, the reclamation of old landfills, quarries for open pit mining, tailings and others, land will be recovered for agricultural and forestry needs. Programs for waste management, however, in most cases do not consider waste as a resource and do not aim for their re-use. Very few municipalities have real success in waste collection and recycling of inorganic waste. Composting of organic waste from households is still in its infancy. The programs for waste management rarely include the problem of organic waste from plant growing and animal husbandry. The lack of market forces straw land users to burn stubble, which lowers the productivity of the soil and creates fire hazards. Manure is a valuable resource, but is not used sufficiently in agriculture and is disposed at random locations, which pollute the environment. Despite these problems, the municipal programs for environmental protection are a good basis for the introduction of sustainable land management

3.1.3. Cadastral map and specialized maps

In accordance with the Law on cadastre and property registry, after 2002 started the creation of the cadastral map and cadastral registers for the territory of the Republic of Bulgaria. In the cadastral map are determined the location, boundaries and dimensions of the property and data on ownership. The cadastral map covers the entire territory of the lands of settlements – urban, agricultural land, forests and land in forest areas, damaged areas, protected areas, water and others. The cadastral map is a necessary and indispensable base upon which to create specialized maps. The specialized maps for soil, water, air, and other damaged areas should be the basis upon which data on desertification and land degradation should be included. Based on data from these special maps, analyzes and forecasts will be made, needed for sustainable land development and combating desertification.

3.1.4. General development plan of a municipality and specialized development plans

In accordance with the Law on Spatial Planning, with the General Development Plan of a municipality or part thereof, is determined the general structure of the territory covered by the plan, and the overwhelming use of composite and structural parts – the location and boundaries of territories of settlements and communities; agricultural areas; forest areas; territories for environmental protection; territories for cultural and historical protection; damaged areas to restore and territories with special, other or mixed use. The general development plan actually attaches to the respective territories planned measures and activities in the Municipal Development Plan, as well as the measures and activities of Municipal programs for environmental protection. It is particularly important to develop the so-called specialized detailed development plans that are designed for non-urbanized areas – agricultural, forest and protected territories, damaged territories for restoration and territories with special or other purposes. In the planning of forest territories Bulgaria has a long tradition.

Restitution of forests did not affect significantly the process, since the majority of forest areas are state property.

There is no practice, however, in the development of Specialized land planning schemes. Municipalities do not entrust such plans even for land from the municipal land fund. Land use planning throughout the municipality should be the subject of discussions with stakeholders. So far, only the Silistra municipality has experience in land development planning. It is clear that such plans would have a recommendatory character, since the Law on Ownership and Use of Agricultural Land allows each private landowner alone to decide what to produce on their own land.

3.1.5. Plans for river basin management

Management of water, water bodies and water development systems and facilities shall be based on Plans for river basin management. These plans are public and should be linked with other plans within the respective territorial level, including with regional development plans, spatial planning, forestry, park development and other plans. In Bulgaria there are 4 large river basins whose management plans are prepared by the respective basin directorates. Municipalities participate in the public discussion of the plan for the river basin management and present their opinions and recommendations on it. They are represented in the Basin Councils in which the plans are subject to discussion. Stakeholders in this process are many and the importance of plans for river basin management is evident from the fact that they are available for consultation for at least six months. According to the “National Strategy for Management and Development of the Water Sector in Bulgaria 2012” we are in the second planning cycle for the period 2016-2021, and is a necessary for the public concerned to actively participate in the upcoming six-month consultation to be held after the announcement of the draft river basin management plans by the end of 2014 on the sites of Basin Directorates and the MEW.

As required by Article 155, Paragraph 1, Item 2 of the Water Act, and Article 13 of the Water Framework Directive, Basin Directorates make plans for river basin management, which will facilitate the process of integrating within them questions on degradation of soils and sustainable land management.

3.2. Responsibilities of municipalities as competent authority for the imposition of local legislation related to the sustainable land management.

Municipalities, as local authority, have a duty to monitor the implementation of a number of regulations that are relevant to sustainable land management. The Law on

Environmental Protection and the Law on Soil report that the soil is a limited, irreplaceable and practically unrecoverable natural resource. Therefore, the legal and natural persons, owners and/or users of land are obliged to not cause harmful changes on the soil on their own and neighboring land. Municipalities as competent authority for the implementation of the law should control the implementation of these provisions. In practice, mayors or their proxies very rarely carry out such control. To a larger extent, municipalities partake in conducting preventive control through the mechanisms of environmental assessment and environmental impact. This aims at preventing the realization of environmentally harmful activities, integration of the predictions in terms of the environment in the development process in general and introducing the principle of sustainable development. It should be noted that the public concerned shall be informed of investment intentions in the stages of early planning and design, which is controlled and authorized in all its phases by the mayor in accordance with his powers under the Law on Spatial Planning

3.2.1 Control over the use of agricultural land

The law on protection of agricultural land requires that they be used for the production of plants and cattle grazing in a way that is not damaging to soil fertility and health. It is a duty of owners and users of agricultural lands to protect them from erosion, pollution, salinization, acidification, swamping, and other damages and to maintain and improve their performance. The “polluter pays” principle is introduced, as the causer of pollution or damage to farmland bears the costs of restoring their fertility or owes to the state the means spent for these purposes. Municipalities practically do not exercise control over land productivity. However, if damage to agricultural lands is found – pollution (pollution with heavy metals and metalloids, radionuclides, oil and other organic pollutants, industrial, construction and household waste), erosion, salinization, acidification and swamping; deterioration of the ecological functions of the soil and the quality of surface and groundwater, mandatory restrictions are imposed to owners and users on agricultural land. In the years of socialist development in some regions with developed industry the farmland was significantly polluted and this was a responsibility of the state. Therefore, owners should not grow unsuitable products, which may have an increased content of harmful substances and cause significant health risk to both producers and consumers of vegetable products grown on land, contaminated, for example, with heavy metals. In such cases, municipalities can initiate the informing of owners and try to protect the rights of local residents.

The owners and users of agricultural land should be provided with available information on medicinal plants in the municipality, the suitability of the land for their cultivation, as well as information on the obligations and recommendations on land use, including the use of environmentally friendly cultivation technologies related to medicinal plants in each municipality.

Mayors of municipalities carry out the management of the conservation and sustainable use of medicinal plants, and also the activities of cultivation of medicinal plants by issuing permits for use of medicinal plants by land, water and water bodies – municipal property; issue certificates for herbs from cultivated medicinal plants; control the use of medicinal plants in the lands, waters and water bodies – municipal property, in the land fund and the settlements. As a whole, municipalities do not carry out regularly the management activities on the use, preservation and cultivation of medicinal plants. In some areas, cultivation of medicinal plants is a viable alternative livelihood for the local population and can significantly contribute to the sustainable use of abandoned agricultural lands with poor productivity, if promoted and assisted by municipalities.

3.2.2 Control on the use of forests and lands from forest areas

Municipalities have no control functions over the forest areas. They have slightly wider functions on protected areas. Besides being involved in the discussion and adoption of management plans for national and natural parks, they are also involved with monitoring the implementation of these plans. Municipalities can implement security of separate reserves and maintained reserves outside the National Parks. Mayors of municipalities are obliged to stop construction activities in forests, land and water areas in protected areas that are provided for use – state, municipal and private property, carried out in violation of the approved Management Plans and structural and technical plans and projects. They can draw up statements for administrative violation under this Act. This shows that municipalities can play a significant role in the sustainable management of protected areas, but currently they do not have sufficient resources – human and financial, to participate more actively in the process.

Biodiversity is an integral part of the national heritage and its protection is the duty of municipal authorities. They control the activity of the owners or users of land, forests and water areas included in the National Ecological Network, make acts for administrative violations under this law and punish offenders as provided in this Act. The legislator has given broad powers to municipalities in the field of biodiversity, but usually municipalities devote minimal attention and resources on these activities.

3.2.3 Control on damaged terrains

Mineral Resources are exclusive state property. For municipal property are considered quarry materials when used to meet the construction needs of the population and are mined in quarries in volume, not more than 10 000 cub. m. per year. Municipalities can provide rights to mining mineral resources through concessions by mining in coordination with the Ministry of Energy. Municipalities have no powers under the Law on Mineral Resources and are actually strongly affected by the activities of exploration and mining. Open quarry developments violate the landscape of the area. Very often, the implementation of the recultivation of exhausted deposits is postponed for years. Waste from mining and flotation factories are stored in landfills and ponds that not only violate the landscape, but in insufficient wetting of the surface contaminate neighboring farmlands with dust containing heavy metals. To solve all these problems, municipalities have no real mechanisms of influence on the Mineral Resources Act, but the Law on Environmental Protection gives them the opportunity to control such areas when they are polluting the environment.

3.2.4 Control functions in water management

Water management is an important factor for sustainable land management. Upon signing a concession contract for water, water bodies, water development systems and facilities – public municipal property, the municipal council determines places for common use of water and water facilities and existing rights of use of water in the reservoirs.

The mayor of the municipality controls the construction, maintenance and proper operation of sewer networks and installations for treatment of municipal wastewater; construction, maintenance and operation of water systems that are municipal property; the establishment and registration of wells for individual water use from groundwater in the municipality. It is known that less than 50% of domestic waste water in the country is treated before discharge into water bodies. Very important is the role of municipalities to provide water purification, not only from large settlements, but also from those with a population of more than 2000 population equivalent. Wastewater treatment of small towns by creating artificial wetlands is not a widespread method, but in practice applies the approach to sustainable land management and significantly reduces investment and operating costs.

3.3 Responsibilities of the municipalities in their capacity as owners of a land resources

3.3.1 Management of agricultural land

Municipalities in Bulgaria are the owners of agricultural land and as such have the right freely to choose to use these lands according to their destination. In the implementation of this right lies the great responsibility of each owner to use the land in a way that will preserve it for posterity. Only two municipalities – Veliko Tarnovo and Elena, have governed by a special ordinance the management of land from the Municipal Land Fund. In the other municipalities these questions are part of the Municipal regulations for disposal, acquisition and lease of municipal property. This shows that the problems of land management are not assessed adequately by municipalities. Much of the land is municipal property pastures which are agricultural lands of lower category. Municipal property are usually dirt roads that serve the agricultural land and the field margins.¹². And in terms of them, municipalities do not take any care due to lack of financial resources.

The municipalities manage agricultural land remaining after the restoration of the rights of private property owners. Difficulties in the use of these lands are established by the fact that they provide rental and lease for a period of not more than three or four years. Tenants of such lands are not eligible for funding under the programs, as they have short-term contracts and do not qualify. After the expiry of 10 years after the entry into force of the land division plan and the approved map of existing and recoverable old real boundaries, land becomes part of the Municipal Land Fund. This period is very long and further slowing down the process of consolidation of land ownership.

By 2005, municipalities have no accurate information about the state of their own land and the quality of its land territory. Agriculture Municipal Services are subordinated to the Ministry of Agriculture and Food. The provision of digital information cards for repossession of land is carried out by the Chief Directorate "Agriculture and Regional Policy" to the ministry. This greatly hinders the work of municipal planning and land management. Such information should be available and affordable for the municipal administration, both for agricultural land, and for those from forest areas.

Since 2005, the territory of the country gradually and systematically is being covered with a cadastral map. As to 31.12.2007 for the territory of Bulgaria there have been approved or are in the process of creating a cadastral map and cadastral registers for the lands of 420 settlements, incl. all 27 regional cities, 60 municipal centers and other settlements or 333 for a total of about 13% of the country. At present, the process of creating a cadastral map and registers continues. The Geodesy, Cartography and Cadastre Agency opened the procedure for the creating of a cadastral map and cadastral registers for over twenty new settlements in the regions of Burgas, Varna, Veliko Tarnovo, Vidin, Vratsa, Lovech, Pleven, Pernik, Razgrad, Stara Zagora, Haskovo, Shumen, Sofia region, as well as seven regions of Sofia Municipality. Creating cadastral maps and registers is a process funded by the state and citizens have no financial commitment to this activity.

The established cadastral map and the opportunity, based on it, to create specialized maps of lands in connection with combating desertification, have the great advantage to draw information from a map material for the urban area and for agricultural land, forest areas, damaged areas and others.

To promote initiatives to improve the quality of land, municipalities can provide for a period specified by contract, free use to natural and legal persons that:

- have restored or improved with their own resources municipal agricultural lands of low productivity as mines, quarries and other land with a disturbed soil profile; slags, tailings, dumps and other waste; old riverbeds; routes of

12

abandoned channels, roads, railways, construction sites after dismantling of engineering facilities, lining and superstructure;

- have reclaimed with their own funds municipal land as agricultural, which are contaminated with heavy metals and metalloids, radionuclides, oil products, other organic pollutants, industrial and municipal waste; acidified or salinized from industrial activity or from improper irrigation or drainage; ravines, gullies, swamps, highly eroded or stony soils and other lands designated as uncategorizable agricultural land.

This mechanism for the improvement and use of agricultural land is not used in practice, which shows that the economic return on the activities of restoration and reclamation of land is low. If not only the right of a free use, but the acquisition of a such lands is introduced, one can expect a lot more interest and private initiative.

3.3.2 Management of lands from forest areas municipal property

For forest areas – state and municipal property, there shall be established forest management plans with the exception of territories provided for the needs of national security and defense. Forest management plans and programs of forest areas that are property of municipalities shall be approved by ordinance of the Director of the respective Regional Forest Directorate – which fall within the area of activity.

Management of forest areas – municipal property shall be implemented by the municipal forest structure organized in the following forms: a structural unit in the administration of the municipality; a company in which the municipality is the sole shareholder; municipal enterprise under the Municipal Property Act.

The choice of the form of government shall be determined by the municipal council

3.3.3 The management of water and water facilities owned by municipalities

The property of municipalities are water and water bodies, including natural springs, lakes and marshes, when they are within the boundaries of lands – municipal property; waters, including waste flowing out of properties, public or private property and flow into waters – public municipal property; water systems and facilities in the municipality except those included in the assets of companies or associations for irrigation and constructed with funds or loans to companies or associations for irrigation, incl. equipment and systems for water supply of settlements in the municipality, including sewage treatment plants for drinking water; wastewater collection and treatment of wastewater from settlements; dams and micro-dams; protective dikes and equipment and systems for strengthening river beds within the settlements.

The policy related to the operation, construction, reconstruction and modernization of water systems and facilities – municipal property shall be implemented by the mayor. Of particular interest in recent years are dams that give a concession for fish farming, fishing and recreation. Very often walls and overflow of water dams are not maintained in good condition by the concessionaires and create conditions for flooding of adjacent lands and loss of crops. Reasons for this are, on the one hand, the quality of concession contracts, and, on the other hand, the insufficient control by the owner – the municipality.

3.4 Municipalities as partners of the central authorities in the process of a sustainable land management.

Municipalities are practically the only power of authority that integrates into their work all aspects of public life – social, economic, environmental, educational, cultural. Due to this fact, they are a natural partner and corrective to the central authorities in the implementation of national legislation. MEW has long experience of cooperation with local authorities. Other key ministry on sustainable land management – MAF – is

increasingly attracting municipalities as partners in their work. The regional structures of the MAF and the MEW should work closely with local authorities as municipal administrations and in particular mayors and deputy mayors in the villages closest to the people and knowing best their problems. In this respect, municipalities are the natural mediator to facilitate the process of informing on and involving the public into new techniques and procedures. They can also provide an appropriate forum for discussing and solving problems with the participation of all stakeholders.

For the implementation of their plans and programs, municipalities develop projects that seek funding from national and international sources. Experience and build administrative capacity can be to the benefit of users of agricultural lands that find it difficult to prepare their proposals in the required format.

4. Role, participation and responsibilities of business organizations and associations

The role and responsibilities of business and its branch organizations in land management and combating desertification are basically limited to: inclusion in the development and effective implementation of the rules of best practices; support and implementation of technology, environmentally friendly and non-organic farming; measures for sustainable agriculture, forestry, fishing and hunting; use of environmental planning in the practice of business management; the conservation of biological diversity through the conservation of arable lands with high natural value, threatened by the intensification of production and/or abandonment of agricultural land; traditional husbandry practices; preservation of genetic diversity and cultural heritage, eco-tourism, etc.

The long absence of market relations in Bulgaria determines the adverse conditions and uncertainty for businesses. The lack of management experience, adverse and volatile economic environment, difficulties with the realization of goods, etc., has led to large losses and frequent bankruptcies. For a long time the business has been operating in a deficit of rules and laws governing and protecting its activities in the new economic environment. While these conditions change, they are not liquidated. This motivates businessmen to target fast, easy and secure profits. No small part of the producers are guided in their actions by the principle of survival, thus protecting the environment and human health are not a priority, but are rather overlooked and underestimated.

The lack of experience and traditions in the establishment, role, place and functions of the branch organizations is a momentum that is hard to overcome. In centrally planned economies such non-profit organizations did not exist. Their construction has begun, but there are great difficulties. A Council of Bulgarian agrarian organizations has been established. It has more than 20 organizations. The activities of some of them, however, are still modest, due to which the business is slowly overcoming its distrust of them.

In general, business structures are not ready and still are not perceived as a party to the application of the Convention. For the most part they are not aware or are less familiar with the text of the Convention, which limits the possibilities for its effective implementation. They do not have specialized units or personnel directly involved with harmonizing their activities in accordance with international commitments of Bulgaria.

Business structures are not involved enough in the development of normative and legal base relevant to SLM. Their views at the stage of preparation and discussion are still not sought after as much as they should be.

There is no awareness of the mechanisms and funding sources, supporting the measures that are part of NAP for SLM and combating desertification.

A significant deficiency in the field of environmental protection and sustainable land management is the lack of training of specialists for developing competitive projects involving business and its branch organizations, so that no small part of the financial resources allocated for these purposes, are not absorbed.

Still in Bulgarian environmental regulations and legislation emphasis falls on controls and sanctions and rarely on incentives; or if there are incentives – they are insufficient and not always effective to achieve the desired motivation.

Conditions for access of the business to financial support through EU funds and through national funds are improved. The application process is simplified. With the harmonization of the national legislation of Bulgaria to the EU, the business gets more and more clear rules and adequate redress, ensuring greater security and reducing the degree of risk. The economic environment for business is improved and it becomes more sustainable and predictable. Cultural knowledge and skills to manage under a new environment characteristic of the market economy, in which the Bulgarian business was placed, are also increased. As a result of improved training, experience and the role of competition, which is increasingly sifting the capable ones, motivation is achieved for raising initiative, enterprise and self-confidence and capabilities. The increasing number of pilot projects and projects in the agricultural, food and forestry sectors, serve as a demonstration initiative and pave the way for successful business. Conditions are created for more and better information on scientific, technical, technological, marketing knowledge (demand, supply, prices, domestic and international markets, opportunities to minimize transaction costs, etc.); for sources of financing; developing joint projects and cooperation with other institutions and target groups, etc. The need and benefits of unification, integration and coordination of a successful business are already acknowledged. There is an increasingly strong commitment of financial support beneficiaries with requirements for sustainable management of resources. Priority support goes to rural and mountainous areas in most need of the introduction of SLM.

Good opportunity are the measures under Priority 1 of the Programme for Rural Development 2014-2020 year (RDP) that promote knowledge of farmers on the application of good agricultural practices, leading to the conservation of biodiversity, soil and water.

Measures are planned in all priority areas of Priority 4, to which are directed 34% of public money of the Program, that contribute to biodiversity conservation, sustainable management of water and soil.

In the framework of agri-environmental objectives, top priority will be given to measures to protect biodiversity in agricultural lands with high natural value and the Natura 2000 sites. Farmers will be encouraged to maintain the landscape and conduct agricultural activity in disadvantaged areas. The assistance will be directed towards maintaining the traditional extensive farming practices, preventing soil erosion and protecting soil fertility. Unproductive investments and investments for construction of facilities for storage of manure and its proper use according to the requirements of the Nitrates Directive will be supported. Utilization of the country's potential for development of organic farming will be a priority. Reforestation and sustainable management of forest resources with a focus on prevention of forest fires and the protection of biodiversity in accordance with the requirements of Natura 2000 forests will be supported. To ensure the uptake of agri-environmental measures, focus will be placed on improving awareness, training and advice to farmers in terms of requirements for sustainable management of natural resources. Financing is planned of pilot and demonstration projects relating to the implementation of agricultural activities aimed at protecting the environment.

Interventions under Priority 5, targeted by 15% of the public funds of the Program will also contribute directly or indirectly to the environment as far as promoting resource and energy efficiency, the development of bio-economy, the shift to agri-environmental practices and enhancing biodiversity. All these effects will contribute to the functioning of a healthy ecosystem, which will limit the negative impacts of the primary sector on the environment – air, soil and water.

App. 6B envisages measures for the construction of water supply infrastructure, which will contribute to a more sustainable water management. LAG works will encourage investment and approaches aimed at preserving and protecting the environment and promoting resource efficiency, incl. training and consultancy support for environment and climate.

Construction works of LAG will encourage investment and approaches aimed at preserving and protecting the environment and promoting resource efficiency, incl. training and consultancy support for environment and climate.

A significant part of the trade organizations were able to stand their grounds and won convincingly in the agriculture, food and forestry sector. The professional organizations were active participants in the national debate on the future of the Common Agricultural Policy until 2020, the concepts for the implementation of direct payments under the first pillar and the help under the second pillar of the CAP through the Rural Development Programme 2014-2020, branch organizations take an ever-wider participation in the preparation of a number of regulations – ordinances, codes, best practices and more.

5. Scientific and information support and international cooperation for sustainable land management and combating desertification. Role of Education.

The importance of the key role of science in developing and implementing schemes for SLM is undisputed. What is needed is a strong foundation of scientific knowledge, implementation and communication of the knowledge of participants, significant financial resources to support conservation efforts and sustainable land management.

Scientific organizations have the necessary technical and human resources as number, qualifications and level of commitment with which to participate in the process of SLM and combating degradation. In scientific organizations there are structures that work or can be involved in the development of projects on the issues of SLM, degradation, in the fight against drought and reducing its consequences, taking into account the scale and integrity of those issues, considering them a priority in their scientific plans and programs. However, the scale and complexity of the problems associated with desertification and land degradation, require new personnel and technical solutions, construction of specialized structures in scientific institutes.

The existence of centralized national systems for the management of science (AA, BAS Council of Rectors of universities) allow coordinated implementation of national programs for applied scientific developments in the field of sustainable land management and combating desertification. There are private and public laboratories, well-equipped with modern information and analytical instrumentation for research and studies. A number of developments have been completed, which resulted in accumulated data and information allowing to create databases for the needs of sustainable land management and combating desertification [8].

In many cases weaknesses and difficulties are found in forming interdisciplinary teams, joint for research institutes and universities that can solve complex tasks, and research results are often not brought to the extent that they can directly be used for the purpose of

sustainable land management. The main part of the scientists still are not prepared, that in the period of market economy scientific results are a commodity, which should be targeted to a specific category of buyers and their research should be directed to the interests of socio-economic development of the country. Coordination is insufficient within the scientific community at the planning stage of research, and in their performance. The main reason is the lack of appropriate forms of financing of teams of this type of developments as they relate to different administrative subordination.

Businesses still do not allocate funds to support research and does not see science as an object for investment with good returns.

There is no legal opportunity for research institutes and universities to use credit lines for applied research projects in partnership with businesses in the field of SLM.

The integration between science and practice for supply and use of research results of the market principle is still not realized, because in many cases the scientific products are not evaluated. What is needed is a closer relationship between the two communities, so that the theme of the research to foresee the needs of the practice.

A significant weakness is that fact that the results of the research do not receive the necessary publicity and do not find proper implementation in practice. There is no database available for producers for applied scientific developments in sustainable land management and combating desertification.

Insufficient is the coordination between research institutes on the one hand and their partnership with other stakeholders – on the other. Interdisciplinary teams working on establishing a system for assessing the risk and consequences of unsustainable land management and desertification are rare, leading to insufficient interdisciplinary research on issues of sustainable development. The use of remote methods and modeling with observations, making predictions and planning is not well developed. Predictive models to characterize the degradation of agricultural and forest ecosystems are insufficiently used, considering the state of climate change, the state of the environment and socio-economic living conditions. Insufficient is the use of models that develop scenarios for the management of agricultural and forestry production in the conditions of a lasting drought with an estimate of the damage and the consequences. These surveys cover longer periods of time to obtain objective results, to be used by politicians and managers for making management decisions. For such research funds are not enough.

Poorly developed is the national and regional research base for multidisciplinary research to attract users of agricultural and forest lands and producers of agricultural products locally. Insufficiently systematic and open for use is the information, data and developments related to combating desertification and land degradation in research institutes and universities.

There is no sufficient experience and no specialized cadres in the economic valuation of expected or past events violating SLM or causing desertification.

Major obstacle to the development of applied research directions are insufficient financial resources to carry out studies and implementing projects pertaining to sustainable land management, upgrading of equipment and automation of observations; lack of incentives for greater initiative and entrepreneurship among scientists for the practical realization of their development.

There is scientific staff fluidity because of low pay and lack of perspective in the meager funding from the state and industry research, including the outflow of scientists from the country and an aging scientific staff. Young people do not prefer science and are not attracted to work in scientific institutes, because they do not provide good working conditions and better pay. With the exception of grading the academic ranks and seniority,

training of scientists and research institutes does not form a direct differentiation of monthly salaries. There is still leveling in wages of scientists and specialists, which does not motivate them to greater initiative.

As a party to the UNCCD, Bulgaria is obliged to build capacity to protect, promote and use relevant traditional and local technology, knowledge, know-how and practices to combat desertification and land degradation. This requires them to be adequately protected and the local population to receive immediate benefit on equitable and mutually agreed terms. In this aspect, BAS and AA have real successful solutions for the application of appropriate technologies, such as growing crops without irrigation, cultivation of alternative crops to update the traditional technology in major crops, for reclamation of degraded and contaminated land and more. Some of the institutes use their own funding and technical support to such activities, but they are too weak. Better coordination between scientists and their participation in working groups on specific tasks for the implementation of local technologies will contribute to better results. The few financially secured implementation activities at this stage lead to a reduction in interest among scientists, despite many good traditions in the past.

The Bulgarian scientific community is involved and participates in the formation of global policy on the conservation of soil resources, including conservation and improvement of soil fertility, control and prevention of soil degradation processes and promoting sustainable land management.

The country has committed to facilitate the transfer, acquisition, adaptation and development of environmentally friendly, economically viable and socially acceptable technologies. Through the use of relevant information systems and thematic programming networks, the exchange of information on available technologies should be supported for possible environmental risks related to the conditions of their acquisition. In this respect it is good to take actions to create market conditions, incentive systems, and measures to effectively protect the rights of scientific and intellectual property.

Innovative development of alternative sources of subsistence is to acquire new habits of the local population in areas with drought to ensure a stable livelihood. This calls for the development and implementation of applied research projects. Research institutes contribute to the development and implementation of a number of technological solutions related to the growing of crops without irrigation, selection of alternative crops, construction of forest belts. Insufficient equipment and technical facilities in these institutes as well as inadequate use of the existing capacity of staff (due to lack of specialized structures and financial security) creates problems in the implementation of these activities.

The need to develop and implement programs for sustainable irrigation stems from global developed models for adverse climate changes in the coming years in the country. Providing specialized assistance and support at local level in this area requires better contacts and cooperation of scientists with users of agricultural lands. Scientific institutes of BAS and AA have a qualified staff and experience, but they are insufficient in number. There is also lack of efficiency in academia for better contacts with the business issues of irrigation, introduction of technologies for rational use of water resources.

Development and implementation of sustainable methods in agriculture-related organization, planning and regulation of land use, strengthening the role of agriculture for rural development and sustainable agricultural practices, present another possible destination, where the role of science is extremely important.

The scientific and academic communities in the country have the capacity to develop modern agri-environmental programs for organizing and conducting training for qualified farmers and breeders to introduce technology, new practices and knowledge in agriculture.

Research projects are being implemented in the selection of drought-resistant crops, farming practices, agromelioration with a constant timeframe and own funds of the scientific institutes, albeit insufficient. New methods and approaches of research in agriculture are essential to ensure a more rational use of the training of scientists.

Effective and sustainable management of natural resources also requires the involvement and support of science. This requires a thorough analysis of the environmental conditions in areas affected by desertification, assessing the causes of land degradation and the effects of drought and desertification, and identifying priority areas for action. In the process of these activities, implementation is sought of the initiatives of the UNCCD-related processes to combat poverty and forced migration of people from rural areas.

5.1. Role of international cooperation for the implementation of activities under SLM

States that are parties to the Convention take into account the leading role of international cooperation and focus on: the development and implementation of subregional and regional action programs, technology transfer, research and development, exchange of information and best practices, know-how and so on. This cooperation includes the development and implementation of joint programs for the sustainable management of trans-boundary natural resources, scientific and technical cooperation in the field of sustainable land management, strengthening the relevant institutions, assistance in finding financial resources.

Bulgaria regularly develops and submits to the Secretariat of the UNCCD National Reports of the Republic of Bulgaria for undertaken political and institutional measures and decisions on the implementation of the UN Convention to Combat Desertification.

The country participates in international forums (conferences, round tables, committees, regional workshops) at political and expert level, to adopt political decisions on specific global issues and to determine work priorities and next steps in the implementation of the Convention at global, regional and national level.

Recognition of the importance of the trans-boundary nature of land degradation processes attracted the attention of international institutions to the need to develop a policy for the protection of land and soil at global level.

To the UNCCD was established a Committee on Science and Technology, which provides information and advice on scientific and technical issues related to degradation and combating desertification; develops methodologies and projects supporting regions affected by desertification and periodically reviews the priority directions of research. Bulgaria, as a full member to the Convention, has a representative who represents the country and is involved in the preparation and development of these documents.

Participation in international projects of our institutes and universities with research organizations abroad is a good direction for development. Bulgaria is a member of the European Soil Bureau and its representatives participate in working groups on soil monitoring, evaluation of soil organic matter, evaluation and impact on soil erosion, pollution assessment of soil with organic pollutants and heavy metals, databases on soil properties, digitized soil maps at different scales.

Although low participation of scientists in promoting good international practices and in cooperation, and less use of international experience is reported. The capacity of the agrarian community of scientists to prepare projects and apply for participation in international programs is low. At the same time projects prepared by them are not less competitive than those of foreign institutions.

In accordance with the purposes and principles of the UNCCD, according to its capabilities, Bulgaria undertakes to promote scientific and technical cooperation in the

field of combating desertification and mitigating the effects of drought on national and local level.

Exchange of scientific information on SLM issues is conducted through networks of scientific and technical cooperation, though not well structured to date. Researchers have human resources for their maintenance, but lack financial security. These networks support the collection and coordination of relevant data and information on land degradation, analysis of processes and their consequences, solving specific problems in the field of SLM.

The new socio-economic conditions in the country require precise formulation of the research priorities in desertification and land degradation and intensive search capabilities for financial support through international cooperation or within the action programs on SLM.

5.2. Role of Education for the purposes of SLM

An important role is assigned to the development and use of educational programs to explain the causes and consequences of land degradation and drought, and a better understanding of their relationship with poverty.

Development of joint training programs between research institutes and universities should create the necessary conditions for an organic connection and interpenetration in research programs and curricula of the two communities, and exploitation of results and achievements reached so far for the purpose of SLM.

The implementation of such an integrated management approach would bring together the efforts of teachers from universities and researchers from institutes for the quality of their work and meeting the requirements of the European Community in this regard. This requires education and educational work at all levels of the educational system (from teenagers to students and doctoral students), as well as training of specialists from science and business for training and participation in competitions for projects in SLM.

Training on management and protection of land from contamination is not well represented in the educational programs of primary schools. There are over 90 secondary vocational schools in the field of agriculture and forestry funded by MAF. There is ignorance and insufficient promotion of the teaching of international best agricultural practices, including in rural and eco-tourism. Scientists with experience from research institutes are not involved or are not sufficiently involved in the preparation of training programs and plans of the university disciplines in the field of SLM. Training programs of masters and doctoral level in fields relevant to SLM are not prepared jointly by research institutes and universities. There is not enough coordination and partnership between research institutes and universities in the preparation of master's and doctoral training programs in areas relevant to SLM.

6. Role, responsibilities and participation of NGOs. Informing and involving the public

In Bulgaria the democratic changes began in 1989 with the formation of informal environmental organizations which launched the development of civil society. This process continued in the coming years, which resulted in the registration of over 500 non-profit organizations carrying out activities in the field of environment and sustainable development. These organizations are extremely diverse in structure, priorities and capacities. The largest part of the active non-governmental organizations (NGOs) deal with biodiversity conservation and other conservation activities, a smaller number have directed their activities to protection of air, water resources, sustainable waste management,

environmental education. In recent years, more and more organizations work in the field of organic farming, regional and local development, eco and rural tourism. NGOs are active partners in the development of the legislative framework, they have expertise to conduct information and education campaigns for the public and in the implementation of public control over the implementation of the commitments made by the government, local authorities and businesses.

There had been gained considerable experience in working on projects and programs funded by the EU and other donors, especially from NGOs working in the field of environmental protection, but mostly in urbanized areas of the country.

Desertification, land degradation and sustainable land management are priorities for too few organizations. Sustainable land management and management of the forestry sector were considered until recently activities carried out exclusively by the state. An important factor affecting the poor interest from NGOs is the lack of financial resources, both from domestic and from international donors in the field of sustainable land management. In the country economic levers such as bank financing of successful projects or good practices implemented by NGOs are poorly developed.

On the other hand the development of NGOs working in the field of desertification, land degradation and sustainable land management directly depends on the overall development of rural areas. Preparedness and interest among NGOs to carry out activities for sustainable forest management turned insufficient. Implementation of activities for increasing the forest cover of the region through the creation of new forests and shelter belts on municipal and private lands, creating cultures of honey species for development of beekeeping, satisfying the need of the population of wood for energy and the development of alternative tourism are a good alternative and prerequisite for the future development of NGOs.

NGOs have great potential for development in the implementation of the rules of good agricultural practice and the implementation of the National Agro-ecological Program. A wide information campaign to explain the rules of good agricultural practice and to motivate farmers for their application, in which NGOs could play a significant role as a mediator in the process. Great opportunities for development will provide the launch in Bulgaria of the EU initiative – Horizon 2020.

First pilot project in this direction was launched in February 2003, a joint project of the Ministry of Agriculture and Food and the United Nations Development Programme (UNDP), “Sustainable Rural Development”. The project was implemented in eleven pilot municipalities: Ardino, Belitsa, Vurshets, Garmen, Ivaylovgrad, Kirkovo, Madjarovo, Topolovgrad, Trun, Satovcha, Yakoruda, located in five regions (Montana, Pernik, Blagoevgrad, Kardzhali, Haskovo). The project activities were focused on the sustainable development of agriculture, forestry and alternative tourism. The project works to improve the capacity and cooperation of municipal administrations, farmers, SMEs, NGOs, professional associations and cooperatives through the creation of 11 Local Action Groups (LAGs) according to the Leader methodology, involving three sectors: NGO, local authorities and business.

This approach allowed for the development of public-private partnerships at local level. These partnerships play a positive role in the development of the local economy through the creation of various forms of employment and inclusion of various stakeholders in sustainable land management.

Low qualification level of the population in rural areas has a negative effect not only on the development of modern and efficient agriculture, but it also reduces the chances of starting non-agricultural activities. The share of long-term unemployed in rural areas is increasing due to lack of qualifications or level of education. These general trends entail a

lot of problems with the organization of local communities in civic associations independent of state funding, and the unpreparedness to participate in projects funded by the EU leads to instability in the development of organizations.

As a good opportunity to support NGOs from rural areas is accounted the establishment and support of the development of the National Network for Rural Development. The Network will be able to join NGOs registered in rural areas. The main services that the Network will offer, are generally defined as:

- Providing information to the members of the Network;
- Providing training seminars and technical assistance for capacity building of members of the Network;
- Assistance in creating and building the capacity of Local Action Groups;
- Conducting advocacy campaigns on key issues related to rural development;
- Strengthening and expanding the Network.

In recent years there have been numerous information resources on the Internet for the water status in Bulgaria (in quantity and quality according to water bodies), legislation, management, discussing strategies in the water sector and others. NGOs play an important role in water resources management. Their citizenship is especially important when participating in Basin Councils, which are established to the Basin Directorates. The first Basin Council in Bulgaria was established as an NGO in 2002. The dissemination of information and education campaigns in relation to integrated water management are among the top priorities of NGOs.

7. Role, involvement and responsibilities of owners and users of agricultural land in the process of sustainable land management and combating desertification

Negative natural growth, aging population and internal migration are valid for the whole country, but they are much more pronounced in rural areas. Nearly 78% of those employed in agriculture work in rural areas, but only 3% of them are permanently employed workers. The remaining 97% are generated from temporary (seasonal) workers or workers in semi-subsistence farms (mostly for their own consumption).

In mountainous areas a trend towards depopulation is observed, which not only leads to unsustainable management of agricultural land, but also to the continuous deterioration of its quality and productive potential. In some municipalities, the population density per square kilometer reaches alarming levels (Treklyanovo, Kyustendil – 4.2 residents, Malko Tarnovo – 5.7 inhabitants Chuprene, Vidin and Ivaylovgrad – 9-10 inhabitants, etc.).

Most of the land is owned by urban residents, nearly 80% is property of the legators, not the heirs, some of whom are in retirement or have already died. At the same time much of the rural population are landless or indigent. This implies a further fragmentation – by divisions, purchase and sales, donations, land settlement and other land transactions. This in turn leads to primitive production, impossibility of implementing advanced technology level, low yields, expensive and uncompetitive agricultural production and limited opportunities for SLM.

Problems associated with the fragmentation of land ownership, however, are most strongly felt by the large agricultural land users. According to 64% of them, consolidation would be beneficial for their company. Only 5.3% of small agricultural businesses in rural areas agree. People in the villages did not perceive the problem of fragmentation as particularly important for the development of the rural economy.

The majority of farmers lease or rent land under a short-term lease. Of the farms managing 67% of the utilized agricultural land in the country and observed in 2000 by Agrostatistics,

50% cultivate rented land, 45% - leased, and only 5% - their own. [6] According to data from the Agricultural Census in Bulgaria in 2010, the owned land has increased to 20% of the total utilized agricultural area of farms. The still high share of land rented and leased. This discourages users of agricultural lands to put investments into the land for permanent improvements and rational use, leads to serious difficulties in planning and sustainable land management, and to the deterioration of its properties and structure.

Owners are reluctant to lease their land for a longer period of time mainly due to incorrectness of the tenants, increasingly frequent breaches of contract and their impunity. Owners are numerous, small and divided, and are not able themselves to defend their interests against the many and insurmountable circumstances – too liberal a Lease Act, failure to provide adequate protection; ineffective judicial system; larger and economically stronger tenants; monopoly of the only tenant in many villages; low level of land rent; the lack of an association or union of landowners and others.

Many of the new owners do not have proof of ownership. This will keep the consolidation of ownership and land use and will be a serious limiting condition for absorption of EU Structural Funds, and from there – of SLM. Since the vast majority of the land is returned to the legators, division between the heirs is necessitated, which sometimes reach up to 70 people. Pending divisions, unresolved issues relating to land ownership under paragraph 4 of the Law on Ownership and Use of Agricultural Land, ongoing lawsuits to prove ownership, dispute of the value assessment of land upon compensating owners with registered compensatory bills, etc., will for long time adversely affect sustainable land management and combating desertification.

Farmers in their majority do not have qualifications and experience in the cultivation of crops and livestock, as well as management skills, and frequently do not comply with agro-technical requirements for crop rotation, do not apply efficient technologies of fertilization, combating diseases and pests, irrigation, etc. Insufficient financial resources for livestock are a prerequisite for improper storage and use of manure, which is responsible for water and soil pollution.

Lack of sufficient conviction about the benefits of association among farmers will be a serious obstacle to the sustainable management of pastures and for the absorption of funds from the EU Structural Funds. The majority of fields and pastures in Bulgaria are state and municipal property, but in most cases they are used for free by farmers raising animals. But no one cares about them. With the implementation of the common agricultural policy in which subsidies are paid per hectare, the majority of farmers in the mountain areas will not be able to receive them because they do not own land.

The planned rule by Ordinance No. 3 on the creation and maintenance of a register of farmers as part of the conditions for eligibility to financial support from the Agriculture State Fund is not working effectively. Producers refrain from registration because under the Ordinance they are required to pay health and pension insurance, and their unemployment benefits will also be gone. This barrier is the result of distrust in farmers that they will be among the beneficiaries approved due to the smaller size of the funds until now. As a result, they believe that additional costs and income foregone are pointless.

Farmers encounter great difficulties in the realization of agricultural production due to the loss of traditional trading partners in the external market and the shrinking solvent demand on the domestic one, with non-parity exchange of agricultural products, with their high resource consumption and low yield, unfair competition of subsidized imports, etc., which adversely affect their competitiveness, ability and motivation to participate in SLM.

Farmers have mostly physically and morally worn material and technical base, which can not meet the animal health, plant health and hygiene requirements and the requirements and standards for environmental protection. Vertical integration, information for

agriculture workers, food and forestry sectors, the transfer of scientific knowledge, consulting services, marketing know-how, the implementation of a quality assurance system, financial schemes to promote quality and others are highly insufficient.

The application procedures for financial support are complex, a lot of documentation, high transaction costs, which is a serious barrier, especially for small farmers. This will be a limiting factor for the provision of financial resources for the activities and measures for SLM.

There is an insufficient amount of funds to preserve and improve the quality of agricultural land. Private ownership of agricultural land, in the absence of experience in associating for collective use, and maintenance of destroyed for the most part irrigation equipment will cause serious problems in sustainable land management and combating desertification. Established water associations will gradually mitigate these problems.

At the same time the land owners/users have a number of obligations arising from national legislation. Owners of forests and lands from forest areas should exercise their right of ownership over them in a way that does not worsen their condition and do not cause harm to other owners of forests and lands from forest areas or society.

The owner freely chooses the way of use of agricultural land, if that does not change its purpose and does not cause harm to their own land, the land of other owners or the quality of surface and groundwater. But under current law owners and users of agricultural land are obliged to protect them from erosion, pollution, salinization, acidification, swamping and other damages and to maintain and improve their performance; to protect archaeological sites, monuments, melioration, electricity and other facilities and installations, geodesic and border signs located on their property. Upon non compliance with these requirements of the law, the legislator does not provide for effective sanctions, so they have more of a wishful character than real importance.

Bulgarian agriculture in the short and medium term will be characterized by two extremes – small family farms intended for self-sufficiency and wholesalers – in the form of cooperatives, lease holdings and other associations. Small farms in their current form are not viable, inefficient and uncompetitive, and the large ones are temporary structures of monoculture production, organized primarily on foreign land, leased for short periods, making them unstable and unsustainable, and will be a constant factor in the destabilization of the sector and unsustainable land management.

For consolidation of land ownership and land use especially during the programming period 2014-2020, indirect influence will be rendered by the support under the First Pillar of the CAP through direct payments per area. It will facilitate the change that has occurred in the Common Agricultural Policy.

With some positive changes in OUALA, as with the implementation of the CAP of EU, dominated by payments per hectare, there are created prerequisites for consolidation and SLM. The water associations will improve the sustainable management of irrigation facilities and water resources.

Part III. Strategic objective and strategic sectors of the National Action Program for sustainable land management and combating desertification

Programs proposed for implementation within the framework of the strategic sectors of the NAP, offer a set of activities that will contribute to the improvement of the institutional, legislative and application environment related to sustainable land management and combating desertification in Bulgaria through operations.

The proposed programs and measures are not comprehensive and exhaustive in terms of all the activities that need to be implemented in order to achieve and implement all the policies related to SLM. The programs outline the general course of action. In this sense programs will rely on the initiative at a national, regional and local level to enrich the spectrum of possible actions to contribute to and build upon the efforts of NAP for SLM. In essence the proposed programs will depend largely on the financial and institutional support of existing strategies and economic mechanisms and therefore the active participation of all stakeholders – institutions, administrations at all levels of government, civil society and business to attract alternative and additional resources is crucial.

NAP for SLM establishes the general strategic framework and direction of development and provides realization of **the most urgent measures and activities** that help to provide the basis for the integration and implementation of long-term policy in this area. NAP should not be viewed as a limiting strategic framework, which enables only a narrow range of initiatives. This program provides the starting point for implementing the national policy for sustainable land management and thus provides potential for all stakeholders and institutions to develop their own initiatives and ideas.

Strategic objective: *Limiting land degradation and combating desertification for maintaining and developing the capacity of ecosystems to achieve a clean, safe and attractive environment, economic stability and improved quality of life.*

Strategic Sectors

Strategic sector I: Improving national legislation and policies for sustainable land management and combating desertification

In order to provide good conditions for the operation of the existing legal framework and policies for sustainable land management with their effective future implementation and overall improvement, we must bind the main objectives of the NAP with specific programs that will ensure the operational realization of strategic goals.

Each of the proposed programs contains an integrated package of measures whose implementation will contribute to the effective functioning legal framework, ensuring synergy of individual policies at all managerial and administrative levels and creating better conditions for improving institutional capacity, offering working mechanisms for coordination between institutions and organizations related to sustainable land management and combating desertification. Another important element of the proposed programs is to outline the expected results and impact of their implementation, and the possibilities for funding of the program.

Programs:

I.1 Program “Improvement and supplementation of the national legal framework for sustainable land management and combating desertification”

Justification

The national legal framework related to sustainable land management is largely in place and Bulgarian legislation provides a variety of legal mechanisms for the protection and management of land and environment components. There is a need of a clear and regulated relationship between the objectives and the specific provisions of the laws relating to sustainable land management, and improving the legal framework that regulates various aspects related to the protection of farmland, protection of ecologically clean agricultural lands, rights to various types of resources, management of irrigation land. It is particularly important to create legally regulated conditions for conducting preventive action in respect of land unaffected by degradation processes, and promoting the introduction of early warning systems, regular monitoring and control activities related to the management and use of land resources. Without the application of specific measures to improve and enrich the legal framework, this could lead to fragmented and ineffective management of land, which in the future could lead to degradation of land resources and comprehensive disruption and deterioration of the environment.

Objective

Complex improvement and complementing of the national legal framework on sustainable land management and conservation of natural resources.

Measures

1. Development of “Methods for keeping a register of the areas with damaged soils, which contain information on the location, source of damage, type and area of damage, risk assessment and the funds spent on research and recovery”.
2. Improvement of the national legislation on irrigation management and land protection.
3. Development of a program to expand the network of forest belts and improvement of existing forest belts.
4. Development of regional programs to protect forests from fires.
5. Development of preventive measures for lands affected by degradation processes or lands that have suffered degradation to a minor degree.
6. Development of standards harmonized with the EU requirements for early prevention and monitoring of desertification processes.
7. Development and implementation of a system of economic incentives to encourage owners and land users to conduct activities for sustainable land management.

Among the most important measures specifying the further implementation and overall improvement of the legal framework related to conservation and sustainable land management are the enacted Law on Soil (Prom. SG. No. 89 of 6 November 2007) Ordinance No. 4 for soil monitoring (Prom. SG. 19 of March 13, 2009) Ordinance No. 3 of 1.08.2008 on the standards for acceptable content of harmful substances in the soil and Ordinance on the inventory and studies of areas with contaminated soil, necessary restorative measures, and the maintenance of the realized restoration measures (adopted by Decree of the Council of Ministers No. 30 of 2007).

Expected results

Enriched and improved national legal framework allowing to overcome the existing deficits for long-term sustainable management of land and creating a more favorable legal environment for forward-looking and integrated application of various legal mechanisms, upgrading the efforts for conservation and efficient management of land resources and the environment.

Period of application

2015-2016

Responsible institutions

Ministry of Environment and Water (MoEW), the Executive Environment Agency (EEA), the Ministry of Agriculture and Food (MAF), the Executive Forest Agency (EFA), in partnership with other line ministries (Ministry of Finance, Ministry of Economy) and NIMH.

Possible source of funding

State budget

Alternative funding sources – donor organizations

Total indicative financial amount of funds needed for the implementation of program I.1: BGN 360 000.

I.2 Program "Improving and integrating policies and strategies with respect to sustainable land management and combating desertification"**Justification**

The country has created the common strategic framework, which regulates the protection of the environment and its elements, proposes a set of actions through which to ensure achieving the objectives and securing a large part of the necessary financial resources. Only in recent years after the ratification of the UNCCD in 2001, the country began a process of implementing its principles and requirements. In fact, this means the absence of a strategic and integrated approach to sustainable land management and sufficient experience and traditions in the creation and successful implementation of integrated actions which not only protect the earth resources and environment as a whole, but also provide friendly and coupled with other strategies and policies implementation of plans for conservation and sustainable land management.

Objective

Improvement of existing national policies and strategies related directly or indirectly to sustainable land management and an integrated approach to their implementation.

Measures

1. Integration and application of principles and approaches to sustainable land management in existing national strategies and policies.
2. Creation of specialized maps of lands in connection with the fight against desertification.
3. Inclusion of the main recommendations in the UNCCD as part of the regional operational programs, regional strategies and local development plans.
4. Operation of the National Coordination Council on implementation of the UNCCD and provision of interconnection and integrated implementation of all relevant policies and strategic documents related to the sustainable land management and combating desertification.

Expected results

Unified and integrated implementation of policies and strategies related to sustainable land management with a high degree of consistency and efficiency and adding value to individual policies and complying with the principles enshrined in the UNCCD.

Period of application

2015-2017

Responsible institutions

MEW, MAF, municipalities

Possible source of funding

State budget

Alternative funding sources – donor organizations.

Total indicative financial amount of funds needed for the implementation of program I.2: BGN 50,000

I.3 Program “Strengthening institutional capacity and building mechanisms for coordination, communication and partnership”

Justification

Successful implementation of policies relating to SLM are largely dependent on and determined by adequate institutional coordination, partnership and timely communication between the parties in the process. Of particular importance is the horizontal coordination in the implementation of a uniform policy for conservation and better management of land resources and vertical coordination of the practical implementation of this policy.

Awareness and commitment on the part of the public on the subject of sustainable management and conservation of natural resources is also a crucial element which needs to improve in our country, and this requires the implementation of activities, which, along with good inter-institutional coordination, also create conditions for broad participation and active involvement of stakeholders at local and regional level.

Objective

Improving the existing institutional capacity to formulate and implement policies for sustainable land management and establishing mechanisms to promote inter-institutional coordination and implementation of the principle of partnership with all levels of government and socio-economic partners.

Measures

1. Establishment of an interagency working group for implementation of activities requiring enrichment of existing or creation of new legislation concerning sustainable land management and combating desertification.
2. Strengthening the administrative capacity to manage and implement policies for sustainable land management and establishing mechanisms to promote inter-institutional coordination and implementation of the partnership principle (seminars, fellowships, exchanges of experience, etc.)
3. Improvement of specialized knowledge and skills of experts in the field of SLM (courses, seminars, fellowships).

Of particular importance is the creation of a favorable environment for functional coordination and communication between institutions and organizations that implement policies related directly or indirectly to sustainable land management.

Expected results

Improved coordination and communication between the institutions conducting SLM policy and established working mechanisms for exchange of information and wide promotion at local and regional level of the principles of environmental protection and land resources.

Period of application

2015-2020

Responsible institution

MEW, MAF

Possible source of funding

State budget

Alternative funding sources – donor organizations.

Total indicative financial amount of funds needed for the implementation of program I.3: BGN 69 000

I.4 Program “Development of national and local programs and participation in international processes on sustainable land management and combating desertification”

Justification

The program is necessary for the overall implementation of the NAP as it serves for the promotion of international cooperation and partnership, and the coordination at regional and international levels on issues related to SLM. The adequate and effective implementation of NAP is inconceivable without the participation of our country in international processes and events in the field of combating desertification and conservation of land resources. In addition, in the spirit of the UNCCD, it is necessary to also provide opportunity for science to assist the implementation of an effective national policy for sustainable land management.

Objective

Creating favorable conditions for the active involvement of our country in international processes related to sustainable land management and expanding opportunities for inclusion of science in the implementation of effective policies for sustainable land management. Improving regional toolbox of strategies in the context of the principles of sustainable land management.

Measures

1. Conducting specialized workshops and study tours for representatives of regional and municipal administrations to present good and working regional and local plans for sustainable land management.
2. Development of programs for exchange of experience, best practices and joint actions between Bulgaria and other countries implementing the UNCCD and their NAPs.
3. Participation in regional and sub-regional action programs for sustainable land management and combating desertification in the framework of Annex V to the UNCCD.
4. Development of national reports on the country's progress in implementing the UNCCD.
5. Participation in international forums (conferences, round tables, committees, regional workshops) at political and expert level.

Among the most important activities within the framework of this program is the introduction to the experience of other countries that have begun implementing its NAP for SLM. Acquaintance with their experience and extraction of useful lessons at the beginning of the implementation of the NAP for Bulgaria would be of utmost importance.

Expected results

Active involvement and regular participation of our country in international processes and acquaintance with developments, trends and best practices in sustainable land management. Providing an opportunity to exchange experience and expand the horizons of science working in support of the effective implementation of national policies for the protection of land resources. Creating a well-trained and knowledgeable regional and local

administrations to implement successfully its plans and strategies related to sustainable management and conservation of the environment and its elements.

Period of application

2015-2017

Responsible institutions

MEW, municipalities

Possible source of funding

State budget

Funds from academia and research institutes.

Alternative funding sources – donor organizations, NGOs, businesses, etc.

The total indicative financial amount of funds needed for implementation of the program I.4: BGN 60,000

The total cost of implementing the measures under direction I. "Improvement of the national legislation and policies for sustainable land management and combating desertification" – BGN 539 000

Strategic sector II: Preservation and improvement of the potential of land resources and their sustainable use

Programs:

II.1 Program "Limitation of the erosion processes"

Justification

Soil erosion (water, wind and irrigation) as area distribution is the most serious degradation process in the country, affecting both agricultural and forest areas. The natural conditions, land management (fragmented structure, unsustainable agricultural practices) and ineffective implementation of the law suggest a high risk of experiencing water and wind erosion in the future. Forecasts for the development of erosion processes on the basis of annual erosive rainfall and winds, and how land management have tended to intensify.

Objective

Limitation of the erosion processes that will lead to the preservation of productive, filtering, site-forming and buffering functions of soils; limiting depletion and pollution of water resources (with sediment, nutrient and toxic elements) and thus providing more favorable conditions for the functioning of the natural and artificial ecosystems and restoring and maintaining biodiversity.

Measures

The specialized program includes prevention, mitigation and restoration measures (including **soil protection and flow-corrective measures** consistent with the specific soil and climatic and topographic conditions) to be applied on areas affected by past and ongoing erosion.

1. Identification of priority areas for combating erosion.
2. Restoration, creating new and maintaining anti-erosion engineering and technical infrastructure in rural and forest areas, incl. to strengthen the hydrographic network.

3. Implementation of measures on agricultural irrigation and forest melioration to reduce erosion.
4. Restoration and maintenance of forest belts and implementing new anti-erosion forestation.
5. Establishment of windbreak shelter belts and linear afforestation along the borders of agricultural land near the canals, roads and others.
6. Adaptation and implementation of new technologies to restore forest soils damaged by fire.
7. Grassing of slopes inclined at 10° to stabilize the soil and utilization of the effect of mulching in arid areas. (new)
8. Application of appropriate soil conservation processing across the slopes with a complex topography and incline over 10°
9. Improving the effectiveness of the control over agricultural lands to prevent unintentional and indiscriminate burning of stubble and dry grass and shrubs outside the forest areas
10. Implementation of appropriate technologies, schemes and reforestation of lands affected by erosion.
11. Ensuring the production of the necessary quantity of tree and shrub species for anti-erosion forestation in state forest nurseries.
12. Application of soil-friendly types of felling techniques and technologies in forestry.
13. Development of a unified system for monitoring, early detection and disclosure of forest fires and improvement of sanitary status.
14. Adaptation and implementation of new technologies to restore forest soils damaged by fire.
15. Restoration and maintenance of field boundaries and riparian forests by providing periodic flooding, if necessary, temporarily opening dikes and construction of special channels to preserve riparian habitats.
16. Assimilation of eroded and barren lands for the cultivation of alternative crops – medicinal, essential oil, forestry and production of alternative bio-fuels.

Expected results

Stabilized condition of ecosystems and enhanced benefits and services from them.

Preserved and increased productivity of soils.

Reduced sediments in water bodies (rivers, reservoirs, irrigation canals) and decreased levels of water pollution by biogenic elements.

Restored biodiversity and limited risk of inundations, landslides, floods.

Improved visual qualities of landscapes.

Economic stability in agriculture in the long term.

Stabilized employment and improved living conditions.

Mitigated poverty and increased public awareness of the protection of land resources.

Period of application:

2015-2020

Responsible institutions: MAF, EFA

Possible funding sources: State and alternative funding sources – donor organizations, business

Total indicative financial amount of funds needed for implementation of the program II.1: BGN 980 000

II.2. Program “Restoration of irrigated agriculture and water resources protection”

Justification

According to the Third National Action Plan on Climate Change, most climate models indicate a rise in temperature of 2° to 5°C by the end of the century. Permanent drought trends are established, hot summers are expected, and forecasts for Bulgaria outline the reduction of rainfall during the warm half and raising the temperature of the soil, leading to increased crop evapotranspiration.

The Program for rural development for 2014-2020 takes into account the need to develop sustainable structures of agricultural production, promote activities related to quality, added value and innovation in the production, processing and marketing of agricultural products. Within this purpose, investment for individual farms to restore or build new irrigation fields can be supported. Improving irrigation infrastructure outside the farm is also necessary in order to achieve the above objectives. Support of investment for irrigation infrastructure “inside the farm” and “off-farm” should be interconnected to increase the competitiveness of agriculture. Restoration of irrigation systems is directly related to the condition of water bodies in terms of the amount of water needed for irrigation and the measures related to their conservation. Under discussion is a project of a new long-term strategy for the management and development of the irrigation sector /includes irrigation and drainage of agricultural land/, developed by the team of the World Bank under an agreement to provide advisory services to strengthen the competitiveness of agricultural production and design strategies for sustainable management in the irrigation sector and protection from harmful effects of waters between the Ministry of Agriculture and Food of the Republic of Bulgaria and the World Bank signed on March 20, 2014, as amended on 24 July 2015.

The strategy for the irrigation sector guides key stakeholders in the sector to work together for the development of irrigation systems that serve the overall economic interest of rural communities in general and agriculture in particular. The strategy sets the framework for legal and institutional reform that affects deeply the existing organizational structure. It provides for shared responsibility for the management of systems between system operators / service providers, irrigation associations and the state (national and local). Moreover, the strategy provides a time frame for building capacity and confidence in the way in which Bulgaria will manage its irrigation infrastructure.

Objective

The main objective is to create conditions for **the construction and restoration of effective and efficient irrigation by modernizing infrastructure** as an essential precondition for economically viable and sustainable and competitive agriculture in Bulgaria, resistant to climate change and conservation of natural resources.

Measures

1. Engineering and technical – Reconstruction and modernization of irrigation systems built so far after revaluation of their parameters regarding the status of specific water bodies in terms of water quantity / water security /, size of irrigated areas, type of crop and the requirements of modern irrigation technologies and techniques of irrigation and construction of new ones.
2. Development and implementation of new schemes for the distribution of water in irrigation systems, organization and management of irrigation according to changed conditions of land use, limit of water loss in water supply network, and

timely delivery of irrigation water to water users according to the requested volume and time.

3. Development of systems for early prediction of the need for watering and determining the optimal parameters of the irrigation regime.
4. Implementation of efficient water-saving and energy-saving technologies and irrigation techniques.
5. Increasing the efficiency of irrigation through proper moisture preserving technologies.
6. Encouraging users for organized irrigation through their inclusion in the irrigation associations and support of their activities to increase the potential of efficient use of water.
7. Subsidies for small-scale irrigation systems.
8. Utilization of wastewater (domestic and livestock) for biomass production while minimizing the risk to the ecosystem functions of the landscape.
9. Conservation and maintenance of water-protective forests.

Expected results

Increased quantity and quality of production.

Increased soil fertility.

Limited wind and irrigation erosion.

Improved microclimate.

Reduced pollution of surface and groundwater.

Maintained biodiversity (natural resources).

Period of application

2015-2017

Responsible institutions: MAF, Hydro Melioration Directorate, BAS, AA.

Possible funding sources: State budget alternative funding sources – donor organizations, business

Total indicative financial amount of funds needed for implementation of the program II.2: BGN 1.12 million.

II.3. Program “Sustainable use of land resources in disadvantaged areas”¹³

Justification

Along with the socio-economic reasons for the extensive development of disadvantaged areas, a substantial contribution comes from a number of features in terms of land resources such as low natural fertility of soils, insufficient quantity or unevenly distributed water resources, specific climatic conditions, availability of degradation processes. However, there is potential to increase the productivity of land resources and their more effective and varied use which, complying with the principles of conservation, outline good prospects for sustainable development.

13

¹³ Less favored areas (Programme for Rural Development 2007-2013) are mountainous areas with natural constraints and other less favored areas with restrictions other than mountain (bad soil). These areas are defined by the Regulation establishing the criteria for disadvantaged areas and their territorial scope, approved by Decree of the Council of Ministers No. 30 of 15.02.2008, SG 20 of 26.02.2008

Objective

Based on the limitation of the degradation processes, increase of their productivity and/or disclosure and application of hitherto untapped possibilities for the use of ecosystem functions, to limit the impoverishment of the population and migration processes.

Measures

1. Encouraging diversification of economic, agricultural and forestry activities in disadvantaged areas.
2. Introduction of suitable species for planting in semi arid conditions outside Natura 2000 sites.
3. Exploring the opportunities for growing non-traditional for the region and country cultures (including alternative energy ones), development and piloting of technologies for their cultivation.
4. Improving land productivity through appropriate technologies and techniques.
5. Maintaining and increasing the productivity of pastures, meadows and common lands by improving the grass composition, improving and correcting the terrain and humidity conditions (drainage/irrigation), appropriate fertilization, introduction of grazing plot.
6. Application of organic farming, coupled with measures for SLM.
7. Recovery of eroded lands (see Program for limiting erosion processes).
8. Stimulation of natural regeneration and timely reforestation of forests affected by natural disasters;
9. Providing / ensuring more complex spatial structure of plantations (structurally heterogeneous plantations), which will improve their mechanical stability and conservation of ecosystem functions.
10. Increasing biodiversity and ensuring the uneven structure of the plantation.

Expected results

Increased productivity of land resources.

Limited erosion.

Stable ecosystem functions.

Maintained and increased biodiversity.

A wide variety of raw materials and products from ecosystems.

More diversity in the market (including food and pharmaceutical products).

Prerequisites for the development of crafts, tourism and others. activities in the rural economy.

Improved visual qualities of landscapes.

Stabilized employment and improved living conditions.

Mitigated poverty.

Period of application:

2015-2020

Responsible institutions: MAF EFA

Possible funding sources: State and alternative funding sources – donor organizations, business

Total indicative financial amount of funds needed for implementation of the program II.3: BGN 820 000

II.4. Program “Environmentally sound storage and use of waste biomass[□] from agriculture and forestry”

Justification

For Bulgaria and worldwide waste biomass is among the renewable energy sources with the greatest potential due to its high accumulating capability. It includes waste from agricultural, forestry, logging, wood processing and food industry, from utilities, environmental maintenance. Receiving huge amounts of biomass and its uncontrolled disposal causes serious environmental consequences and its under-use – low economic indicators.

Objective

Preservation and utilization of waste biomass in different industries.

Measures

1. Creating cultures of fast-growing and drought-resistant tree species for energy production.
2. Testing stability and production opportunities of some drought-resistant trees and shrubs for anti-erosion purposes and biomass.
3. Use of biomass as an energy source for heat and power, production of biogas and bioethanol.
4. Encouragement of compost production (family/home composting and building of compost centers).
5. Stimulation of the production and use of organic and organo-mineral fertilizers and substrates.
6. Development and implementation of projects for recovery of various types of biomass and construction of pilot projects.
7. Design and construction of manure depots meeting the requirements for environmental protection and preservation of the qualities of waste substrates such as organic fertilizer

Expected results

Clean and attractive environment.

Sustainable options to regulate soil fertility and enhance soil productivity.

Improved sanitary conditions on farms.

Social, economic and political effects.

Period of application

2015-2020

Responsible institutions: MAF, MEW, AA, NGOs

Possible funding sources: State and municipal budget, OPE, OPRD; alternative funding sources – donor organizations, NGOs, business

Total indicative financial amount of funds needed for implementation of the program II.4: BGN 1.05 million.

II.5. Program “Sustainable management of agricultural lands with high natural value¹⁴”

□

The term biomass unites all organic substances of plant and animal origin

Justification

One of the most valuable ecosystems in Bulgaria are part of the agricultural landscape – meadows and pastures that exist as a result of sustainable agricultural practices (grazing and/or haymaking) that have been used for many centuries. Pastures and meadows cover about 30% of agricultural land in Bulgaria, according to statistics in 2004. Most of the grasslands ecosystems in the country are semi-natural. They not only provide resources to feed domestic animals and a number of environmental services, but also a home to species and habitats of national, European and global conservation significance

Currently, the reduction of livestock in Bulgaria reduces the importance of grasslands as a food source for livestock. A large part of the meadows are plowed and converted to arable land, and a significant part of the pastures are abandoned and overgrown with trees and bushes. Other threats of meadows and pastures in Bulgaria are also overgrazing (exploitation), land use changes, erosion and construction. According to the National Strategy for Conservation of Biological Diversity (1995) grasslands and wetlands are the most vulnerable and endangered habitats in the country.

Objective

Preservation of habitats and species of national, European and global conservation significance.

Measures

1. Development of modern classification, passportization and inventory of meadows, pastures and common land in Bulgaria. Creation and maintaining a national GIS database.
2. Inventory and mapping of grasslands and agricultural lands with high natural value (incl. grassland habitats listed in Annex I of the Habitats Directive of the EU (92/43 EC).
3. Restoration of open grass associations through the reintroduction of typical plant variety of wild fauna.
4. Establishment of demonstration farms for sustainable agriculture and management of meadows, pastures and common lands.
5. Identification, development/production and marketing (market) for specific products and services from agricultural systems with high natural value.
6. Sustainable use of meadows and pastures by the introduction of domestic and foreign drought resistant species to extend the grazing period, the introduction of grazing plot and others. - Moved from II.1.20.
7. Limitation of conversions of forests into agricultural land, to prevent carbon losses on changes in land use.

Expected results

Restored and stabilized grass ecosystems of high natural value.

Protected habitats for species of high conservation value (including poultry).

Restored and enriched biodiversity.

Enriched and systematic information for grassland ecosystems in agricultural lands with high conservation value.

Limited erosion and limited risk of inundations, landslides and floods.

Agricultural lands with high natural value: areas of semi-natural grasslands, sheltering species and habitats of national, European and global conservation significance and including mountain pastures and meadows, riparian wetlands, coastal dunes with vegetation outside protected areas.

Stabilized grass ecosystems and enhanced benefits and services of grassland ecosystems.

Additional income for farmers.

Preserved local culture and traditional agricultural practices.

Period of application

2015-2020

Responsible institutions: MAF, MEW, BAS, AA, municipalities.

Possible funding sources: State budget, Enterprise for Management of Environmental Protection Activities, Agriculture State Fund, alternative funding sources – donor organizations, NGOs

Total indicative financial amount of funds needed for implementation of the program II.5: BGN 790 000

II.6. Program “Implementation of agroforestry systems as models for sustainable land use”

Justification

Agroforestry is a form of multifunctional and environmentally friendly use of natural resources, using the benefits of biological interactions created in co-growing trees and/or shrubs with crops and/or livestock.

Agroforestry has extremely favorable conditions for development in the country due to the ongoing socio-economic reform and the presence of many landowners, both in agriculture and in forest areas. A prerequisite for the implementation of agroforestry is the presence of 2.5 million acres of uncultivated land within the agricultural fund, especially in foothill and mountain areas; the need to increase the forest cover, which in some areas of the country is below the critical ecological minimum; the need for rehabilitation and reconstruction of the network of shelter belts in separate areas of the country; the existence of large areas of fragile and low productive forests, subject to reconstruction, as well as international commitments of the country under the Convention on Biological Diversity, to combat land degradation and desertification and to prevent the consequences of global climate change.

Objective

Creating opportunities for the development of agroforestry as a form of multifunctional and sustainable management of natural resources.

Measures

1. Support and promotion of agroforestry technologies, according to the peculiarities of the region, to increase the potential productivity of ecosystems.
2. Application of agroforestry systems to increase the diversity of the local economy and reduce the economic risk of purely agricultural or forestry production under conditions of market competition.
3. Implementation of agroforestry systems as part of measures related to the management of agricultural and forest resources to adapt to climate change.

Expected results

Developed and designed new schemes for economic and environmentally compatible components for use in the agricultural-forestry land use activities.

Functioning alternative systems of land use in regions of the country on the basis of embedded agroforestry techniques and technologies and to enhance the aesthetic condition and biodiversity of the local landscape.

Developed diversified local economy and limited economic risk in terms of the sharp market competition and provision of livelihood for the population.

Applied agroforestry systems for reforestation and adaptation of agriculture and forestry to climate change.

Functioning national structure for research, education, consulting and implementation activities in the field of agroforestry and its promotion.

Responsible institutions: MAF, EFA

Period of application

2015- 020

Possible sources of funding: State budget, EU programs, private sources of financing for business projects;

The total indicative financial amount of funds needed for implementation of the program II.6: BGN 310 000

II.7. Program “New practices for recovery and efficient use of land resources in the disturbed areas”

Justification

Damaged areas are the most critical areas as regards degradation of the affected land resources. Reclamation technologies applied in Bulgaria in disturbed areas (former mostly agricultural and less forest lands), scientifically justified and meeting the technical requirements as a whole, have led to a situation of these territories, which requires both keeping their continuing application and improving compliance with the European requirements as well as searching for new ways to integrate reclaimed landscapes in modern economic activities. The pace of reclamation is unsatisfactory. The barriers are formed mainly due to shortage of funds. Restoration of damaged areas is an indisputable need because of their continuing and significant strong negative impact on land resources and ecosystems.

Objective

Minimizing or eliminating the sources of pollution and their harmful impact on the land resources, and limiting transport of pollutants. Implementation of reliable modern practices that provide good results on the visual qualities of the landscape and more options for future use of the rehabilitated areas.

Measures

1. Adaptation and implementation of new technologies for technical and biological reclamation of disturbed areas.
2. Developing and implementing technologies to eradicate or minimize pollution of the water without risk limits in areas of extraction of MR.
3. Promoting effective production and limiting the wasteful consumption of raw materials and natural resources.

Expected results

Removed or limited contamination of land resources in the damaged areas.

Reduced or eliminated impact of pollution sources on land resources.

Strengthened functions of land resources.

Restored and enriched biodiversity and reduced risk to human health.

Economical and environmentally friendly production cycle.

Opportunities for the production of raw materials, energy.

Landscapes restored and adapted to various uses.

Period of application:

2015-2020

Responsible institutions: MEW, ME, BAS, AA, Universities.

Possible funding sources: State budget, OP E OP RD; alternative funding sources – donor organizations, business

Total indicative financial amount of funds needed for implementation of the program

II.8: BGN 450 000

The total cost of implementing the measures under direction II. “Preserving and enhancing the potential of land resources and their sustainable use” - BGN 6.31 million

Strategic sector III: Science and education in support of policies for sustainable land management and combating desertification

The direction **Science and education in support of policies for sustainable land management and combating desertification** has developed three programs that cover basic measures needed for education at all levels – scientific, information and application security measures for sustainable land management and participation in international processes for exchanging knowledge, know-how and good practices in agriculture and forestry in Bulgaria. Their implementation will contribute to more effective cooperation between scientific and educational communities

Programs:

III.1. Program “Development and incorporation of educational programs for sustainable management of land resources at all levels of the education system”

Justification

Natural and climatic conditions, diversified soil cover and traditions in agricultural production are the basis for a stable development of agriculture and forestry in Bulgaria. The large number of specialized agricultural schools, colleges and universities that train students in disciplines that relate to agriculture and forests, provide a significant number of educated professionals in these areas. Although in the curricula of primary and secondary schools is included training on key issues of the living environment, and colleges and universities with agricultural orientation have many disciplines in separate branches of agriculture and environment, in the curricula there are no sections on sustainable land management. So education in Bulgaria does not form in students knowledge on the conservation and sustainable use of land from agricultural and forest areas, on combating land degradation, on the effective management of irrigation regimes of the crops and the obligations and rights of land users, so they could gain practical experience in the application of best practices in agriculture and forestry.

Objective

Enriching the existing curricula at all levels of education with sections for the formation of new knowledge on sustainable management of the environment components, including activities for biodiversity conservation, combating desertification and predicting climate change, which prepare specialists on sustainable land management.

Measures

1. Study of the environment, capacity and readiness to integrate the principles of sustainable land management in the curricula of specialized vocational schools;
2. Enrichment of the curriculum and development of masters and doctoral programs on sustainable land management in universities;
3. Development of modern textbooks and teaching aids for vocational secondary schools, colleges and universities in accordance with the curricula for training in sustainable land management;
4. Developing specialized training programs on economic valuation of activities under sustainable land management and combating desertification;
5. Preparation of trainers and teachers in educational programs for farmers and specialists with secondary and higher education in the field of SLM.

Expected results

Created new curricula and plans of secondary agricultural schools, colleges and universities, including sections on SLM.

Issued textbooks, brochures, educational help and training materials on the subject for SLM.

Availability of specialists with secondary and higher education, prepared for active participation in the SLM tasks.

Period of application

2015-2020

Responsible institutions

MAF, MEW, Ministry of Education, AA, BAS, Universities / Institutes

Possible sources of funding: State budget, OP SESG, EMEPA of MEW, donor organizations

Total indicative financial amount of funds needed for implementation of the program III.1: BGN 131 000

III.2. Program “Scientific, information and application security measures for sustainable land management”

Justification

Research in the field of agriculture and forestry has a long tradition and is concentrated in research institutes of the Agricultural Academy (21 institutes and centers and 27 regional stations of scientific applications service), two agricultural colleges, 4 universities and four research institutes of BAS. Bulgaria has over 1500 scientists and over 3000 highly qualified professionals working and developing different branches of agriculture and forestry. A shortcoming of the research is the inability to quickly form scientific results that are useful and implement them in practice, and to actively participate in international programs financed by EU funds. Not enough scientific programs are directly aimed at the practice of SLM and the preparation of materials for information support of the measures in this activity.

Objective

Expanding and enriching the scientific and applied activities for the implementation of measures for SLM, as well as offering an information system of applied knowledge for the practice of agricultural and forestry industries and the training of producers.

Measures:

1. Development and implementation of an integrated information system, including practical knowledge and examples of good agricultural practices for sustainable land management and combating desertification in Bulgaria.
2. Preparation of information packages of knowledge and applied research programs for municipalities, NGOs, regional administrations and academics in sustainable land management.
3. Conducting scientific seminars related to the consolidation of land in the agricultural and forest land properties, with the development and stabilization of production in the agricultural and forestry holdings.
4. Development and implementation of programs for sustainable land management in disadvantaged areas based on evaluation and analysis of changes in environmental and socio-economic conditions in the country.
5. Development and implementation of applied scientific research in the field of agroforestry to develop the basic principles in the selection of cultivation and compatible components.
6. Development and implementation applied research using landscape approach to restore forest areas and its promotion as a new type of system for SLM, that has proved its effectiveness.
7. Establishment of a system to assess the agrochemical status of the land and fertilization recommendations for the conservation and improvement of soil fertility.
8. Creation of a strategic sector “Sustainable Land Management” at the Scientific Research fund of MES.
9. Purposeful use of existing scientific capacity of the state administration in the development of criteria and indicators for assessing the sustainability of ecosystems against desertification.

Expected results

Built integrated information system “applied knowledge and examples of good agricultural practices for SLM”.

Established association between basic scientific institutes, universities and agencies in the field of sustainable land management.

Created strategic sector “Sustainable Land Management” to finance projects at the “Scientific Research” National Council of MES.

Period of application

2015-2020

Responsible institutions

MAF, EFA, MEW, Ministry of Education, AA, BAS, universities with a focus on sustainable land management.

Possible sources of funding

State budget, OP SESG, EMEPA of MEW, International Projects of Horizon 2020, Life, donor organizations

Total indicative financial amount of funds needed for implementation of the program III.2: BGN 305 000

III.3. Program “Participation in international processes for exchanging knowledge, know-how and best practices for sustainable land management”

Justification

The active participation of the Bulgarian scientific community in international organizations for environmental protection provide a steady stream of research results and knowledge about the achievements in the field of agriculture and forestry, and trends in the development of SLM practices. A setback for active scientific contacts and exchange of knowledge are limited language skills and financial resources available to research institutes and universities. Urgent measures are needed to strengthen these contacts through the Internet, to participate in targeted workshops and other joint activities with scientists, farmers and European countries producers.

Objective

Expanding and enriching cooperation between the research teams of Bulgaria and the European countries in the field of agriculture, including the creation of joint teams for applying know-how as well as participation in a European system for soil monitoring.

Measures

1. Training of scientists and specialists in sustainable land management by BAS and 6 agro-technology parks of AA with the participation of international consultants.
2. Participation of Bulgarian teams in the activities of the European Soil Bureau and other international organizations / structures working on issues of sustainable land management.
3. Participation of academics and specialists in the field of SLM in international forums and events, promoting and strengthening international links and their involvement in a transnational network of experts working in the field of SLM.
4. Conducting international study tours for professionals from public administration, academia, business and non-profit sector, to exchange experience and to get acquainted with best practices implemented by countries in the process of realization of their NAP for SLM.

Expected results

Built training centers for sustainable land management in partnership with European centers for consultation and training.

Increase of the qualification of young scientists and specialists in the education system of the European Soil Bureau, including Summer soil school, programs for short and long-term fellowships and workshops on SLM.

Established digitized map of soil resources in Bulgaria in scale 1: 250,000 as part of the European soil map of the same scale, organized by the European Soil Bureau.

Period of application

2015-2020

Responsible institutions

MAF, MEW, AA, BAS.

Possible sources of funding

State budget, EMEPA of MEW, Scientific programs of the EC, Programs of the European Soil School, BAS

Total indicative financial amount of funds needed for implementation of the program III.3: BGN 51 000

The total cost of implementing the measures under direction III. “Science and education in support of policies for sustainable land management and combating desertification” - BGN 487 000

Strategic sector IV: Integrating and implementing policies for SLM locally

Programs:

IV.1. Program “Review and inclusion of SLM options in the municipal development plans and programs”

Justification

The Municipal Development Plan (MDP) is the main programming document of local government. It justifies the need to conduct specific activities for which funding is provided from the municipal budget or by external donors. Its attachment to the respective territory is carried out through the general plan of the municipality and the specialized plans. While some development issues of agriculture and forestry are part of the analysis and the activities in the municipal development plans, sustainable land management is not well practiced in them.

Objective

Introducing the approach of sustainable land management in the programming documents at the municipal level.

Measures

1. Information campaign for municipalities presenting the SLM and the benefits of its application in practice. Training of experts from the municipalities to get acquainted with SLM.
2. Inventory and analysis of the state of land resources, municipal property and updating the strategic documents at local level – MDP and municipal programs for environmental protection

Expected results

All municipalities are informed and trained and have introduced SLM in MDP by the end of 2015. Plans of municipalities (general and specialized) were commissioned and developed by the end of 2017.

Period of application

2015-2017

Responsible institutions

For information and training – MEW, MAF Municipalities.

Possible sources of funding

State and municipal budget; NPRRS, OP E, OP RD, external donors

Total indicative financial amount of funds needed for implementation of the program IV.1: BGN 210 000

IV.2. Program “Management and use of resources that are municipal property in accordance with the principles of SLM”

Justification

Municipalities own agricultural lands, in forest areas, water resources that are managed and used in most cases “piece by piece” and ineffectively. The municipal remaining fund is

fragmented and is rented or leased for a period of not more than three, respectively four years, which hampers the implementation of SLM.

Objective

Rational and environmentally friendly use of land resources, providing steady income for local people.

Measures

1. Promoting investment in sustainable practices including cultivation of medicinal plants and alternative cultures in low municipal lands.
2. Maintenance of municipal pastures and common lands.
3. Afforestation of lands unfit for agricultural use.
4. Building local composting facilities for waste of plant and animal origin and use of compost to improve the fertility of the land.
5. Implementation of actions to prevent the harmful effects of water on the territories (strengthening the walls of the dams that are municipal property, dikes and facilities for river beds within the settlements).

Expected results:

All municipal lands are used in accordance with the principles of sustainable land management.

Period of application:

2015-2020

Responsible institutions:

Municipalities, MAF, MEW.

Source of funding:

Municipal budget, OPE

Total indicative financial amount of funds needed for implementation of the program IV.2: BGN 750 000

IV.3. Program “Strengthening the role of municipal administrations for transfer of policy options and best practices for SLM”

Justification

Local authorities are closest to the people, know their problems and needs. Users of agricultural land want to achieve maximum economic efficiency and stability of production, but this should not adversely affect the environment. They are not well informed about modern practices for SLM, the opportunities to apply for funding for their ideas.

Objective

Increasing knowledge and awareness of land users for SLM.

Measures:

1. Training and dissemination of information at the municipal level for financing opportunities for SLM activities of national and international sources.
2. Assistance in providing advice and consultation on development of traditional, alternative and organic farming, including credit and subsidies for agricultural production.
3. Organization of activities to inform the owners and operators of contaminated land for restrictions on their use; control of compliance with those restrictions.

Expected results

Agricultural land users are informed, they use the available financial resources and apply modern practices for SLM.

Period of application:

2015-2020

Responsible institutions:

Municipalities, MEW, MAF

Source of funding:

State and municipal budget.

Total indicative financial amount of funds needed for implementation of the program IV.3: BGN 70,000

The total cost of implementing the measures in direction IV “Integration and implementing policies for SLM at local level” - BGN 1 030 million

Strategic sector V: Improving information sharing and public participation in the processes of decision-making for sustainable land management and combating desertification

An important element of the implementation of the NAP is the inclusion of the public in decision-making, awareness raising and the role of NGOs in terms of SLM. The main part of the programs in this strategic sector is aimed at enhancing the capacity of stakeholders, information support for sustainable land management, building a network of rural areas and the inclusion of the issues of sustainable land management, the involvement of the public in public campaigns and others.

Provided performance indicators will help track progress, the quality of implementation and financial support for the activities during the implementation of the proposed programs.

Programs:

V.1. Program “Information support for sustainable land management at national and local level”

Justification

In Bulgaria, after the adoption of the Law on Access to Public Information, there is an increasing interest in specialized information aimed at a broader public. With the advent of new information technologies, there are found exceptional opportunities to provide information on sustainable land management. Of course, the need for specialized information to benefit farmers, landowners, including the various activities aimed at rural development, is also growing.

Objective

Achieving good information supply to support the process of decision-making at national and local level on SLM.

Measures

1. Creation of an information platform (Internet-based), which presents the available and relevant to SLM national strategies and database with a wealth of information, news and events, institutions and provides information on the subject to a wider range of stakeholders.

2. Creation of information centers for training and raising awareness of landowners, professionals and the public in the field of SLM.
3. Attracting media to promote the process of SLM.
4. Implementation of activities on communication strategies under NAP.

Expected results

Established information platform for sustainable land management.

Established resource center for training, qualifications of land owners and professionals in the field of SLM.

Rubrics in the media aimed at raising public awareness of SLM

Period of application

2015-2020

Responsible institutions:

MAF, MEW, the municipalities, NGOs

Source of funding

State budget, foreign donors, private business

Total indicative financial amount of funds needed for implementation of the program

V.1: BGN 280 000

V.2. Program “Building networks of NGOs in support of SLM”

Justification

According to the regulations for rural areas of the EU, based on which Bulgaria has developed its – Program for rural development for the period 2014-2020, our country must continue to maintain the established from the previous period National Network for Rural Development, which unites all the organizations and administrations working in the field of sustainable rural development. Each national network should operate on the principles enshrined in the European Agricultural Convention, where emphasis is placed on horizontal and vertical partnerships between national and local authorities, and on local partnerships between the public, private and civil sectors, based on the experience of the LEADER initiative of the EU.

In this sense, the National Network for rural development creates conditions for decision-making, supported by appropriate research activities and competent network within and between rural areas in Bulgaria; initiatives will encourage a “bottom-up” approach and coordinated action by the stakeholders in the protection of their common interests on the basis of access to information, knowledge and technologies in the field of agriculture, sustainable land management and rural development.

Objective

Creating opportunities and networking for sharing information, best practices and knowledge for SLM.

Measures:

1. National survey of attitude and willingness of NGOs to work on SLM.
2. Inclusion of SLM activities in the priorities of the National Rural Network.
3. Participation in international networks related to SLM.

Expected results

National network with activities included under SLM for rural development.

Increasing the number of best practices in sustainable land management, shared with the participants on the Web.

Period of application

2015-2020

Responsible institutions

MAF MEW, NGOs

Possible sources of funding

State budget, foreign donors, private business

**Total indicative financial amount of funds needed for implementation of the program
V.2: BGN 185,000**

V.3. Program “Developing and organizing public campaigns to raise public awareness in relation to the SLM”**Justification**

Conducting public campaigns is one of the natural activities implemented by NGOs. Civil society is a mediator between the policies of the institutions and the understanding of the ordinary citizen. Whether the messages reach the people to whom they are addressed is an important question for which NGOs operate. In rural areas, access to information is limited, the population is aging, Internet access is limited or not used at all. So for NGOs the means by which information is presented to its users are very important. On the other hand, the state could delegate more powers to the NGOs and allocate financial resources to support activities related to the awareness of population on issues regarding SLM.

Objective

Organizing and conducting special campaigns specifically aimed at the conservation and sustainable land management. Creating messages aimed at specific target groups in order to raise public awareness.

Measures

1. Conducting an information campaign for the introduction of good agricultural practices.
2. Organizing public campaigns to support and introduce organic farming.
3. Conducting public campaigns to celebrate the significant international events related to the UNCCD.
4. Dissemination of results and good practices in the country in the implementation of NAP.

Expected results

Realized campaigns for the introduction of organic farming, good agricultural practices.

Brochures, leaflets, developed and distributed.

More people are included in the celebrations of various national and international events related to environmental protection, UNCCD, etc.

Period of application

2015-2020

Responsible institutions

MEW, MAF, NGOs.

Source of funding

State budget, private businesses, international donors.

**Total indicative financial amount of funds needed for implementation of the program
V.3: BGN 115 000**

V. 4. Program “Strengthening the capacity of NGOs in the implementation of SLM policies”

Justification

Among the NGOs working in rural areas, there is lack of interest, financial resources and capacity to deal with the problems of SLM. Despite the experience in gained recent years in project management, this is not sufficient for management of projects funded by the EU. The important role NGOs play and will play on the fight against desertification, soil drought, soil degradation and water management is not yet sufficiently recognized.

Objective

Integrating topics related to SLM in the training of rural development aimed at building capacity among NGOs and their socio-economic partners at local level for participation in NAP.

Measures

1. Exploring opportunities and funding to attract experts to support the activities of NGOs working in rural areas.
2. Organization of seminars, trainings, round tables to raise awareness on SLM among NGOs and local communities.
3. Implementation of pilot projects for the implementation of best practices in sustainable land management.

Expected results:

Increased capacity of NGOs and their socio-economic partners in all planning regions in the country.

Period of application:

2015-2020

Responsible institutions:

NGOs, MEW, MAF, BAS, research centers.

Possible sources of funding:

State budget, NGOs

Total indicative financial amount of funds needed for implementation of the program

V.4: BGN 195 000

V.5. Program: Promotion of public-private partnerships for the implementation of measures for SLM”

Justification

Usually PPP is characterized as a partnership between the public and private sectors for the purpose of realization of a project or service traditionally provided by the public sector. Through this partnership, the strengths of each sector (public and private) are complementary in providing service or providing public use of an object in favor of a particular community. Public-private partnership is characterized by certain advantages for both the public and private sector in the implementation of the defined task – the subject of the partnership. By allowing each sector to do what they do best, services and infrastructure are made available to the public in the most economically efficient way.

Objective

Implementation of PPP to increase the capacity of all stakeholders in SLM.

Measures

1. Analysis of the training needs of PPP, oriented toward local communities and private partners, development of training modules on various topics associated with activities pertaining to the implementation of PPP, trainings, etc.
2. Including issues and activities related to sustainable land management in the work of existing business centers to act as information centers for potential investors.
3. Support for the preparation and development of business services related to SLM.
4. Provision of expert and technical assistance to potential public-private partnerships and the implementation of pilot projects in the field of SLM.

Expected results

PPP trainings in the field of SLM.

Business centers offering services in the field of SLM.

Period of application

2015-2020

Responsible institutions

Private businesses, NGOs, municipalities, MEW, MAF.

Source of funding

State and municipal budget, private business.

Total indicative financial amount of funds needed for implementation of the program V.5: BGN 205 000

The total cost of implementing the measures in the direction V “Improvement of information exchange and engaging the public in the processes of decision-making for sustainable land management” - BGN 980 000

Part IV. Resources, economic mechanisms and schemes to support the implementation of the National Action Plan for SLM and Combating Desertification

The total indicative financial resources required for implementation of the national action plan for sustainable land management and combating desertification amounts to BGN 8.556 million.¹⁵

4.1. Resources for implementation of NAP for SLM

The National Action Program 2014-2020, as an annual range, is linked to the programming cycle of the EU, which creates good prerequisites for the overall coordination of the timing of the NAP and other national strategic documents of Bulgaria, prepared for the same time horizon. Another positive effect is the direct opportunity to use funding that Bulgaria will receive from the Structural Funds for implementation of the NAP.

Activities and measures that can achieve the goals and objectives of the National Action Program for sustainable land management and combating desertification are related to present and future strategies, programs, projects and others. Some of them are directly aimed at the search for approaches and mechanisms, while others – indirectly contribute to this, so that they can all be seen as opportunities, mechanisms and financial resources for the implementation of the NAP for SLM.

The financing of the considerable number of strategic documents will be the task of the state. Relevant government bodies – the Ministry of Agriculture and Food, the Ministry of Environment and Water, the Ministry of Regional Development and Public Works, the Ministry of Finance will have to contribute to their accomplishment through the available financial resources from the European Union and through subsidies of the state budget.

There is a serious emphasis on the role of regional administrations and municipalities in the implementation of the NAP for SLM. It is the right and responsibility of local government to decentralize decision-making on the implementation of the NAP according to local priorities. An immediate objective is the involvement of the unemployed in realization of measures for SLM and CD. The size of state financing will be subject to coordination within the budgetary procedure and will be determined according to the budget for the year.

Another important element to ensure the necessary financial resources for the implementation of activities within the NAP for SLM is the possibility for NGOs to mobilize additional resources for the implementation of individual activities and measures of the NAP. This can be achieved provided that there are good mechanisms by public authorities to motivate and encourage the participation of the third sector in activities related to sustainable land management, informing the public and promoting the aims and objectives of the NAP for SLM.

Along with the necessary financial resources for carrying out activities in the NAP, of utmost importance is the availability of technical equipment and technological security, relevant and reliable databases, advanced approaches and systems for monitoring, early warning and assessment of the available natural resources, created on the basis of a scientific and applied principle and human resources to work on the construction of public and individual consciousness for the protection of land resources and participation in decision-making.

15

Initially, in the development in March 2006 its cost was BGN 13.492 million, and in the update in May 2014 a number of activities were excluded because they were already implemented or obsolete!

Among the important resources available to underpin the successful implementation of policies related to SLM are human resources in the country. They play an important role and contribute to the construction of public and individual consciousness for the protection of land resources and visionary formation and effective implementation of policies for the preservation of the environment.

Bulgaria has a significant potential with experience and capacity in terms of science. This condition is undoubtedly a good prerequisite for successful and adequate formulation of policies and implementation of working methodologies for sustainable land management. The strengthening of the NAP is particularly important to develop tools and approaches that will facilitate its integration into national initiatives in other sectors of social and economic life. Besides, connections are to be established with existing similar frameworks for the implementation of ideas for SLM and CD in neighboring countries with similar problems. In this respect, the role of the scientific community is also crucial

Horizontal principle and a major resource through which can be mobilized many potential opportunities to build on existing achievements and effective cooperation is the partnership – between institutions, public and private, between municipalities, as well as increased international cooperation.

4.2. Economic mechanisms to promote sustainable land management and combating desertification

Sustainable land use can be managed through various schemes and measures. The emphasis, however, should be placed on incentives and less on administrative restrictions and sanctions because they have much lower performance compared to the incentives. Measures imposing restrictions to producers should be compensated by the state. Moreover – sometimes incentives are not attractive enough, because in a market economy the main driving motive is profit. Even when they exist, there is the option to a type of investment, which will bring the highest return. Measures to combat desertification have low profitability but are of great importance to society, which is why they need adequate state policy and support.

To encourage wider participation in the NAP of SLM, it is appropriate to create conditions and mechanisms for easy and affordable access of beneficiaries to financial resources, due to lower profitability and slower return on capital: preferential treatment for getting credit; interest free or low interest loans; longer grace period, state subsidy for part of interest and more.

The financial leasing scheme provides micro or small enterprises with access to otherwise inaccessible financial resources, enabling them to increase their financial rating for banks. The accompanying elements of the scheme for business education and consulting increases the entrepreneurial potential of owners through professional marketing, finance and business planning. Offered business consulting support the process of developing business plans for funding.

It is important for stakeholders to contribute to easier access to small and medium-sized credit lines and maintain partnerships with the private sector to increase the volume of investments and stimulate actions pertaining to the implementation of the Convention at local level.

The funds collected under environment protection laws and regulations, should be used to help businesses and local authorities in carrying out activities of NAP for SLM. Funds can be mobilized through ecotourism, favorable trade regimes or use of participatory processes to attract NGOs, local groups, private organizations through various initiatives.

4.3. Policies, schemes and sources of funding for sustainable land management

4.3.1. Financial opportunities under the EU Structural Funds

EU provides funding opportunities for environmental protection through the following funds:

- European Agricultural Fund for Rural Development; European Fund for Maritime and Fisheries;
- Cohesion Fund;
- Financial instruments for Environment;
- European Regional Development Fund

All of them in varying degrees have a direct or indirect orientation, integrated across sectors or areas of environmental protection. The two main funds supporting mainly or solely environmental protection are the financial instruments for the environment plus the Cohesion Fund, and in a sectoral aspect of greatest importance to agriculture, forestry and fishing sectors are the European Agricultural Fund for Rural Development and the European Fisheries Fund.

In practice, funding under the Structural Funds and the Cohesion Fund to Bulgaria will be implemented through programs and national strategic plans. Those who are directly or indirectly linked to the sustainable management of land, are: Operational Program Environment (co-financed by the Cohesion Fund and the European Regional Development Fund) and the Operational Program Regions in Growth (financed by the European Regional Development Fund). Therefore one of the main financial resources that can provide to some extent the implementation of the NAP are the funds from the EU financial instruments, mainly through these strategic and operational documents.

The total amount of funds under the *Operational Program Environment 2014-2020* was BGN 3 462 564 945, and the next programming period will again have six priority axes - "Water", "Waste" and "Natura 2000 and biodiversity", "Prevention and management of the risk of floods and landslides", "Improving air quality", to be supported with funds from ESIF. OPE provides funding of part of the country-specific challenges identified in the priority Environmentally-friendly and resource-efficient economy.

OPE has provided financial resources for the implementation of one of the specific challenges (under priority axis "Water"): *"improving waste water treatment and quality and management of resources for drinking water in a strategic and cost-effective way"* - through measures for building water and sewerage infrastructure aimed at agglomerations with over 10 000 population equivalent, identified as priorities in the river basin management plans and regional master plans for water supply, in order to contribute to fulfilling the objectives of the Strategy for the development and management of water and sewerage in the Republic of Bulgaria for the period 2014-2023.

With regard to the challenges in the Waste sector: "In order to fulfill its obligations in relation to Community law and to reach a recycling target of 50% by 2020, and the objectives set out in the Road map on Resource Efficiency", OPE provides funding measures to achieve this objective in relation to household waste. The measures are consistent with the recommendation of the EC services that "Priority must be given to waste prevention, reuse and recycling, and the needs of disposing of waste must be reduced".

Priority Axis 3 of the OPE provides financial resources in respect of the challenges associated with support for the sustainable management and restoration of Natura 2000 network, restoration and protection of wetlands and rivers, preparation of management

plans, capacity building of the bodies responsible for Natura 2000, as well as raising awareness among various stakeholders and stopping the loss of biodiversity. Measures identified in the priority axis are based on the National Priority Framework for Action for Natura 2000 (NPRD), the EU Strategy for biodiversity by 2020 and national legislation.

Priority Axis 4 “Prevention and management of the risk of floods and landslides” is aimed at implementing the recommendation of the European Commission to improve flood prevention by assessing the flood risk, mapping and development of instruments for monitoring, support to prevent flooding in river basins dealing with natural disasters, including early intervention measures.

OPE 2014-2020, addresses needs in terms of air quality, according to the challenges associated with improving air quality through the application of adequate long-term programs and short-term action plans depending on the sources of pollution (urban transport, emissions of industry traffic, domestic and central heating, etc.) - by measures under Priority axis 5 of the program.

Operational Program “Environment 2014-2020” (OPE 2014-2020) is one of the operational programs of the Republic of Bulgaria, prepared in implementation of the strategy “*Europe 2020*” of EU for smart, sustainable and inclusive growth. These three complementary priorities suggest building an economy based on knowledge and innovation, promoting a greener and more competitive economy with more efficient use of resources and stimulating the economy with high employment levels, leading to social and territorial cohesion. OPE 2014-2020 was primarily aimed at implementing the priority of sustainable growth of the strategy “Europe 2020” and in particular the following elements of the definition of sustainable growth – building a competitive low carbon economy in which resources are used in an efficient and sustainable manner:

- protecting the environment, reducing emissions and preventing biodiversity loss;
- taking advantage of Europe's leading position in the development of new environmental technologies and production methods.

OPE 2014-2020, contributes to the implementation of “Europe for efficient use of resources” - one of the two flagship initiatives for sustainable growth within the strategy Europe 2020. Activities to be financed under the operational program are in response of the Guidelines on the integration of environmental policy and policy on climate change in the funds for CP, CAP and MDP 2014-2020 – phase Programming of funds to the Common Strategic Framework, prepared by the Ministry, agreed with the responsible departments and approved by the Council of Ministers. The document applies an integrated approach for the implementation of environmental policies and climate change, and in particular for effective use of resources by proposing concrete measures in the operational programs for 2014-2020. MEW developed a second phase of the Guidelines – phase Implementation of the Agreement for partnership and programs in the 2014-2020 period.

OPE 2014-2020 will contribute to reducing greenhouse gas emissions in the country, which will support the implementation of the strategy Europe 2020 for a 20% reduction in greenhouse gas emissions compared to 1990 levels. Such measures are provided in connection with the treatment of waste water from settlements, in particular the construction / rehabilitation / reconstruction of facilities for treatment of sewage sludge of WWTP and delivery of necessary equipment, incl. already constructed WWTP (acc. the Concept for treatment of sludge from waste water treatment plants at national level) – with priority to improve their quality indicators, with a view to their subsequent use for energy purposes. Implementation of these measures will contribute to the implementation of the National Action Plan on Climate Change the 2013-2020 (NAPCC) and will have a direct effect on reducing greenhouse gas emissions.

Establishment of temporary and permanent jobs in pursuance of the OPE will contribute to achieving the priority of inclusive growth strategy to achieve the 75% employment rate for women and men aged between 20 and 64 years by 2020.

The LIFE program of the European Commission to finance projects in the field of environment estimates approximately € 2.592 billion for financing projects in the field of environment, focusing on nature conservation and biodiversity, resource efficiency, and environmental management and information in connection with it. It will also support better governance, dissemination of information and awareness on environmental issues.

4.3.2. Economic mechanisms and instruments applied by the Common Agricultural Policy (CAP)

Key funding sources of CAP of EU are the European Agricultural Fund for Rural Development and the European Fund for Agricultural Guarantee. Funds, financial instruments and mechanisms related to the implementation of the CAP, will be one of the most important for the support for SLM and combating desertification.

The reform of the Common Agricultural Policy (CAP) of the European Union introduces a multi-layered structure of direct payments in 2014-2020.

The total amount of financial resources for direct payments set for Bulgaria for 2014-2020 is BGN 10.4 billion.

4.3.2.1 Direct payment schemes in Bulgaria

Single Area Payment Scheme (SAPS)

SAPS is the main support scheme for direct payments. Support is based on a hectare of eligible agricultural area on which the farmer carries out an agricultural activity.

Arable lands, grasslands and perennials are eligible for support.

The areas stated for support must produce agricultural products to be grazed or to be maintained in a condition that makes them suitable for cultivation or grazing.

To obtain support under SAPS, the eligible area of the holding should be at least 0.5 ha and plots should be not less in size than 0.1 ha.

Agricultural practices beneficial for the climate and the environment (green direct payments)

One of the objectives of the reformed CAP is to improve the environmental performance of agricultural land by introducing a mandatory component of the “greening” of direct payments, through which are supported agricultural practices beneficial for the climate and the environment.

The budget allocated for green payments amounts to 30% of the ceiling on direct payments. Greens payments apply from the 2015 campaign.

Farmers entitled to receive SAPS payments must observe in all their hectares, eligible for support, agricultural practices beneficial for the climate and the environment. For the purposes of greening, these practices are: crop diversification, maintenance of permanent grassland and maintaining ecologically targeted areas.

Maintenance of existing permanent grassland

Farmers should not transform and/or plow ecologically sensitive permanent grassland (PG) located in Natura 2000.

Environmentally focused areas (EFA)

Maintenance of ecologically targeted areas is applied from 2015 on farms with arable land over 15 hectares, claiming support under SAPS. At least 5% of the declared arable land should be occupied by environmentally focused areas. According to the national specifics,

Bulgaria applies the full list of EDA laid down in Regulation (EC) No. 1307/2013, with the exception of traditional stone walls, forest farming systems and wooded areas.

Scheme for young farmers

Encouraging the entry of young farmers in the agricultural sector is intended to be implemented through a separate scheme. Eligible are farmers who have started farming activity in the last five years and during the first year of application are not more than 40 years old. Support is for the first 30 hectares of the farm with a margin of 25% of the SAPS payment. The requirement for young farmers is to have professional skills and knowledge related to agriculture.

Schemes for support coupled with production

Support for vulnerable and priority sectors shall be implemented through the implementation of schemes for support coupled with production. The budget allocated for the coupled support amounts to 13% of the ceiling for direct payments for sectors “Livestock” and “Fruits and Vegetables” and 2% coupled support of protein crops.

Scheme for small farmers

In order to increase the competitiveness of small farms and ensure complementarity of income applies, a separate scheme is applied for the smallest farms. The amount of the annual payment scheme for each farmer is determined by the amount of support that the candidate would receive under direct support schemes for which it is admissible, but not less than € 500. The support scheme for small farmers replaces all other support schemes for direct support but does not replace the payments under the transitional national aid. Application for participation in the scheme is carried out by submitting an application for support for 2015 and additional application for participation in the scheme submitted before October 15, 2015. For participation in the scheme applications can be submitted only in 2015.

Cross compliance

Cross compliance is a set of rules to the farmers that need to be met so that they could receive full direct subsidy.

Cross compliance consists of:

- 1 Statutory Management Requirements (SMRs) under EU law
- 2 Standards for good agricultural and environmental conditions (GAEC).

Standards and requirements are grouped into three areas:

1. Environment, climate change, good agricultural condition of land;
2. Public health, animal health and plant health;
3. Animal welfare.

In Bulgaria GAEC standards are determined by the Minister of Agriculture and Food.

GAEC standards include:

1. maintenance of buffer strips along water courses without application of nitrogen-containing fertilizers;
2. obligation for farms with arable land over 5 hectares in total area of crop rotation to include at least 30% cultures with confluent surface, with the exception of areas for the production of tobacco;
3. to limit the erosion of areas with a slope, the following is applied: - for arable land – soil tillage is done perpendicular to the slope or contour; - for perennials – strengthening of grass between the rows by partial/full grassing or sowing/planting other crops and/or soil tillage is done perpendicular to the slope or contour;
4. ban on burning of stubble;

5. an obligation to preserve and maintain existing field boundaries (hedges) and terraces within the farm;
6. obligation for permanent pastures and meadows to be protected from the encroachment of unwanted vegetation – bracken (*Pteridium aquilinum*), hellebore (*Veratrum* spp.), tree of heaven (*Ailanthus altissima*), false indigo bush (*Amorpha fruticosa*) and other.

The rules under statutory management requirements (SMRs) are not new or additional requirements, and represent a sample of certain rules that are important from the applicable sectoral European and/or national legislation. This means that with the SMRs for farmers no new criteria are scored, but are followed up the already defined and enforceable rules on environmental, veterinary, phytosanitary legislation, legislation on food and feed law.

Cross-border cooperation of the Republic of Bulgaria with Serbia, Romania, Turkey, Greece and Macedonia

One of the priorities of this program is the environment. For the purposes of the programs are prepared Joint programming documents between stakeholders. Implementation is possible of technical assistance and investment projects, including municipal projects.

CBC programs of the Republic of Bulgaria with Serbia, Romania, Turkey, Greece and Macedonia, as well as transnational cooperation programs Balkans – Mediterranean Sea and Danube for 2014-2020, and the Program for interregional cooperation INTERACT 3. The funds for these programs are granted by the European Union through the IPA and the European regional Development Fund (ERDF) and co-financed by the national budgets of partner countries.

The total budget of the Programme Romania – Bulgaria 2014-2020, is € 258 504 125, including funds from the European Regional Development Fund (ERDF) amounting to € 215 745 513. National co-financing amounts to 13% of the approved budget of the Bulgarian project partners. The program includes the following six priority axes: “Well connected region”, “Green Region”, “Safe Area”, “Qualified and Inclusive Region”, “Effective region” and “Technical Assistance”.

The process of formal negotiations with the European Commission for the approval of the Programme Greece-Bulgaria the 2014-2020 continues. It is envisaged that the total budget of the Programme Greece-Bulgaria 2014-2020 will be € 129 695 569, ERDF funds are € 110 241 234. National co-financing amounts to 15% of the approved budget of the Bulgarian partners. The program includes the following five priority axes: “Competitive and Innovative Cross-Border Region”, “Sustainable and Adaptable to Climate Border Region”, “Cross-border Region with Improved Interconnection”, “Cross-border region with greater social inclusion”, “Technical Assistance”.

The program Bulgaria-Turkey 2014-2020, includes three priority axes - “Environment”, “Sustainable Tourism” and “Technical assistance”, and the general budget is € 29 642 984, of which 22.19 million Eur from the EU national co-financing is 15% of the approved budget of the Bulgarian partners.

The program Bulgaria-Serbia 2014-2020 includes four priority axes – “Sustainable Tourism”, “Youth”, “Environment”, and “Technical assistance” as the total budget amounts to € 34 102 251, of which 28.98 million Eur from the EU. National co-financing is 15% of the approved budget of the Bulgarian partners.

The program Bulgaria – Republic of Macedonia 2014-2020, includes four priority axes - “Environment”, “Tourism”, “Competitiveness” and “Technical assistance”, with a total budget of € 19 461 687, of which 16.54 million Eur from the EU. National co-financing is 15% of the approved budget of the Bulgarian partners.

4.3.3. Economic instruments and financial resources of the Ministry of Agriculture and Food, State Fund “Agriculture”

MAF policy for financial support for farmers is realized by the State Fund “Agriculture”.

The “Agriculture” state fund provides financial support to national funds for farmers by providing credit resources and the application of State aid schemes to promote the development of agricultural production, including aid to deal with the effects of adverse weather conditions and plant and animal diseases and the welfare of animals (exceeding the standard of farming) and others.

State Fund “Agriculture” as a Paying Agency provided financial support from EU funds for Bulgarian agriculture through four instruments – direct payments, to which there is national payments, funds for market support, the measures from the Program for Rural Development 2007-2013, and the Operational and development Program “Fisheries 2007-2013” (for the new programming period 2014-2020 -RDP 2014-2020 and the Program for Maritime and Fisheries 2014-2020.

Financial resources from the budget of MAF to support agriculture, forestry and fisheries sectors

In the agricultural and fisheries sectors activities are oriented towards the elimination of consequences of natural disasters and industrial accidents, veterinary activities, irrigated agriculture and protection of the irrigation system, reclamation activities, mountain farming and agriculture, improving the productive quality of farmland, restocking, restoration and maintenance of fish populations, maintaining the ecological balance in the game, the destruction of obsolete pesticides, etc., incl. vocational training, international events of “Forestry” sector, etc.

The majority of capital expenditures funded by MAF in recent years have been targeted toward large irrigation and drainage pumping stations, canals, penstocks, compensating basins, spillways of dams; repair of irrigation and drainage objects – canals, pipelines, water intake structures, and other outlets; repair and rebuilding projects, flood prevention; construction and rehabilitation of small irrigation systems and water security through bored wells of agricultural institutes. Capital expenditures for improving the productive qualities of farmland have been financed from own revenues of MAF procured from charges under the Law on protection of agricultural land. Those funds are used for protection of agricultural lands, utilization of abandoned land from the State Land Fund by clearing trees, bushes, stones, loosening and leveling desolated land into arable.

4.3.4. Financial Resources under the Ministry of Environment and Water

The state budget finances ecological projects with grants for capital expenditures. At the suggestion of the Minister of Environment and Water, in coordination with the Minister of Finance, annually, by the State Budget Act, are defined funds from the state budget for implementation of priority environmental projects and activities included in national environmental strategies and programs. Municipalities shall make proposals to the Minister of Environment and Water by the end of May of the previous year.

Enterprise for Management of Environmental Protection Activities (EMEPA)

The aim is supporting and protecting the environment, nature and biodiversity of Bulgaria. Activities of interest in the project – *organic farming and ecotourism*, potential users of the loans are companies, private producers and cooperatives. Projects related to ecotourism receive grants to municipalities and non-governmental environmental organizations, and

interest-free loans go to companies and individuals. For projects under item 9, ecological agriculture and livestock, loans can be given only in hilly and mountainous areas.

The activities that will support the implementation of the NAP of SLM are: construction of treatment plants for waste water and sewage networks; regional systems for waste management; protection of air quality; construction of facilities for regulating the flow of rivers and creating pools of local importance; construction of facilities to protect river beds and banks of gullies from erosion; in the field of biodiversity, organic farming, ecotourism.

Most of the projects financed by the Enterprise are investment projects. Municipal projects funded by grants, are mainly urban wastewater treatment plants, inlet collectors to treatment plants, sewage systems – mainly in mountainous and hilly areas, landfills and other facilities for treatment of household waste. Construction of sewage systems must be connected with the construction of urban sewage treatment plant for waste water. Financing of municipal investment projects related to solving the critical problems with drinking water supply and closure and reclamation of municipal landfills is also permitted.

Interest-free loans are given to buy containers for waste and transportation equipment necessary for the introduction of separate collection of waste.

Municipal and corporate projects for the development of ecological agriculture and livestock production in mountainous and hilly areas are also financed. Besides investment projects, non-investment projects can also be financed – cleaning polluted areas, reclamation and afforestation, collection and disposal of obsolete pesticides, activities related to protected areas – municipal property and others.

Eligible for such loans are companies, producers and cooperatives. Interest-free loans granted by the Company amount to 70% of the total project cost (between BGN 15000-100000).

Programme for necessary measures in terms of tendency to drought

It affects mainly the issues of effective and sustainable management of water resources for drinking purposes and irrigation, providing treatment of domestic wastewater, completion and construction of water reservoirs with the greatest social impact, reconstruction of water supply systems, combating erosion and afforestation and grassing of eroded areas with appropriate drought resistant native species, fighting forest fires and prohibition of burning stubble, public control on theft and wasteful.

4.3.5. Economic instruments and financial resources from other ministries and institutions

Ministry of Economy and Energy

The Ministry has some edits performed on activities contributing to the implementation of the requirements of the Convention to Combat Desertification, which is mainly limited to the restoration of damaged fields. Object of the implemented projects in recent years is the reclamation of disturbed lands by mining activities.

The *Energy Efficiency Fund* (EEF) was created under the Energy Efficiency Act, adopted in 2004. The share capital of the Fund in the amount of 10 million USD was provided by the Global Environment Fund of the United Nations with the support of the World Bank. Bulgarian government participates with funds from the budget of BGN 3 million, the Austrian government donated EUR 1.5 million. Investment projects which will be financed by the Energy Efficiency Fund should apply known and tested technologies for energy efficiency and their value must be between 30 thousand and 3 million BGN. Projects will

be paid for a period not exceeding 5 years. EEF will finance projects, which are relevant to SLM, for example to increase the energy efficiency of municipal activities (collection and recycling of waste); to increase the energy efficiency of industrial processes and others.

Credit line of the European Bank for Reconstruction and Development (EBRD) for energy efficiency and renewable energy sources

The EBRD provides credit lines to Bulgarian commercial banks, which in turn lend to private companies for energy efficiency projects and projects for renewable energy sources (RES). Eligible projects under the credit line for energy efficiency are: small capacities for cogeneration of heat and electricity, reconstruction of energy infrastructure; recovery of waste heat; automation and control of processes and equipment; optimization of processes, and renewable energy sources: hydro renewables; solar installations; wind farms; biomass; geothermal installations and biogas.

Loans are granted for 5 or 6 years, and for energy efficiency projects the amount of the subsidy is up to 7.5% of the loan amount, and for renewable energy sources – to 20% provided by the Kozloduy International Fund. Implemented projects can get back to 7.5% of the loan amount for energy-saving projects and to 20% for projects in alternative energy sources.

Ministry of Labor and Social Policy.

Ministry of Labor and Social Policy, together with the EFA, performs annually the National program “Restoration and Conservation of Bulgarian forest” for employment of long-term unemployed. The program is funded by the government and has activities in the context of the Convention to Combat Desertification

- For targeted financial support to promote entrepreneurship through the Credit Guarantee Scheme of the Ministry of Labor and Social Policy, a project “Guarantee Fund for Micro Crediting”, was started in 2001. Through this project are created jobs, access is provided to credit resource for SMEs, unemployed persons, craftsmen, cooperatives and farmers who were unable to meet the general conditions of banks in the country.

On the basis of §2 of the Transitional and Final Provisions of the Bulgarian Development Bank and Decision No. 309 of May 3, 2007 of the Council of Ministers of the Republic of Bulgaria, the project passes from the Ministry of Labor and Social Policy to the “Bulgarian Development Bank” AD. Currently part of the group of the Bulgarian Development Bank is a national guarantee fund to facilitate access to finance for SMEs and help to reduce the interest on the loans.

4.3.6. Opportunities of the municipalities to finance activities in sustainable land management

Municipal financing is done through two types of sources – their own and external. For financing activities under NAP for SLM from external sources can be used most of the funds, mechanisms and schemes listed here.

Funds from the municipal budget for environmental projects and activities under priorities identified in the municipal environmental programs are the result of:

- Revenues from the penalties for damage and contamination of the environment above the permissible limits of art. 69 of the EPA (eighty percent received by the budget of the municipality on whose territory the sanctioned entity is with greater force);

- Revenues from fines and penalties under the EPA imposed by the mayors of municipalities, as well as revenue from fines for violation of regulations adopted by municipal councils for the protection of the environment;
- Proceeds from the privatization of municipal property.

At the suggestion of the mayor annually (with the adoption of the municipal budget) there should be defined funds for the implementation of priority environmental projects and activities included in the municipal programs for environmental protection. This activity, however, was not carried out correctly in the majority of the municipalities, especially after was closed the off-budget account “Municipal Fund for Environmental Protection” and revenues from sanctions entered the general budget.

Essential significance for the approval of projects of municipalities in the future will be given to justification of their priority in municipal programs for environmental protection. As before, there will be required complete project readiness of investment objects, decision to assess the impact on the environment, as required in accordance with the Law on Environmental Protection, availability of financing from municipal sources. In the field of the treatment of municipal, hazardous, including hospital waste, advantage is given to projects of regional importance – solving problems of more than one municipality. In the granting of interest-free loans for transportation equipment and containers for household waste it is important to have a well-developed program for municipal waste management, optimization scheme for waste transportation routes. Information and estimates of waste fee under the Local taxes and fees Act is also required.

In the area of reducing air pollution, mainly company projects are funded. As municipal projects can be considered gasification of municipal sites, other projects related to energy efficiency, municipal heating systems, reducing pollution from transport. In these cases, the funds are disbursed as interest-free loans to companies.

Part V. Monitoring / supervision and evaluation of the implementation of the National Action Plan for SLM and Combating Desertification

The introduction of a uniform and comprehensive system for monitoring and evaluation of the degree of implementation of programs within the NAP and their efficiency and effectiveness is a crucial component of the National Action Program for sustainable land management and combating desertification.

The monitoring and evaluation of performance involves determining the temporal coverage for short (2014-2015), medium (2015-2017) and long term (2018-2020) monitoring and implementation of activities under the NAP for SLM.

Following the progress of the NAP for SLM requires the implementation of continuous monitoring of the implementation of the programs and their components. Element of a methodology for the implementation of regular monitoring is the development of annual reports on the progress of the program. In case measures for the relevant period are not carried out or the principles to involve the general public in the tasks of the program are not implemented sufficiently, an analysis of the weaknesses is made and a set of actions is developed to correct and improve the overall implementation of the NAP for SLM.

Institution responsible for implementing the system of evaluation and monitoring of the NAP for SLM is the Ministry of Environment and Water. The main tasks in this process are constantly monitoring the implementation of programs; systematization of information and data with which to monitor progress in the implementation of the NAP – according to specific quantitative or qualitative indicators; to monitor the rate of implementation and

timely realization of programs or their elements and utilization of the financial resources. In this sense, the National Coordination Council on the implementation of the NAP for SLM and combating desertification established by Article 4, paragraph 1, item 1 of Part II of the UN Convention to Combat Desertification, and Article 4, point "a" of Annex V to the Convention, which can carry a large part of these measures / tasks and also to publicize the results, progress and best achievements, will play an important role.

It is advisable to establish units to monitor and evaluate the implementation of programs in accordance with the scope of their implementation at regional and local level. All stakeholders should actively participate not only in the processes of decision-making, but also in monitoring and evaluation of activities under the NAP.

Strategic sector I. "Improvement of the national legislation and policies for sustainable land management"

Quantitative indicators

- Number of newly adopted legislation acts and amended and supplemented existing legislation acts relevant to SLM;
- Number of developed national research and legal analysis and research related to sustainable land management;
- The amount of funds received in national and municipal budgets or other funds under sanctions of regulations relating to sustainable land management;
- Number of sanctions / punitive rulings on legal documents relevant to SLM;

Qualitative indicators:

- Degree of improvement of the national legislative framework relevant to SLM;
- Degree of improvement of the single national information database on SLM;
- Degree of improvement in inter-institutional coordination and partnership

Strategic sector II. "Preserving and enhancing the potential of land resources and their sustainable use"

Because of the variety of factors affecting the development of degradation processes and the essential differences in the various programs in this direction, it is necessary to develop the integrated indicators proposed below (which is likely to include various indicators in different programs).

Monitoring in this area will include monitoring of degradation processes of land resources (soils, water, plants and animals), as well as climate monitoring as an essential factor for their development and assessment of areas (incl. economic benefits) in the scope of which will be implemented the proposed programs (part III). In this connection the following should be established:

- ✓ Integrated indicator of the degree of degradation processes of land resources based on pre-specified biophysical indicators (e.g. - pH of the soil and water, conductivity, organic matter content in the soil, content of heavy metals in soil and water, content of biogenic elements in water, water turbidity, water balance, density of vegetation cover, yields, biochemical composition of plant production, biological indicators, weather indicators, etc.), including the assessment of indicators based on the biological requirements and / or compared to previous observations;
- ✓ Integrated economic indicator reflecting economic benefits / damages.

At this stage, we will offer the following quantitative / qualitative indicators, with the proviso that they do not fully reflect the process.

Quantitative indicators:

- Number of completed projects related to sustainable land management;
- Size of the areas on which are implemented SLM-related projects, ha;
- Number of participants involved in implementation of SLM-related projects;
- Amount of funds spent for implementation of SLM-related projects, BGN;

Qualitative indicators:

- Improved quality of ecosystems due to SLM;
- Improved diversification in rural areas;
- Reduction of depopulation in areas with environmental problems associated with land degradation;
- Reduction of unemployment in areas with environmental problems associated with land degradation.

Strategic sector III. "Science and education in support of policies for sustainable land management and combating desertification"

To follow the progress of implementation of the strategic sector "Science and education in support of policies for sustainable land management and combating desertification", monitoring needs to include monitoring of the implementation of the programs and their components and annual reports of scientific expert councils of research institutes and universities on the progress of implementation of the NAP according to the following qualitative and quantitative indicators:

Quantitative indicators:

- Number of introduced curricula on SLM in plans of the average agricultural schools, colleges and universities with sections on SLM;
- Number of developed information packages and application projects on SLM;
- Number of established associations between research institutes, universities and agencies for partnership and dissemination of formalized knowledge, advice and methodical guidance on SLM;
- Number of established regional centers for training in sustainable land management in partnership with European centers for consultation.

Qualitative indicators:

- Degree of associatedness between basic scientific institutes, universities and agencies in the field of sustainable land management;
- Level of integration of the created information system "applied knowledge and examples of good agricultural practices for SLM" to NAP under SLM and combating desertification for increasing awareness of manufacturers.

Strategic sector IV. "Integration and implementation of policies for sustainable land management at the local level"

Quantitative indicators:

- Number of municipal development plans and programs for environmental protection in which SLM is integrated;
- Number of developed and adopted municipal specialized plans of agricultural land;
- Number of funded and implemented projects of municipalities and land users applying the principles of SLM.

Qualitative indicators:

- Degree of awareness about sustainable land management to local authorities, experts and land users;
- Degree of integration of SLM in municipal strategic documents and planning of specific measures for sustainable land management in them;
- Level of knowledge and use of financial instruments for the implementation of SLM.

Strategic sector V. "Improving information sharing and public participation in the processes of decision-making for SLM"

Quantitative indicators:

- Number of awareness campaigns / number of participants involved in the SLM;
- Number of visitors who benefited from the services of a data center and Internet based information platform;
- Number of organizations involved in the National Rural Network and interested in the issues of sustainable land management;
- Number of business centers offering services created through PPP

Qualitative indicators:

- Level of awareness of professionals and the public on sustainable land management;
- Degree of increase in the activity of NGOs working in rural areas to work on SLM;
- Level of support for the implementation of best practices for sustainable land management at local and regional level;
- Level of increasing the role of PPPs for activities on SLM

Monitoring and evaluation of the performance should take into account changes in the fight against land degradation and desertification, as well as sustainable land management in the country resulting from the implementation of measures and actions taken. This reporting is done using a set of specific indicators referred to each of the strategic sectors. Monitoring and evaluation should also follow up the utilization of available financial resources and potential.

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ANNEX 1

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ANNEX II

Intersections between the scope and the programs of the National Action Program for sustainable land management and combating desertification and national strategies and sectoral policies and the financial resources available

Intersection of policies and financial resources	National Action Program for sustainable land management and combating desertification				
	Strategic sectors				
	Improvement of national legislation and policies for sustainable land management	Preservation and improvement of the potential of land resources and their sustainable use	Science and education in support of the policies of sustainable land management and combating desertification	Integration and implementation of policies for SLM locally	Improving information sharing and public participation in the processes of decision-making for SLM
Operational Programme “Environment” 2014-2020,	<p>Program “Improving and integrating policies and strategies for SLM”</p> <p>Program “Strengthening the institutional capacity and building mechanisms for coordination, communication and partnership”</p>	<p>Program “Sustainable use of land resources in disadvantaged areas”</p> <p>Program “Environmentally sound storage and use of biomass from agriculture and forestry”</p> <p>Program “Sustainable management of lands with high natural value”</p> <p>Program "Restoration of irrigated agriculture and water conservation”</p> <p>Program "Restoration and conservation of landscape diversity in forest areas by implementing sustainable practices”</p>	<p>Program "Development and incorporation of educational programs for sustainable management of land resources at all levels of the education system”</p> <p>Program "Scientific, information and application security measures for sustainable land management”</p>		<p>Program “Information support for SLM at national and local level”</p> <p>Program “Developing and organizing public campaigns to raise public awareness in relation to the SLM”</p>

		Program "New practices for recovery and efficient use of land resources in the disturbed areas"			
Program for Rural Development 2014-2020,	The main objective within the Rural Development Programme 2014-2020 is to provide an integrated approach to sustainable land management.			The program includes measures to protect the ecosystems and sustainable management, use of natural resources in agriculture, forestry and food industry, climate change prevention and adaptation. This objective is aimed at implementing good agricultural practices leading to biodiversity conservation in agricultural lands with high natural value and the Natura 2000 areas, sustainable management of water and soil, maintaining the traditional extensive farming practices, prevention of erosion processes in the soil and preservation of soil fertility.	
National Strategy for management and development of the water sector in Bulgaria 2012 Strategic Goal Goal 4. Reducing the risk	Development of management plans for flood risk	II.2. Program "Restoration of irrigated agriculture and water conservation" 1. Development and implementation of new schemes for the		Program "Inclusion of measures to reduce the risk of flood damage in the municipal development plans and programs"	Program "Information security of the risk from flooding at national and local level"

<p>of damage during floods</p>		<p>distribution of water in irrigation systems, organization and management of irrigation according to changed conditions of land use and curbing losses in water supply infrastructure.</p> <p>2. Development of systems for early prediction of the need for watering and determining the optimal parameters of the irrigation regime.</p> <p>3. Application of water saving, energy saving and preserving functions of ecosystems, technologies and techniques of irrigation.</p> <p>4. Increasing the efficiency of irrigation through appropriate moisture retention technology.</p> <p>5. Encouraging users to organized irrigation through their inclusion in the irrigation associations and support of their activities for efficient use of water</p>			

<p>Third national action plan on climate change for the period 2013-2020</p>	<p>In the concept of the Third National Action Plan on Climate Change for the period 2013-2020 is enshrined preservation, rational and responsible use of resources as a prerequisite not only for improving and protecting the environment, but also for sustainable economic growth and increasing the competitiveness of Bulgarian economy.</p>	<p>Third National Action Plan on Climate Change is to outline the framework for action to combat climate change for the period 2013-2020 and to focus the country's efforts to actions leading to reduce the negative impact of climate change and the implementation of commitments .</p>		<p>The third Action Plan on Climate Change foresees concrete measures to reduce greenhouse gas emissions in all sectors, as these measures are consistent with the country's policy in the field of climate change, and consequently the potential of the national economy of reducing emissions.</p> <p>In the agricultural sector measures are connected, on one side, to increase the knowledge of farmers on the application of appropriate practices, reducing emissions from the sector and the introduction of practices such as encouraging the use of appropriate crop rotation, especially with nitrogen-fixing crops, promoting extensive grazing of animals, and, on the other hand, with the technical support of farms for tillage / stubble biological reclamation with typical grassland species of degraded agricultural lands.</p>	
<p>National strategy for</p>	<p>Analysis of the</p>	<p>Maintaining vital,</p>	<p>Increasing the vitality and</p>	<p>Increasing the vitality and</p>	<p>Increasing the vitality and</p>

<p>development of the forestry sector in the Republic of Bulgaria for the period 2013-2020.</p> <p>Priority 1: Measure 1.1., Measure 1.1.3.</p> <p>Priority 3, Measure 3.1, Measure 3.5, Measure 3.6, Measure 3.8</p>	<p>effectiveness of existing legal and regulatory framework governing changes to the purpose, methods of use and ownership of forest areas and recommendations for its improvement.</p> <p>The aim of the measure is to produce analysis and improve relevant laws and regulations.</p>	<p>productive and multifunctional forest ecosystems, contributing to mitigate the negative impacts of climate change</p> <p>Measure 1.1. Increase the area of forest growing stock and the stock of carbon in forest areas</p> <p>The measure is aimed at: Increasing the forest area through afforestation of abandoned agricultural land, naked and deforested areas, areas eroded and threatened by erosion:</p> <ul style="list-style-type: none"> - Reclamation of unforested area for afforestation in forest territories; - Afforestation of areas of abandoned agricultural lands bare, eroded and threatened by erosion areas outside forest areas; - Developing a financial mechanism to support activities to establish new forests . 	<p>competitiveness of the forest sector.</p> <p>Measure 3.5 Promoting employment and entrepreneurship in the forests and improving the quality of vocational training of the workforce in the forestry sector</p> <p>An essential tool for maintaining and increasing the level of employment is the realization of training programs and training of workers in the forestry sector, including related to the protection of biodiversity, biomass production, development and marketing of tourism services, ensuring health safety.</p> <p>The implementation of the measure is related to:</p> <ul style="list-style-type: none"> - Development and implementation of training programs for workers in the forestry sector; incl. through a system of training throughout the entire a career; - Active participation of the stakeholders in the forestry sector in the process of updating of curricula and programs of the UF for the 	<p>competitiveness of the forest sector.</p> <p>Measure 3.1 Ensuring sustainable planning activities in forest areas</p> <p>The measure is aimed at improving forest planning by developing national strategic documents, regional development plans for the forest areas, forest management plans and programs and management plans for protected areas that provide comprehensive, integrated and sustainable development of forest areas.</p>	<p>competitiveness of the forest sector.</p> <p>Measure 3.8 Providing information, publicity and transparency and applying the principle of partnership in sustainable management of the forest sector</p> <p>The measure is aimed at: 1) establishing a mechanism for applying the principle of partnership and providing information aimed at inclusion and broad participation of all target groups, including NGOs and the public in making and implementing decisions related to sustainable development of the forestry sector and 2) the organization of consultative and coordination process that takes into account the views of all stakeholders, and reflects all relevant policies.</p>
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			<p>acquisition of professional qualification;</p> <p><i>Measure 3.6</i> Development of research activities and linking them to the needs of the forestry business The measure is aimed at creating conditions to support the development of applied research in priority areas for the forestry sector and increase their efficiency and effectiveness. Develop and implement a system for coordinating the development of applied research activities and commitment to the needs of the practice of scientific developments.</p>		

<p>Operational Programme “Science and education for smart growth” 2014- 2020,</p>			<p>Program “Development and incorporation of educational programs for sustainable management of land resources at all levels of the education system”</p> <p>Program “Scientific, information and application of security measures for sustainable land management”</p> <p>Program “Participation in international processes for exchanging knowledge, know-how and best practices for sustainable land management”</p>		
<p>State Fund “Agriculture”</p> <p>Implementation of schemes and support measures financed with national and European funding</p>		<p>Program “Sustainable use of land resources in disadvantaged areas”</p> <p>Program “Restriction of erosion”</p> <p>Program “Restoration of irrigated agriculture and water conservation”</p> <p>Program “Implementation of agroforestry systems as models for sustainable land use”</p>	<p>Program “Participation in international processes for exchanging knowledge, know-how and best practices for sustainable land management”</p>		

		Program “Restoration and conservation of landscape diversity in forest areas by implementing sustainable practices”			
EMEPA Investment projects; Grants to municipalities and NGOs; Interest-free loans in mountainous and semi-mountainous areas		Program “Sustainable management of lands with high natural value” Program “Restoration of irrigated agriculture and water conservation” Program “Restriction of erosion processes” Program “Environmentally sound storage and use of biomass from agriculture and forestry” Program “Sustainable use of land resources in disadvantaged areas”	Program “Scientific, information and application security measures for sustainable land management”		Program “Developing and organizing public campaigns to raise public awareness in relation to the SLM” Program “Strengthening the capacity of NGOs in the implementation of SLM policies”

1) Operational Programme "Environment" 2014 – 2020

The new operational program focuses on building water supply and sewerage infrastructure and sustainable management of the water sector, compliance with the hierarchy in waste management, supporting the implementation of the National Priority Framework for Action for the ecological network Natura 2000, prevention and management of flood risks and landslides and reduction of air pollution.

The planned budget for the “Water” sector is about 1 billion. Eur, and the focus is on investments in construction, rehabilitation and modernization of water supply and sewerage infrastructure, targeting agglomerations with over 10 000 population equivalent. There are also measures for monitoring the quantity and quality of water through the setup and optimization of existing monitoring networks (points, stations and equipment). In planning investment activities in the water sector, project financing will be subject to the implementation of sustainable and economically sound measures for water infrastructure in settlements that offer long-term solutions with minimal investment. In this regard, as part of a project financed by the World Bank, were developed master plans for water and sewerage, which identified the needs of water supply investments in Bulgaria and offered a technically and financially sustainable measures in the short, medium and long term. During the programming period 2014-2020, the envisaged investment in the water sector can be directed to agglomerations with over 10 000 PE and consistent with the need for preparation of regional feasibility studies drawn up on the basis of developing regional master plans for water and sewerage, i.e. the financing of water supply and sewerage projects in the new programming period will follow the regional principle. Projects meeting the requirements of the regional approach can be implemented with funds from the new program.

In terms of sector “Waste” is planned a budget of over 220 million Euro. There is a plan to finance measures under the hierarchy of waste management – reuse centers, facilities for pre-treatment of waste and anaerobic and/or composting installations for biodegradable and/or green waste.

In the sector “Biodiversity and Natura 2000” are provided measures under the National Priority Framework for Action for Natura 2000. The budget here is over 86 million Eur and the focus is on the Natura 2000 network, but the projects do not in themselves constitute major infrastructure projects.

In the new programming period will be affected two new themes. Under priority axis “Prevention and management of the risk of floods and landslides” /with a budget of 66 million Eur/, except investment measures to strengthen banks, construction of hydraulic structures and strengthening of landslides, is also provided the establishment of a National System for the Management of Water in real time. Under priority axis “Improving air quality” /50 million Eur/, municipal programs for air quality will be reviewed and analyzed and, if necessary, their processing will be supported, measures will be implemented to improve air quality in an urban environment.

Beneficiaries of the program are expected to be municipalities, water and sewerage operators, businesses, NGOs, structures of ministries, etc.

2) Programme for Rural Development 2014-2020

The main objective within the Rural Development Programme 2014-2020 is to provide an integrated approach to sustainable land management. The program includes measures to protect the ecosystems and sustainable management, use of natural resources in agriculture, forestry and food industry, climate change prevention and adaptation.

The main objective within the Rural Development Programme 2014-2020 is to provide an integrated approach to sustainable land management.

3) Third national action plan on climate change for the period 2013-2020

The purpose of the Third National Action Plan on Climate Change is to outline the framework for action to combat climate change for the period 2013-2020 and to focus the country's efforts to actions leading to reduce the negative impact of climate change and provide specific measures to reduce greenhouse gas emissions in all sectors, as these measures are consistent with the country's policy in the field of climate change, and consequently with the potential of the national economy of reducing emissions.

5) National strategy for development of the forestry sector in Bulgaria 2013-2020

The most significant challenges facing the forestry sector in recent years are related to the impact of climate change and forest management in adapting to climate change, preservation and maintenance of biological and landscape diversity in forest areas, forest conservation of natural disasters, fires, illegal activities, separation of business from the control functions in state forests and the institutional changes aimed at strengthening its viability.

The national strategy for development of the forestry sector in Bulgaria for the period 2013-2020 is the basic document that defines the strategic framework of the government policy to achieve long-term and sustainable management of vital and productive multifunctional forests and increasing competitiveness of the forest sector as a basis for a better standard of living, especially in mountainous and rural areas. A prerequisite for sustainable development of forest areas are the regulated by the Law on Forests three levels of forest planning – national, regional and local, duly reflected in the National Strategy for development of the forest sector, Strategic plan for development of the forestry sector, regional plans for development of forest territories and forestry plans and programs.

6) State Fund “Agriculture”

Provision of credit resources for realization of projects in the following fields:

- Crop – creation, restoration and cultivation of perennial crops and investments in greenhouse production;
- Livestock – creation and equipment of breeding farms and purchasing of pure, hybrid and commodity animals;
- Technical support – purchase of machinery, equipment and inventory used in agriculture

Granting **state aid** to promote the development of agricultural production, including aid to deal with the effects of adverse weather conditions and plant and animal diseases, animal welfare (exceeding the standard of farming),

Providing **direct payments** and market support under First Pillar of the CAP

Providing support under RDP 2007-2013 and 2007-2013 OPRD as well as programs for the new programming period 2020 – RDP 2014-2020 and 2014-2020 MFDP

8) Enterprise for Management of Environmental Protection Activities (EMEPA)

The aim of the support is protecting the environment, nature and biodiversity of Bulgaria. The activities that will support the implementation of the NAP of SLM are: construction of treatment plants for waste water and sewage networks; waste management; protection of air quality; construction of facilities for regulating the flow of rivers and creating water areas of local importance; construction of facilities to protect river beds, banks and gullies from erosion; in the field of biodiversity, organic farming, ecotourism.

APPENDIX III

Strategic sectors, programs and activities of the National Action Program for sustainable land management and combating desertification

Programs	Activities / Measures	Responsible institution	Allocation of funds by years in BGN			
			Short-term 2015- 2016 BGN	Middle-term 2017-2018 BGN	Long-term 2019-2020 BGN	Possible funding source
Strategic sector I: Improving national legislation and policies for sustainable land management and combating desertification						
<i>I.1. Program “Improvement and supplementation of the national legal framework for sustainable land management and combating desertification”</i>	<ol style="list-style-type: none"> 1. Development of “Methods for keeping a register of the areas with damaged soils, which contain information on the location, source of damage, type and area of damage, risk assessment and the funds spent on research and recovery”. 2. Improvement of the national legislation on irrigation management and land protection. 3. Development of a program to expand the network of forest belts and improvement of existing forest belts. 4. Development of regional programs to 	MEW, ExEA, MAF, EFA				SB, EMEPA, OP-E, alternative funding sources – donor organizations

	<p>protect forests from fires.</p> <p>5. Development of preventive measures for lands affected by degradation processes or lands that have suffered degradation to a minor degree.</p> <p>6. Development of standards harmonized with the EU requirements for early prevention and monitoring of desertification processes.</p> <p>7. Development and implementation of a system of economic incentives to encourage owners and land users to conduct activities for sustainable land management.</p>					
Total indicative budget for I.1.:						BGN 360 000
<i>I.2 Program "Improving and integrating policies and strategies with respect to sustainable land management and combating</i>	<p>1. Integration and application of principles and approaches to sustainable land management in existing national strategies and policies.</p> <p>2. Creation of specialized maps of lands in connection with the fight against</p>	MEW, MAF, Municipalities				SB, municipalities

<i>desertification"</i>	<p>desertification.</p> <p>3. Inclusion of the main recommendations in the UNCCD as part of the regional operational programs, regional strategies and local development plans.</p> <p>4. Operation of the National Coordination Council on implementation of the UNCCD and provision of interconnection and integrated implementation of all relevant policies and strategic documents related to the sustainable land management and combating desertification.</p>					
Total indicative budget for I.2:						BGN 50 000
<i>I.3 Program “Strengthening institutional capacity and building mechanisms for coordination, communication and partnership”</i>	<p>1.Establishment of interagency working group for implementation of activities requiring enrichment of existing or creation of new legislation concerning sustainable land management and combating desertification.</p> <p>2. Strengthening the administrative capacity to manage and implement policies for sustainable land management and establishing mechanisms to promote inter-institutional coordination and implementation of the partnership principle</p>	MEW, MAF				SB, alternative financial sources

	(seminars, fellowships, exchanges of experience, etc.) 3. Improvement of specialized knowledge and skills of experts in the field of SLM (courses, seminars, fellowships).					
Total indicative budget for I.3:						BGN 69 000
<i>I.4 Program “Development of national and local programs and participation in international processes on sustainable land management and combating desertification”</i>	1. Conducting specialized workshops and study tours for representatives of regional and municipal administrations to present good and working regional and local plans for sustainable land management. 2. Development of programs for exchange of experience, best practices and joint actions between Bulgaria and other countries implementing the UNCCD and their NAPs. 3. Participation in regional and sub-regional action programs for sustainable land management and combating desertification in the framework of Annex V to the UNCCD. 4. Development of national reports on the country's progress in implementing the UNCCD. 5. Participation in international forums (conferences, round tables, committees, regional workshops) at political and expert level.	MEW, Municipalities				SB, EMEPA, municipalities

				Total indicative budget for I.4:			BGN 60 000
Total for Strategic Sector I.							BGN 539 000
Strategic sector II: Preservation and improvement of the potential of land resources and their sustainable use							
II.1 Program <i>“Limitation of the erosion processes”</i>	<ol style="list-style-type: none"> 1. Identification of priority areas for combating erosion. 2. Restoration, creating new and maintaining anti-erosion engineering and technical infrastructure in rural and forest areas, incl. to strengthen the hydrographic network. 3. Implementation of measures on agricultural irrigation and forest melioration to reduce erosion. 4. Restoration and maintenance of forest belts and implementing new anti-erosion forestation. 5. Establishment of windbreak shelter belts and linear afforestation along the borders of agricultural land near the canals, roads and others. 6. Adaptation and implementation of new technologies to restore forest soils damaged by fire. 7. Grassing of slopes inclined at 10° to stabilize the soil and utilization of the effect of mulching in arid areas. (new 8. Application of appropriate soil conservation 	MAF, EFA					SB, alternative financial sources, donors, business

	<p>processing across the slopes with a complex topography and incline over 10°</p> <p>9. Improving the effectiveness of the control over agricultural lands to prevent unintentional and indiscriminate burning of stubble and dry grass and shrubs outside the forest areas</p> <p>10. Implementation of appropriate technologies, schemes and reforestation of lands affected by erosion.</p> <p>11. Ensuring the production of the necessary quantity of tree and shrub species for anti-erosion forestation in state forest nurseries.</p> <p>12. Application of soil-friendly types of felling techniques and technologies in forestry.</p> <p>13. Development of a unified system for monitoring, early detection and disclosure of forest fires and improvement of sanitary status.</p> <p>14. Adaptation and implementation of new technologies to restore forest soils damaged by fire.</p> <p>15. Restoration and maintenance of field boundaries and riparian forests by providing periodic flooding, if necessary, temporarily opening dikes and construction of special channels to preserve riparian habitats.</p> <p>16. Assimilation of eroded and barren lands for the cultivation of alternative crops – medicinal, essential oil, forestry and</p>					
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	production of alternative bio-fuels.					
Total indicative budget for II.1:						BGN 980 000
<i>II.2. Program “Restoration of irrigated agriculture and water resources protection”</i>	<p>1. Engineering and technical – Reconstruction and modernization of irrigation systems built so far after revaluation of their parameters regarding the status of specific water bodies in terms of water quantity / water security /, size of irrigated areas, type of crop and the requirements of modern irrigation technologies and techniques of irrigation and construction of new ones.</p> <p>2. Development and implementation of new schemes for the distribution of water in irrigation systems, organization and management of irrigation according to changed conditions of land use, limit of water loss in water supply network, and timely delivery of irrigation water to water users according to the requested volume and time.</p> <p>3. Development of systems for early prediction of the need for watering and determining the optimal parameters of the irrigation regime.</p> <p>4. Implementation of efficient water-saving and energy-saving technologies and irrigation techniques.</p>	MAF				SB, alternative financial sources donor organizations, business

	<p>5. Increasing the efficiency of irrigation through proper moisture preserving technologies.</p> <p>6. Encouraging users for organized irrigation through their inclusion in the irrigation associations and support of their activities to increase the potential of efficient use of water.</p> <p>7. Subsidies for small-scale irrigation systems.</p> <p>8. Utilization of wastewater (domestic and livestock) for biomass production while minimizing the risk to the ecosystem functions of the landscape.</p> <p>9. Conservation and maintenance of water-protective forests.</p>					
Total indicative budget for II.2:						BGN 1 120 000
II.3. Program "Sustainable use of land resources in disadvantaged areas"	<p>1. Encouraging diversification of economic, agricultural and forestry activities in disadvantaged areas.</p> <p>2. Introduction of suitable species for planting in semi arid conditions outside Natura 2000 sites.</p> <p>3. Exploring the opportunities for growing non-traditional for the region and country cultures (including alternative energy ones), development and piloting of technologies for their cultivation.</p>	MAF				SB, alternative funding sources – donor organizations, business

	<p>4. Improving land productivity through appropriate technologies and techniques.</p> <p>5. Maintaining and increasing the productivity of pastures, meadows and common lands by improving the grass composition, improving and correcting the terrain and humidity conditions (drainage/irrigation), appropriate fertilization, introduction of grazing plot.</p> <p>6. Application of organic farming, coupled with measures for SLM.</p> <p>7. Recovery of eroded lands (see Program for limiting erosion processes).</p> <p>8. Stimulation of natural regeneration and timely reforestation of forests affected by natural disasters;</p> <p>9. Providing / ensuring more complex spatial structure of plantations (structurally heterogeneous plantations), which will improve their mechanical stability and conservation of ecosystem functions.</p> <p>10. Increasing biodiversity and ensuring the uneven structure of the plantation.</p>					
Total indicative budget for II.3:						BGN 820 000

<p>II.4. Program “Environmentally sound storage and use of waste biomass[□] from agriculture and forestry”</p>	<ol style="list-style-type: none"> 1. Creating cultures of fast-growing and drought-resistant tree species for energy production. 2. Testing stability and production opportunities of some drought-resistant trees and shrubs for anti-erosion purposes and biomass. 3. Use of biomass as an energy source for heat and power, production of biogas and bioethanol. 4. Encouragement of compost production (family/home composting and building of compost centers). 5. Stimulation of the production and use of organic and organo-mineral fertilizers and substrates. 6. Development and implementation of projects for recovery of various types of biomass and construction of pilot projects. 7. Design and construction of manure depots meeting the requirements for environmental protection and preservation of the qualities of waste substrates such as organic fertilizer 	<p>MAF, MEW</p>				<p>SB, OPE alternative funding sources – donor organizations, NGOs, business</p>
Total indicative budget for II.4:						BGN 1 050 000

□

The term biomass unites all organic substances of plant and animal origin

<p>II.5. Program “Sustainable management of agricultural lands with high natural value”</p>	<ol style="list-style-type: none"> 1. Development of modern classification, passportization and inventory of meadows, pastures and common land in Bulgaria. Creation and maintaining a national GIS database. 2. Inventory and mapping of grasslands and agricultural lands with high natural value (incl. grassland habitats listed in Annex I of the Habitats Directive of the EU (92/43 EC). 3. Restoration of open grass associations through the reintroduction of typical plant variety of wild fauna. 4. Establishment of demonstration farms for sustainable agriculture and management of meadows, pastures and common lands. 5. Identification, development/production and marketing (market) for specific products and services from agricultural systems with high natural value.. 6. Sustainable use of meadows and pastures by the introduction of domestic and foreign drought resistant species to extend the grazing period, the introduction of grazing plot and others. - Moved from II.1.20. 7. Limitation of conversions of forests into agricultural land, to prevent carbon losses on changes in land use. 	<p>MAF, MEW</p>				<p>SB, EMEPA, State Fund “Agriculture” alternative funding sources – donor organizations, NGOs</p>
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Total indicative budget for II.5:						BGN 790 000
II.6. Program “Implementation of agroforestry systems as models for sustainable land use”	<p>1. Support and promotion of agroforestry technologies, according to the peculiarities of the region, to increase the potential productivity of ecosystems.</p> <p>2. Application of agroforestry systems to increase the diversity of the local economy and reduce the economic risk of purely agricultural or forestry production under conditions of market competition.</p> <p>3. Implementation of agroforestry systems as part of measures related to the management of agricultural and forest resources to adapt to climate change.</p>	MAF, EFA				SB programs of the EU, private sources of financing for business projects;
Total indicative budget for II.6:						BGN 310 000
II.7. Program “New practices for recovery and efficient use of land resources in the disturbed areas”	<p>1. Adaptation and implementation of new technologies for technical and biological reclamation of disturbed areas.</p> <p>2. Developing and implementing technologies to eradicate or minimize pollution of the water without risk limits in areas of extraction of MR.</p> <p>3. Promoting effective production and limiting the wasteful consumption of raw materials and</p>	MEW				SB, OPE alternative funding sources – donor organizations, business

	natural resources.					
Total indicative budget for II.8:						BGN 450 000
Total for Strategic Sector II:						BGN 5 520 000
Strategic sector III: Science and education in support of policies for sustainable land management and combating desertification						
III.1. Program “Development and incorporation of educational programs for sustainable management of land resources at all levels of the education system”	<p>1. Study of the environment, capacity and readiness to integrate the principles of sustainable land management in the curricula of specialized vocational schools.</p> <p>2. Enrichment of the curriculum and development of masters and doctoral programs on sustainable land management in universities.</p> <p>3. Development of modern textbooks and teaching aids for vocational secondary schools, colleges and universities in accordance with the curricula for training in sustainable land management.</p> <p>4. Developing specialized training programs on economic valuation of activities under sustainable land management and combating desertification.</p> <p>5. Preparation of trainers and teachers in</p>	MEW				SB OP SESG, EMEPA, donor organizations

	educational programs for farmers and specialists with secondary and higher education in the field of SLM.					
Total indicative budget for III.1:						BGN 131 000
III.2. Program “Scientific, information and application security measures for sustainable land management”	<p>1. Development and implementation of an integrated information system, including practical knowledge and examples of good agricultural practices for sustainable land management and combating desertification in Bulgaria.</p> <p>2. Preparation of information packages of knowledge and applied research programs for municipalities, NGOs, regional administrations and academics in sustainable land management.</p> <p>3. Conducting scientific seminars related to the consolidation of land in the agricultural and forest land properties, with the development and stabilization of production in the agricultural and forestry holdings.</p> <p>4. Development and implementation of programs for sustainable land management in disadvantaged areas based on evaluation and analysis of changes in environmental and socio-economic conditions in the country.</p> <p>5. Development and implementation of</p>	MAF, MEW	EFA,			State budget, OP SESG, EMEPA of MEW, International Projects of Horizon 2020, Life, donor organizations

	<p>applied scientific research in the field of agroforestry to develop the basic principles in the selection of cultivation and compatible components.</p> <p>6. Development and implementation applied research using landscape approach to restore forest areas and its promotion as a new type of system for SLM, that has proved its effectiveness.</p> <p>7. Establishment of a system to assess the agrochemical status of the land and fertilization recommendations for the conservation and improvement of soil fertility.</p> <p>8. Creation of a strategic sector “Sustainable Land Management” at the Scientific Research fund of MES.</p> <p>9. Purposeful use of existing scientific capacity of the state administration in the development of criteria and indicators for assessing the sustainability of ecosystems against desertification.</p>					
Total indicative budget for III.2:						BGN 305 000
III.3. Program “Participation in international processes for exchanging knowledge, know-	<p>1. Training of scientists and specialists in sustainable land management by BAS and 6 agro-technology parks of AA with the participation of international consultants.</p> <p>2. Participation of Bulgarian teams in the</p>	MAF, MEW				SB, EMEPA, International Projects of Horizon 2020, Life, Donor organizations

how and best practices for sustainable land management”	<p>activities of the European Soil Bureau and other international organizations / structures working on issues of sustainable land management.</p> <p>3. Participation of academics and specialists in the field of SLM in international forums and events, promoting and strengthening international links and their involvement in a transnational network of experts working in the field of SLM.</p> <p>4. Conducting international study tours for professionals from public administration, academia, business and non-profit sector, to exchange experience and to get acquainted with best practices implemented by countries in the process of realization of their NAP for SLM.</p>					
Total indicative budget for III.3						BGN 51 000
Total for Strategic Sector III:						BGN 487 000
Strategic sector IV: Integrating and implementing policies for SLM locally						
IV.1. Program “Review and inclusion of SLM options in the municipal development plans and programs”	<p>1. Information campaign for municipalities presenting the SLM and the benefits of its application in practice. Training of experts from the municipalities to get acquainted with SLM.</p> <p>2. Inventory and analysis of the state of land resources, municipal property and updating</p>	MEW, Municipalities				SB, municipal budget; OPE, external donors

	the strategic documents at local level – MDP and municipal programs for environmental protection.					
Total indicative budget for IV.1:						BGN 210 000
IV.2. Program “Management and use of resources that are municipal property in accordance with the principles of SLM”	<ol style="list-style-type: none"> 1. Promoting investment in sustainable practices including cultivation of medicinal plants and alternative cultures in low municipal lands. 2. Maintenance of municipal pastures and common lands. 3. Afforestation of lands unfit for agricultural use. 4. Building local composting facilities for waste of plant and animal origin and use of compost to improve the fertility of the land. 5. Implementation of actions to prevent the harmful effects of water on the territories (strengthening the walls of the dams that are municipal property, dikes and facilities for river beds within the settlements). 	MEW, municipalities				SB, municipal budget, OPE
Total indicative budget for IV.2:						BGN 750 000
IV.3. Program	1. Training and dissemination of information	MEW,				SB, municipal

<p>“Strengthening the role of municipal administrations for transfer of policy options and best practices for SLM”</p>	<p>at the municipal level for financing opportunities for SLM activities of national and international sources.</p> <p>2. Assistance in providing advice and consultation on development of traditional, alternative and organic farming, including credit and subsidies for agricultural production.</p> <p>3. Organization of activities to inform the owners and operators of contaminated land for restrictions on their use; control of compliance with those restrictions.</p>	<p>municipalities</p>				<p>budget</p>
Total indicative budget for IV.3:						BGN 70 000
Total for Strategic Sector IV:						BGN 1 030 000
<p>Strategic sector V: Improving information sharing and public participation in the processes of decision-making for sustainable land management and combating desertification</p>						
<p>V.1. “Information support for sustainable land management at national and local level”</p>	<p>1. Creation of an information platform (Internet-based), which presents the available and relevant to SLM national strategies and database with a wealth of information, news and events, institutions and provides information on the subject to a wider range of stakeholders.</p> <p>2. Creation of information centers for training and raising awareness of landowners, professionals and the public in the field of SLM.</p>	<p>MEW</p>				<p>SB, external donors, private business</p>

	<p>3. Attracting media to promote the process of SLM.</p> <p>4. Implementation of activities on communication strategies under NAP.</p>					
Total indicative budget for V.1:						BGN 280 000
V.2. Program “Building networks of NGOs in support of SLM”	<p>1. National survey of attitude and willingness of NGOs to work on SLM.</p> <p>2. Creation of an information platform (Internet-based) of NGOs working on sustainable land management.</p> <p>3. Inclusion of SLM activities in the priorities of the National Rural Network.</p> <p>4. Support for small NGOs working in rural areas, to unite and to work on SLM.</p> <p>5. Participation in international networks related to SLM.</p>	MEW, MAF				SB, external donors, private business
Total indicative budget for V.2:						BGN 185 000
V.3. Program “Developing and organizing public campaigns to raise public awareness in relation to the SLM”	<p>1. Conducting an information campaign for the introduction of good agricultural practices.</p> <p>2. Organizing public campaigns to support and introduce organic farming.</p> <p>3. Conducting public campaigns to celebrate the significant international events related to the UNCCD.</p>					SB, external donors, private business

	4. Dissemination of results and good practices in the country in the implementation of NAP.					
Total indicative budget for V.3:						BGN 115 000
V. 4. Program “Strengthening the capacity of NGOs in the implementation of SLM policies”	<p>1. Exploring opportunities and funding to attract experts to support the activities of NGOs working in rural areas.</p> <p>2. Organization of seminars, trainings, round tables to raise awareness on SLM among NGOs and local communities.</p> <p>3. Implementation of pilot projects for the implementation of best practices in sustainable land management.</p>	MEW, MAF				SB, NGO
Total indicative budget for V.4:						BGN 195 000
V.5. Program: “Promotion of public-private partnerships for the implementation of measures for SLM”	<p>1. Analysis of the training needs of PPP, oriented toward local communities and private partners, development of training modules on various topics associated with activities pertaining to the implementation of PPP, trainings, etc.</p> <p>2. Including issues and activities related to sustainable land management in the work of existing business centers to act as information centers for potential investors.</p> <p>3. Support for the preparation and development of business services related to</p>	MEW				SB, municipal budget, private business

SLM. 4. Provision of expert and technical assistance to potential public-private partnerships and the implementation of pilot projects in the field of SLM.					
Total indicative budget for V.5:					BGN 205 000
Total for Strategic Sector V:					BGN 980 000
Total for the National Action Program					BGN 8 556 000