LATTANZIO
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Ministry of Regional Development – DG Territorial Cooperation Management

EX-ANTE EVALUATION AND SEA OF THE BULGARIA – THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA IPA CBC PROGRAMME 2014-2020

Environmental report

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1 Non-technical summary

According to the SEA Directive EU/2001/42 a Strategic Environmental Assessment (SEA) must be implemented as part of the programming procedure of the IPA CBC Bulgaria-the Former Yugoslav Republic of Macedonia Programme 2014-2020. The Environmental Assessment of the IPA CBC Bulgaria- the Former Yugoslav Republic of Macedonia Programme 2014-2020 follows the SEA process steps corresponding to the typical programming stages within the Cohesion Policy, as defined in the "*Guidance document on ex-ante evaluation (2014-2020)*". The SEA aims at assessing the possible impacts on the environment of the IPA CBC Bulgaria-the Former Yugoslav Republic of Macedonia Programme 2014-2020 on the environment. The purpose of the SEA is to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development.

The draft version 1 (June 2014) forms the basis for the assessment of possible effects on the environment resulting from the implementation of this Programme.

Core contents of the Programme

The IPA CBC Bulgaria-the Former Yugoslav Republic of Macedonia Programme 2014-2020 is a European cooperation programme, which aims to intensify cross-border cooperation between the people and institutions of the region in order to jointly address common challenges and exploit untapped potentials (Overall Objective). The overall Strategy of the IPA CBC Bulgaria- the Former Yugoslav Republic of Macedonia Programme 2014-2020 is embedded in the superordinate objectives and strategies of the EU, in particular the EU 2020 Strategy.

The 3 selected thematic priorities (out of the list identified in the Annex III of the IPA II regulation) have been structured into tree **Priority Axes** (PA), which reflect the needs and challenges as identified in the situation analysis of the Programme area:

THEMATIC PRIORITY	PRIORITY AXIS	SPECIFIC OBJECTIVE
2. Protecting the environment and promoting climate change adaptation, risk prevention and management	**1. "Environment"**	SO-1.1. Environmental protection and sustainable use of the common natural resources of the CBC area SO-1.2. Risk prevention and mitigation the consequences of natural and manmade hazards and disasters in the CBC region
4. Encouraging Tourism and cultural and natural heritage	**2. "Tourism"**	SO-2.1. Enhancing the tourism potential of the region through better preservation and sustainable utilization of natural and cultural heritage SO-2.2.

THEMATIC PRIORITY	PRIORITY AXIS	SPECIFIC OBJECTIVE
		Raising the competitiveness of the CBC region's tourist offer SO-2.3. Promoting cooperation among regional actors in the area of sustainable tourism
7. Enhancing competitiveness, business environment and the development of small and medium-sized enterprises, trade and investment	**3. "Competitiveness"**	SO-3.1. Improving the competitiveness of regional businesses

Current state of the environment

Regarding the current state of the environmental issues considered (Air and Climate, Water, Biodiversity, flora and fauna, Water, Soil and Cultural/natural heritage and landscape) emerges the environmental issues such as "Water", "Soil" or "Air and Climate" are exposed to various pressures (e.g. from transport or waste management) which can have an adverse effect on these issues.

The cross-border region is especially high vulnerability towards the intensified effects of climate change. And Air pollution caused by transport remains an environmental challenge.

The bordering regions of Bulgaria and Former Yugoslav Republic of Macedonia are rich in nature reserves and protected areas but one of the biggest environmental problem of the border region is water pollution of the rivers. There are highly polluted river sections particularly within the catchment area of the Struma and Bregalnica river resulting mainly from the direct flow of waste waters from industry (and mine sites) and households, mine deposits and the use of pesticides and fertilizers in agriculture. Waste water treatment facilities are insufficient. With view to soil the main challenges derive from water soil erosion and pollutants.

Methods of assessment

The environmental assessment has been performed with an identification of the possible effects and impacts resulting from the implementation of the Programme, taking into account their probability, scale, frequency/duration, reversibility, transboundary dimension, uncertainty.

The **assessment of likely effects on environment resulting from the Programme** has been **conducted at the level of Priority Axis and their corresponding Specific Objectives,** taking into account the cross-border actions to be supported.

The environmental assessment have been guided by the following central question: *Do the Specific objectives (and corresponding cross-border actions) related to the Priority axes identified in the in the Bulgaria*-the Former Yugoslav Republic of Macedonia *IPA CBC Programme 2014-2020 have a significantly positive or negative effect on the environmental issues (air and climate; biodiversity, fauna and flora; water ;soil; population and human health; cultural/natural heritage and landscape – and their related cross-cutting themes) in the Programme's area?"* and supported by guiding Evaluation Questions consolidated through a number of identified SEA Objectives.

The Environmental Report provides a **qualitative description of the potential positive or negative effects (direct, indirect and cumulative**) of the Programme's Specific Objectives and activities on the respective environmental issues ("**findings"** of the analysis), with **recommendations to prevent, reduce** and as fully as possible **offset** any significant **adverse effects** on the environment of implementing the Programme. These recommendations are also referred to criteria to use in course of the project selection, including eligibility and quality criteria in terms of environmental impact.

Possible environmental effects of the Programme

The assessment at the programme level can only provide a general outline of possible environmental effects. This is due to the fact that more detailed information on the likely environmental effects will occur at the implementation phase of the projects. It has to be noticed that the possible environmental effects and impacts of the Bulgaria-the Former Yugoslav Republic of Macedonia IPA CBC Programme 2014-2020 are primarily of indirect nature (because linked to "soft measures"). In some case - "investments measures" – the effects on the environment issues are more direct.

The following figure provides an overview of the possible global effects on the environmental resulting from the implementation of the activities foreseen by the Programme within each Specific Objective related to the tree Priority Axes.

	Environmental issue					
	Air and Climate	**Biodiversity, Flora and Fauna**	**Water**	**Soil**	**Population and Human Health**	**Cultural/Natural Heritage and Landscape**
Priority Axis 1: "Environment"						
So 1.1 Environmental protection and sustainable use of the common natural resources	**+**	**+**	**+**	**+**	**+**	**+**
SO 1.2 Risk prevention and mitigation the consequences of natural and manmade hazards and disasters	**+**	**+**	**+**	**+**	**+**	**+**
Priority Axis 2: "Tourism"						
SO2.1 Enhancing the tourism potential of the region through better preservation and sustainable utilization of natural and cultural heritage	**+/-**	**+/-**	**+/-**	**+/-**	**0**	**+/-**
SO 2.2. Raising the competitiveness of the CBC region's tourist offer	**0**	**0**	**0**	**0**	**0**	**0**

	Environmental issue					
	Air and Climate	**Biodiversity, Flora and Fauna**	**Water**	**Soil**	**Population and Human Health**	**Cultural/Natural Heritage and Landscape**
SO 2.3 Promoting cooperation among regional actors in the area of sustainable tourism	+	+	+	+	0	+
Priority Axis 3: "Competitiveness"						
SO 3.1. Improving the competitiveness of regional businesses	+	+	+	+	+	+
Accumulation of impacts	+	+	+	+	+	+

The above environmental assessment has been carried out on the basis of the following 5-point-scale

POINT SCALE	DESCRIPTION
+	Possible positive environmental effects
-	Possible negative environmental effects
+/-	Both possible positive and negative environmental effects
0	No significant environmental effects
/	Assessment is not possible (limited availability of information)

As a result of the assessment, no significant negative cumulative impact is expected from activities financed by the Programme.

Positive cumulative effects are expected on all environmental issues considered, since the whole Programme assumes protection of environment and sustainable development of productive activities as the strategic approach on which all activities are based, according also to European and national policies.

Most important positive results are expected to be achieved on protection of natural resources of the project area, thanks to improved capacity to manage critical situations (wood fires and other natural disasters) but also to information/training activities and spreading of new ideas, skills and technology, targeted on local authorities and local communities on the importance of the management/protection of natural, cultural and historical heritage of the Region.

Preservation and amelioration of water resources are expected as well. The development of tourist sector can be considered as "sustainable" only if it is accompanied by the parallel improvement of the existing water supply and sewerage systems, but also local population can benefit of such structures.

Potential risks for the environment can be linked mainly to the same subject, namely the development of uncontrolled initiatives related to tourist sector: structures for accommodation without appropriate infrastructures for water supply and treatment, deficiencies of public transports, proliferation of structures with negative impacts on landscape.

Some additional negative impacts can be expected during the construction phase of the foreseen facilities, but they can be considered as temporary effects.

Moreover, the implementation of the interventions financed by the Programme should not have any negative impact, as also stated by specific analysis already carried out by Ministry of Environment and Water, with respect to the requirements of Art. 31 of the Biological Diversity Act (BDA).

According to this study, "*the program is not likely to have a significant negative impact on natural habitats, populations and habitats of species subject to conservation in protected areas from the Natura 2000 network".*

Monitoring measures

According to the SEA Directive Article 10, possible significant environmental effects of the implementation of the Programme shall be monitored in order to identify at an early stage unforeseen adverse effects, and to enable the Programme Managing Authority to undertake appropriate remedial actions. In this context this chapter present, at both programme and project levels, different types of measures which can contribute to identification and monitoring of possible significant environmental effects resulting from the implementation of the IPA CBC Bulgaria-the Former Yugoslav Republic of Macedonia Programme 2014-2020.

In detail, at Programme level, in order to avoid duplication of monitoring, as required by SEA legislation, appropriate **environmental indicators** (**"SEA indicators"**) **already defined in the monitoring and evaluation framework of the Programme** will be used[1]. At project level, a preliminary impact assessment on environmental issues will be done through applicants' **Environmental Self-assessments**.

[1] Output and result indicators.

2 Introduction

The Regulatory framework for the period 2014-2020 drives European policies, as the Cohesion Policy, towards results in order to contribute to the Europe 2020 Strategy for a smart, sustainable and inclusive growth. To this end, the Common Provision Regulation (1303/2013) increases the importance of well-designed programmes taking into great account European, national and regional needs as well as the expected results. In this framework, the role of ex-ante evaluation is reinforced as an essential support to programming authorities in designing Operational Programmes' architecture (clearly organising their intervention logic and defining their contribution to Europe 2020 strategy) and in outlining suitable implementing and monitoring devices to meet evaluation requirements.

Where appropriate, the ex-ante evaluation shall be combine with the **Strategic Environmental Assessment (SEA)** carried out according to the European Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment, known as the SEA Directive. The objective of this directive is *to provide a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development* by ensuring that an environmental assessment is carried out of certain plans and programmes which are likely to have significant effects on the environment.

In this context, as it cannot be excluded that the future IPA Cross-border Cooperation Programme Bulgaria-the Former Yugoslav Republic of Macedonia 2014-2020 might trigger positive and/or negative environmental effects, a Strategic Environmental Assessment (SEA) is therefore required.

For that, the **Environmental Report** at hand – the main document of the SEA – evaluates possible environmental impacts related to Priorities Axes and Specific Objectives of the Programme and gives recommendations on how to enhance the quality of the programme in respect to environmental aspects.

The Environmental Assessment of the IPA CBC Bulgaria-the Former Yugoslav Republic of Macedonia Programme 2014-2020 follows the SEA process steps corresponding to the typical programming stages within the Cohesion Policy, as defined in the "*Guidance document on ex-ante evaluation (2014-2020)*".

It has to be noted that the IPA CBC Bulgaria-the Former Yugoslav Republic of Macedonia Programme 2014-2020 is a European Cross border cooperation programme which aims to support, through Instrument for Pre-accession Assistance (IPA), the reforms in the "enlargement countries" with financial and technical help. The IPA Programme gives support for political reforms and for economic, social and territorial development - with a view to smart, sustainable and inclusive growth - and promotes regional integration and territorial cooperation. This means that the IPA CBC Bulgaria-the Former Yugoslav Republic of Macedonia Programme 2014-2020 mainly promote "soft factors"[2] (such as the building of and increasing of capacities including exchange of knowledge and good practices among the participating countries) with limited direct effects on the environment that are thought the process of SEA[3]. Nevertheless, the promotion of "soft factors" forms the basis for further investment activities.

[2] Anyway, the Programme also provides support for small-scale infrastructures.

[3] In this context it should be noted that the Programme sets a framework for cross-border cooperation in small budget and "networking" projects activities with environmental considerations strongly present

Following the SEA procedure and in accordance with Bulgarian and Macedonian legislation on Environmental Assessment, this SEA Report (**Environmental Report)** is presented by the Managing Authority of the Programme and must be made available, together with the Operational Programme (OP), to the relevant authorities and the public in both participating countries for the **public consultation process** (see paragraph 2.5).

2.1 Purpose and objectives of SEA

In compliance with the requirements of the Directive 2001/42/EC and the national Bulgarian regulation[4], the SEA aims at assessing the possible impacts on the environment of the IPA CBC Bulgaria-the Former Yugoslav Republic of Macedonia Programme 2014-2020 implementation. The purpose of the SEA is to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development. The SEA is carried out during the preparation of the programme and will be completed before the submission to the Commission of the programme.

The first step within the SEA, the **scoping process**, was undertaken to decide upon the scope and level of detail of the information which must be included in the Environmental Report. Correspondingly, a Scoping Report was developed and consulted with relevant authorities.

To enable the identification of interactions between the Programme and the environment, this **SEA Report** includes a review of the current state of the environment which is discussed in separate components (biodiversity, soil, water, air, etc.) in Chapter 5, and a description of the core contents of the Programme, in particular the Intervention Logic (overall objective, thematic priorities, priority axes, actions to be supported).

The Environmental Report provides, among other things, an **assessment of likely significant effects of the Programme** including secondary, cumulative, short-term and long-term, positive and negative effects of the activities under the Priority axes, taking into account the objectives and the geographical scope agreed upon within the scoping phase. Another important part of the Environmental Report are the recommendations on how to enhance the environmental impact of the Programme and to prevent, reduce and offset adverse effects. Alternatives are also considered, including the zero-option, which is defined as the “baseline” for the overall assessment process. Finally the Environmental Report present different types of measures which can contribute to monitoring of possible significant environmental effects resulting from the implementation of the IPA CBC Bulgaria-the Former Yugoslav Republic of Macedonia Programme 2014-2020.

The Environmental Report is based on the draft of the Programme June 2014 vers. 1 – which, together with the Environmental Report, will be subject to public consultation.

in it. This cannot be connected with significant immediate adverse environmental impacts. In this context, what has been primarily analysed is whether the Programme contribute to a development framework with indirect, long-term negative impacts. At the same time, long-term environmental benefits have been brought out and enhanced.

[4] Bulgaria transposed the SEA Directive through the Environmental Protection Act No. 91/2002 and by the Ordinance for the conditions and the order for implementing ecological assessment of plans and programmes (Adopted by Council of Ministers Decision № 139 of 24.06.2004, as last amended SG 94 of 30.11.2012).

2.2 Methodological approach to the assessment

With regard to the **assessment methodology**, the SEA of the Programme has been done in an **iterative process**, based on interim results of the programming process and in close co-ordination with the programming and the ex-ante evaluation team. The assessment is based, *in primis*, on a **quality approach[5].**
More specifically, **methods and techniques** utilised for environmental assessment and completion of this Environmental Report are those listed in the Commission guidance documents and reports on the application of the SEA Directive, in particular in the following documents:

- Handbook on SEA for Cohesion Policy 2007-2013" (Handbook on SEA) - January 2006, "Green/environmentally friendly regional development programmes";
- Guidance on “Implementation of Directive 2001/42 on the assessment of the effects of certain plans and programmes on the environment;
- Guidance on integrating climate change and biodiversity into Strategic Environmental Assessment - EA, 2013.

National specific legislation, manuals and guidelines developed by Bulgaria and the Former Yugoslav Republic of Macedonia were also taken into account.

2.3 Method of environmental assessment

The **environmental assessment** has been performed with an identification of the possible effects and impacts resulting from the implementation of the Programme, taking into account their probability, scale, frequency/duration, reversibility, transboundary dimension, uncertainty.

The **assessment of likely effects on environment resulting from the Programme** has been **conducted at the level of Priority Axis and their corresponding Specific Objectives,** taking into account the cross-border actions to be supported.

In this context the assessment at the programme level can only provide a general outline of possible environmental effects. This is due to the fact that more detailed information on the likely environmental effects will occur at the implementation phase of the funded projects.

The environmental assessment have been guided by the following **central question**:

“Do the Specific objectives (and corresponding cross-border actions) related to the Priority axes identified in the in the Bulgaria-the Former Yugoslav Republic of Macedonia IPA CBC Programme 2014-2020 have a significantly positive or negative effect on the environmental issues (air and climate; biodiversity, fauna and flora; water ;soil; population and human health; cultural/natural heritage and landscape – and their related cross-cutting themes) in the Programme’s area?”

To answer the central question the assessment has been supported by guiding **Evaluation Questions** consolidated through the identified SEA Objectives (see § 4.7).

[5] Anyway, the "toolbox" used includes both qualitative (checklists, matrices, etc.) and quantitative (indicators, simple or synthetic indices) tools, as well as intermediate tools.

The environmental assessment has been carried out on the basis of the following 5-point-scale

POINT SCALE	DESCRIPTION
+	Possible positive environmental effects
-	Possible negative environmental effects
+/-	Both possible positive and negative environmental effects
0	No significant environmental effects
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The results of the analysis are given in an **environmental assessment matrix**. Cross-cutting themes have been integrated into the assessment of the respective environmental issues. Accordingly, the themes “use of renewable energy sources”, “energy efficiency” and “mobility and transport” have been assigned to “air and climate”; the theme “risk management” have been assigned to the issues “population and human health”, “cultural/natural heritage and landscape”, “air and climate”, “soil” and “water”; the theme “sustainable use of natural resources” have be assigned to the issues “water”, “biodiversity, fauna and flora” and “soil”; the theme “waste management and prevention” have be assigned to “soil”, “water” and “population and human health”“; the theme “adaptation to climate change” have be assigned to the issues “air and climate”, “biodiversity, fauna and flora” and “water”; the theme “sustainable tourism” have be assigned to the issues “biodiversity, fauna and flora”, “water”, “air and climate”, “soil” and “cultural/natural heritage and landscape”; finally the cross-cutting theme “environmental education and awareness raising on environmental issues” have be integrated into the assessment of all the issues selected.

In the context of environmental assessment matrix, the Environmental Report provides a **qualitative description of the potential positive or negative effects (direct, indirect and cumulative**) of the Programme’s Specific Objectives and activities on the respective environmental issues (“**findings”** of the analysis), with **recommendations to prevent, reduce** and as fully as possible **offset** any significant **adverse effects** on the environment of implementing the Programme. These recommendations are also referred to criteria to use in course of the project selection, including eligibility and quality criteria in terms of environmental impact.

2.4 Consultation on the Scoping report

According to the SEA Bulgarian Regulation for the terms and conditions of the Environmental Assessment of plans and programmes (EA Regulation, Art. 19a) a public consultation of the Scoping Report is obligatory.

The **Scoping Report** was made available to the relevant authorities[6] which by reason of their specific environmental responsibilities, are likely to be concerned by the environmental effects of implementing plans and programmes, in order to receive their professional comments.

[6] As identified in the Scoping Report.

All the environmental authorities and relevant bodies of both participating countries consulted on the Scoping Report had **14 days to send** their **remarks**. In this period of time were received the remarks from:

- **Ministry of Environment and Water;**
- **Basin Directorate for Water Management West Aegean – Blagoevgrad.**

All of the observations received were taken into account for the implementation of the assessment of the environmental effects of the Programme and the implementation of the Environmental Report.

2.5 Consultation on the Environmental report

According to the SEA Directive and the national SEA laws, the **Environmental Report**, it's **Non Technical Summary** and the draft of the Operational Programme (OP) must be made available to the relevant authorities and the public in both participating countries for the consultation phase of **30 days**.
The SEA directive makes the following requirements concerning the consultation of the Environmental Report:

- *"2. The authorities referred to in paragraph 3 and the public referred to in paragraph 4 shall be given an early and effective opportunity within appropriate time frames to express their opinion on the draft plan or programme and the accompanying environmental report before the adoption of the plan or programme or its submission to the legislative procedure.*
- *3. Member States shall designate the authorities to be consulted which, by reason of their specific environmental responsibilities, are likely to be concerned by the environmental effects of implementing plans and programmes.*
- *4. Member States shall identify the public for the purposes of paragraph 2, including the public affected or likely to be affected by, or having an interest in, the decision-making subject to this Directive, including relevant non-governmental organisations, such as those promoting environmental protection and other organisations concerned.*
- *5. The detailed arrangements for the information and consultation of the authorities and the public shall be determined by the Member States."*

In the **SEA public consultation process** of Bulgaria-the Former Yugoslav Republic of Macedonia IPA CBC Programme 2014-2020 should at least be involved:

- the **competent authority** and other interested and relevant **environmental authorities**[7];
- the **Districts authorities** of the eligible area of the Programme;
- **representatives of the public and third parties** which can be affected by the Programme implementation;
- **non-governmental organizations** (NGOs);
- environmental agencies, professional associations, employer's organizations, trades unions, associations of local self-government, foundations, independent research institutes, the not-for profit media, etc..

[7] As identified in the Scoping Report: **Ministry of Environment and Water**; **Ministry of Health**; **Regional Inspectorates of Environment and Water (Blagoevgrad); Basin Directorate "West Aegean region**". In the Former Yugoslav Republic of Macedonia: the Ministry of Environment and Physical Planning.

The consultations will be formal and (eventually) informal. Formal consultations will be conducted by: official letters (on paper or by e-mail), publications in mass media and/or website of the Managing Authority of the Programme, and the competent authorities; official letters and publications in the press and on the Internet for consultations with the public, the interested authorities and third parties who are likely to be affected by the Programme. Informal consultation could be conducted through informal meetings between SEA experts and representatives of the Managing Authority, representatives of the competent authorities, national authorities.

After the consultation process all the responses will be collected and explanation shall be given showing how the Environmental Report and the consultation replies have been taken into account in the final Programme.

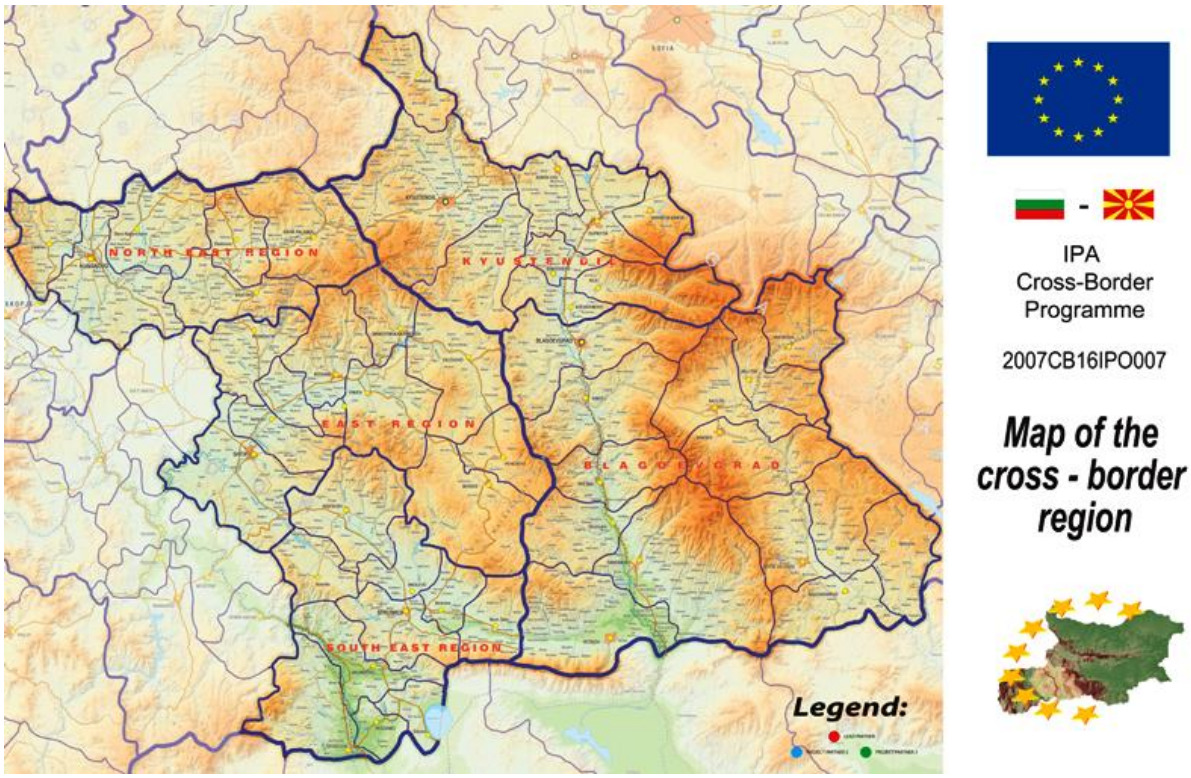
3 Description of the Programme CBC Bulgaria – the Former Yugoslav Republic of Macedonia 2014-2020

3.1 Geographical area of relevance

Geographically the implementation of the IPA Cross-border Cooperation Programme between Bulgaria and the Former Yugoslav Republic of Macedonia cover the eligible area of the Programme (cfr. Figure 1), which is located in the South-Central part of the Balkan peninsular, with a territory of **18.087 km²** and a population of **980.375** inhabitants.

The territory includes on Bulgarian side two NUTS 3 districts - **Blagoevgrad** and **Kyustendil** (52,5% of the CBC Programme area), comprising of 23 municipalities, 462 settlements and a population of 452.973 people (46,2% of the total Programme area population, 6,2% of the country population). The territory on side of the Former Yugoslav Republic of Macedonia comprises of **North-East,** the **East** and the **South-East** NUTS 3 statistical regions (47,5% of the Programme area, 33,4% of the country area), consisting 27 municipalities, 597 settlements and population of 527.402 people (53,8% of the total Programme area population, 25,6% of the country population).

Fig. 1 Eligible area of the Programme



Source: Description of the CBC Programme Region

3.2 Relevant period of time

Environmental trends and Programme effects will be assessed throughout the programming period 2014-2020, until the programme implementation deadline and, when programme effects are considered as long term, even further on (**relevant period for trend and effects)**.

3.3 Core contents of the Programme

3.3.1 General framework and Programme content

The IPA CBC Bulgaria-the Former Yugoslav Republic of Macedonia Programme 2014-2020 is a European cooperation programme, which aims to *intensify cross-border cooperation between the people and institutions of the region in order to jointly address common challenges and exploit untapped potentials* (**Overall Objective**).
The strategic orientation of the Programme considers both EU policies and regulatory framework as well as the specific situation and needs of the Programme area[8].
Regarding EU strategic and regulatory documents, the most relevant[9] for the Programme are:

- the **Europe 2020 Strategy**[10];

[8] The strategic orientation further reflects the CBC relevance of potential interventions.
[9] See par. 3.4 for more documents.
[10] This Union Strategy put forward three mutually reinforcing priorities:

- the Framework regulation on the implementation of **ETC initiatives**[11];
- the **IPA II regulation**[12];
- the Commission staff working document **"Elements for a Common Strategic Framework 2014 to 2020"**[13]**;**
- the (draft) EC **Partnership Agreement of the Republic of Bulgaria**[14] ;
- the (draft) **EC Country Strategy Paper 2014-2020** for EU assistance to the Former Yugoslav Republic of Macedonia[15].

The Bulgaria-the Former Yugoslav Republic of Macedonia IPA CBC Programme (2014-2020) also considers how it could potentially contribute to implementing **Macro-regional strategies** - in particular, **EU Strategy for the Danube Region (EUSDR)** - and takes into consideration and seeks the respective complementarity and demarcation with **National and regional strategies of Bulgaria** and of **the Former Yugoslav Republic of Macedonia** (see par. 3.4)**.**

In addition, the following **horizontal principles** are taken into consideration for the strategic orientation of the Programme:

- **Sustainable development**;
- Equal opportunities and non discrimination, and
- Equality between man and women.

In particular, sustainable development is one of the main pillars of IPA CBC Programme Bulgaria-the Former Yugoslav Republic of Macedonia (2014-2020) that supports several specific objectives that focus fully on this principle.

A **cross cutting issue** of the Programme is the support for youth, women and vulnerable groups.

3.3.2 Key objectives and priorities of the Programme

The process carried on for the definition of Programme priorities has been characterized by the elaboration of a Regional Analysis and the Analysis of Strengths, Weaknesses, Opportunities, Threats (SWOT) and Needs/Challenges for the Programme's intervention area.

- Smart growth: developing an economy based on knowledge and innovation;
- Sustainable growth: promoting a more resource efficient, greener and more competitive economy;
- Inclusive growth: fostering a high-employment economy delivering social and territorial cohesion.

[11] Regulation (EU) No 1299/2013 of the EP and the Council of 17 December 2013.

[12] Regulation (EU) No 231/2014 of the EP and the Council of 11 March 2014.

[13] The document suggests, in Annex II, a number of characteristics of transnational and cross-border cooperation. Cross-border cooperation, in particular, is characterised by some features, which can be summarised as: coverage of large areas with a high diversity of regions and often conflicting interests; limited budgets in relation to the covered area, population and time frame, which often contradict the scope and objectives of cooperation initiatives; limited ability to deliver direct investment effects, acting as an auxiliary to mainstream programmes; mainly intangible results.

[14] Draft Partnership Agreement of the Republic of Bulgaria outlining the Support from the European Structural and Investment Funds for the 2014-2020 Period, submitted to the EC in April 2014. The Partnership Agreement between Bulgaria and the European Commission defines as main priority areas for cooperation: environmental protection, promotion and development of natural and cultural heritage, tourism and education and social infrastructure, with special emphasis on employment promotion, labour mobility and poverty reduction.

[15] Draft Country Strategy Paper 2014-2020 EU assistance to the Former Yugoslav Republic of Macedonia, EUROPEAN COMMISSION, December 2013 (Ares(2013)3786995 - 20/12/2013)

In a final analytical step the results, *in primis*, of the territorial situation as well as the results of the SWOT analysis and need assessment have been "translated" into a "priorisation" and a list of 3 out of 8 **Thematic Priorities** for assistance for territorial cooperation for the period from 2014-2020, as identified in the Annex III of the IPA II regulation:

1. Thematic priority 2: **Protecting the environment and promoting climate change adaptation, risk prevention and management**
2. Thematic priority 4: **Encouraging Tourism and cultural and natural heritage;**
3. Thematic priority 7: **Enhancing competitiveness, business environment and the development of small and medium-sized enterprises, trade and investment.**

The selected thematic priorities have been structured into **three Priority Axes (PA)**, which reflect the needs and challenges as identified in the situation analysis of the Programme area:

Tab. 1 Priority Axes identified

THEMATIC PRIORITY	PRIORITY AXIS
2. Protecting the environment and promoting climate change adaptation, risk prevention and management	**4. "Environment"**
4. Encouraging Tourism and cultural and natural heritage	**5. "Tourism"**
7. Enhancing competitiveness, business environment and the development of small and medium-sized enterprises, trade and investment	**6. "Competitiveness"**

The provisional Programme's budget is set out at 16.5 Mio EUR (EU contribution). The programming team have proposed the following proportionate distribution of the financial resources available among the 3 Priority Axes:

Tab. 2 Distribution of the Programme's financial resources

PRIORITY AXES	%[16]
1. "Environment"	**35%**
2. "Tourism"	**40%**
3. "Competitiveness"	**15%**

The proposed **Intervention Logic of the Bulgaria-the Former Yugoslav Republic of Macedonia IPA CBC Programme 2014-2020**[17] (see the tables below) is structured in **Specific Objectives (SO)** for each PA, the **results** that are seek to be achieved with the Programme, and the **indicative actions** to be supported under each specific objective.

The operations under the cross-border cooperation Programme shall be selected by the Joint Monitoring Committee (JMC)[18]. The following general principles will guide the selection of operations:

[16] 10% on the total amount will be available for "Technical Assistance".
[17] As presented in the OP Draft, Version 1.0 – June 2014.
[18] According to article 39 (1), Selection of operations, of Commission Implementing regulation (EU) No 447/214 of 2 May 2014 on the specific rules for implementing Regulation (EU) No 231 of the European Parliament and of the Council establishing an Instrument for Pre-accession Assistance (IPA II),

1) CBC character:
- Involvement of beneficiaries of the two participating countries;
- Clear identification of cross-border benefit/impact if operation is implemented in a single country.

2) Partnership:
- The involved project partners are eligible corresponding to the Programme's rules;
- The involved project partners have the capacity for the project's management.

3) Regional relevance:
- The operations are in correspondence to the identified needs and challenges of the CBC area;
- The operations contribute to economic, territorial and social cohesion (following the EU-2020 Strategy).

4) Strategic relevance:
- The operations are in line with the SO;
- The operations are coherent with strategies and concept at the regional and the national level.

5) Operations' quality
- The operations/projects are clear and structured (intervention logic);
- Expenditures of the operations are effective;
- The projects are based on the concept of sustainability.

6) Horizontal principles:
- The operations take the equality between men and women into account;
- The operations consider non-discrimination principles;
- The operations follow the concept of sustainable development.

Tab. 3 Priority Axis 1 intervention Logic

Thematic Priority: "Protecting the environment and promoting climate change adaptation, risk prevention and management"

Priority Axis 1 "Environment"		
Specific Objective	**Results**	**Indicative actions[19] to be supported**
SO-1.1. **Environmental protection and sustainable use of the common natural resources of the CBC area**	**R-1.1.1** Better protected environment and biodiversity in the cross-border region	A1.1.1 Joint initiatives and investments in small infrastructure, equipment and technologies for pollution control and rehabilitation of rivers, contaminated lands, brown fields, etc. A1.1.2 Small scale investments in recycling, waste collection, waste separation, remediation of illegal damping sites and improving public hygiene A1.1.3 Investments for monitoring and combating of air pollution A1.1.4 Small scale investments for improving the management of Natura 2000 and nature protected sites A1.1.5 Small scale investments in RES and energy efficiency A1.1.6 Measures for restoration of natural areas

[19] This examples of actions are a non-exhaustive list that illustrate the range of possible actions under this Thematic Priority. The actions can be of two types: soft measures and investment measures.

	R-1.1.2 Improved capacity for nature protection and sustainable use of common natural resources in the CBC area	A1.2.1 Awareness raising and training initiatives on all levels (individual persons, organizations, businesses, public administration, schools) on issues related to environmental and nature protection A1.2.2. Joint initiatives, networks and partnerships for promotion of nature protection, energy efficiency and sustainable use of natural resources among local population, including young people, marginalized communities and other vulnerable groups; A1.2.3 Joint approaches, studies, plans, strategies, researches, common databases focused on protecting landscape and biodiversity; A1.2.4 Cooperation, exchange of experiences and knowledge between institutions in the field of nature protection and pollution prevention; A1.2.5 Cooperation between public authorities and NGOs in the field of safe and sustainable low-carbon economy across borders; A1.2.6 Public awareness campaigns on the needs of reducing and recycling waste.
SO-1.2. **Risk prevention and mitigation the consequences of natural and manmade hazards and disasters in the CBC region**	**R 1.2.1** Improved preparedness of the region concerning natural and environmental hazards and the consequences of climate change	A1.3.1 Preparation of technical documentation, feasibility studies and detailed designs for consolidation of river beds, construction of dikes, prevention of landslides, etc. A1.3.2 Development of early warning and disaster management systems A1.3.3 Small scale investments for risk prevention and response to natural and environmental hazards and the consequences of climate change, such as: - supply of specialized fire-fighting equipment, - supply of specialized equipment for control of floods and for search and rescue interventions, - sanitation and reforestation of river banks, building dikes, canals, etc. for prevention of floods), - forestation of vulnerable land and prevention of landslides, cuttings for emergency situations.
	R 1.2.2 Improved capacity for joint interaction in case of fires, floods and other emergency situations	A1.4.1 Joint approaches for promoting risk prevention awareness, adaptation and mitigation (e.g. risk mapping of accident risk spots, hazard and risk assessment and evaluation exercises, join databases, joint plans and methodologies) A1.4.2 Joint activities for improving cooperation, strategies and capacity for disaster management A1.4.3 Exchange of experience and good practices (study visits, round-tables, conferences, trainings) for public authorities and other concerned target groups on management of environmental emergencies A1.4.4 Awareness-raising campaigns in the field of risk prevention and management for all population groups (including young people and marginalized groups). A1.4.5 Conducting joint theoretical-tactical exercises and field trainings for emergency situations management with special focus on young people A1.4.6 Public awareness campaigns on the negative effects of climate change and possible mitigation measures

The decision of selecting strategic projects is within the competence of the JMC of the Programme. The actions supported under this PA are envisaged to bring benefits to the following target groups:

- Population in the region;
- Regional and local authorities.

The following table shows the types of Beneficiaries that may apply for the two types of projects/measures under this Priority Axis:

Tab. 4 Types of beneficiaries of Priority Axis 1 actions

Priority Axis 1		
	INVESTMENT PROJECTS	**SOFT MEASURES**
Local and regional authorities and organisations established and managed by local and regional authorities (especially those dealing with emergency situations and nature / environment protection)	x	x
National authorities and organisations established and managed by national authorities	x	x
Administrations of protected areas	x	x
Regional and sector development agencies		x
Research and academic institutes		x
Civil Society/Non-governmental organisations (including associations and networks)		x

Tab. 5 Priority Axis 2 Intervention Logic

Thematic Priority: "Encouraging Tourism and cultural and natural heritage"

Priority Axis 2 "Tourism"		
Specific Objective	**Results**	**Indicative actions[20] to be supported**
SO-2.1. **Enhancing the tourism potential of the region through better preservation and sustainable utilization of natural and cultural heritage**	**R-2.1.1** Increased tourism attractiveness of the CBC region	A2.1.1 Restoration and maintenance of touristic sites of historical and cultural importance A2.1.2 Conservation and protection of tangible and intangible natural, historical and cultural heritage A2.1.3. Rehabilitation of access roads to natural, cultural and historical touristic sites A2.1.4 Building of new and/or reconstructing or upgrading of existing cycling routes and walking paths A2.1.5 Building of new and/or rehabilitation and upgrading of tourist attractions A2.1.6 Public utilities upgrade (electricity, water-supply, sewerage, etc.) related to touristic sites A2.1.7 Development of cross-border transport schemes to touristic sites A2.1.8 Establishment of info-centres and/or kiosks

[20] This examples of actions are a non-exhaustive list that illustrate the range of possible actions under this Thematic Priority. The actions can be oft wo types: soft measures and investment measures.

		to guide potential visitors A2.1.9 Development of facilities for access to or in the tourist sites for disabled people
SO-2.2. **Raising the competitiveness of the CBC region's tourist offer**	**R-2.2.1** Improved visibility, variety and quality of the tourist offer in the CBC region *or alternately* **R-2.2.2** Increased contribution of tourism to the regional economy	A2.2.1 Elaboration and implementation of joint thematic routes and thematic tourism clusters (that are based on the region´s unique natural and cultural heritage) A2.2.2 Development of new/alternative sustainable tourism products and services A2.2.3 Joint actions, tools and initiatives for the promotion of the cross-border tourist products (e.g. development of joint web-sites and platforms for online reservations and payment, joint participation in tourism trade fairs, exhibitions and other promotional events, joint advertising campaigns, etc.) A2.2.4 Promotion and branding initiatives on themes and in areas related to joint cross-border tourism products A2.2.5 Joint researches on potential niche tourism activities and/or on the demand for new tourist destinations and experience A2.2.6 Joint initiatives to improve the service quality in tourism (exchange of experience and good practices, trainings, study tours, etc.) A2.2.7 Training schemes and consultancy support services for tourism enterprises/establishments to improve skills and performance A2.2.8 Support to start-up initiatives for exploiting local assets to create new tourism products and services (incl. for women and marginalized groups)
SO-2.3. **Promoting cooperation among regional actors in the area of sustainable tourism**	**R-2.3.1** Enhanced cooperation and networking for sustainable tourism development potential	A2.3.1 Awareness raising campaigns on all levels (individual persons, organizations, businesses, public administration, schools) on issues related to sustainable utilization and promotion of the region´s intangible cultural and natural heritage A2.3.2 Creating/developing/strengthening of joint networks for exchange of good practices in sustainable tourism management A2.3.3 Developing/implementing joint policies, strategies, training and capacity building events for the valorization of the cultural and natural heritage through its restoration and promotion for sustainable economic uses A2.3.4 Organization of various joint cultural events for the promotion of the region´s cultural identity A2.3.5 Creating networks for addressing youth initiatives in the border area, incl. the participation of young people in cultural initiatives A2.3.6 Support for kids and youth initiatives in the area of cultural, social, science and physical activities (music, philosophy, sports, regional exploration)

The actions supported under this PA are envisaged to bring benefits to the following target groups:

- Population in the region;
- Public and private cultural institutions;

- Education and training institutions;
- Regional and local authorities;
- Small and medium enterprises (SMEs) in tourism;
- Tourist operators:
- Tourist information centres (points).

The following table shows the types of Beneficiaries that may apply for the two types of projects/measures under this Priority Axis:

Tab. 6 Types of beneficiaries of Priority Axis 2 actions

Priority Axis 2		
	INVESTMENT PROJECTS	**SOFT MEASURES**
Local and regional authorities and organisations established and managed by local and regional authorities	**x**	**x**
National authorities and organisations established and managed by national authorities	**x**	**x**
Regional and sector development agencies		**x**
Civil Society / Non-governmental organisations (including associations and networks)		**x**
Regional touristic associations / NGOs in the field of tourism		**x**
Business support structures - chamber of commerce, business association, business cluster		**x**
Education / Training Centres		**x**
Cultural institutes (museum, library, art gallery, community centres, etc.)	**x**	**x**

Tab. 7 Priority Axis 3 intervention Logic

Thematic Priority: "Enhancing competitiveness, business environment and the development of small and medium-sized enterprises, trade and investment"

Priority Axis 3 "Competitiveness"		
Specific Objective	**Results**	**Indicative actions[21] to be supported**
SO-3.1. **Improving the competitiveness of regional businesses**	**R-3.1.1** Improved conditions for business development *or alternatively* **R-3.1.2** Improved performance of regional businesses	A3.1.1 Support to joint start-up and self-employment initiatives (especially for young people, women) A3.1.2 Support for the development of cross-border business clusters A3.1.3 Support to (creation of) social enterprises and social entrepreneurship A3.1.4 Joint approaches for promoting innovations in businesses A3.1.5 Promoting and implementing of joint business development training and capacity building schemes A3.1.6 Introduction of programmes for

[21] This examples of actions are a non-exhaustive list that illustrate the range of possible actions under this Thematic Priority. In this case, all the actions are considered soft measures.

		cooperation and exchange of experience in modern managerial practices A3.1.7 Joint initiatives for export promotion; organization and participation of cross-border fairs, exhibitions, trade missions; joint participation in fairs in third countries A3.1.8 Joint initiatives and exchange of experience for stimulating the growth of innovative/higher added-value industries (e.g. bio-farming, environmental technologies, ICTs, energy saving, pharmaceutical, electronic, etc.)
	R 3.2.1 Enhanced capacity of public and private sector for business development	A3.2.1 Joint initiatives for investment promotion A3.2.2 Exchange of experience and good practices for boosting the economic development of the region A3.2.3 Cooperation between business and the educational institutions in the field of technology transfer and the promotion of knowledge-based economy A3.2.2. Creating networks for enhancing the employment potential of young people, women and vulnerable/marginalized groups

The actions supported under this PA are envisaged to bring benefits to the following target groups:

- SMEs and other businesses in the region;
- local and regional workforce;
- Education and training institutions;
- Regional and local authorities.

The following Types of Beneficiaries may apply for the projects under this PA:

- Local and regional authorities and organisations established and managed by local and regional authorities;
- National authorities and organisations established and managed by national authorities;
- Business support structures - chamber of commerce, business association, business cluster;
- Regional and sector development agencies;
- Education and training centres.

Under all tree Priority axis, **strategic projects** could also be identified outside calls for proposals for the achievement of the priority SO that should contribute to a bigger impact through real and strong cross-border impact and long-term results. Strategic Projects must be effective and answer the territorial needs and result in a significant and long-lasting change or improvement on the whole or large parts of Programme area. The basic principles for the eligibility of a strategic project should be the following:

- to address key SO that can be achieved only through the involvement of large partnerships and /or of key stakeholders on the two sides of the border;
- to produce lasting effects and catalyse further actions.

Concerning "**sustainable development**" into the Programme's text it is stated (pages n. 81-82):

Bulgaria – the former Republic of Macedonia IPA CBC Programme Authorities must ensure that environmental protection requirements, climate change mitigation and adaptation, biodiversity and ecosystem protection, disaster resilience and risk prevention and management are promoted in the preparation and implementation of the programmes. In the case of the Bulgaria – the former Republic of Macedonia IPA CBC Programme the biggest challenges are related to environmental and biodiversity protection and sustainable use of natural resources and the addressing of climate change, environmental risks management and emergency preparedness. These challenges relate to the protection of the environment as a sustainable value of the region and as a prerequisite for sustainable tourism.

Generally, all three dimensions of sustainability, including the ecological, the economic as well as the social one, will be taken into consideration within the IPA BG-MK Programme; therefore the programme contributes directly to the Europe 2020 Strategy's components of smart, sustainable and inclusive growth.

Within all axes of the programme strategy, sustainable development is seen as a cross-cutting issue with all three pillars (economic, social and environmental) equally represented in the Programme priority axes. Especially the Programme's Priority Axis 1, which targets cooperation on natural and cultural resources for sustainable growth, takes into account environmental protection, resource efficiency, climate change (include both mitigation and adaptation) as well as natural hazards, disaster and risk resilience, prevention and management. In these fields, the Programme mainly contributes to the generation and dissemination of knowledge and capacities on the protection and sustainable use of natural resources and addresses issues of resource management. Priority Axis 2, which deals with sustainable tourism, targets cooperation on the creation of sustainable tourist services and tourism attractiveness will capitalise on the existing natural and cultural resources, which shall be managed and preserved in a sustainable way.

Besides actions within the Programme priorities, which may foster sustainable development, a number of activities have been identified which may be implemented in projects submitted under any chosen priority Axis.

All projects and interventions of the IPA BG-MK Programme can integrate measures to ease the burden of emissions of their actions, e.g. by:

- actively tackle wider environmental concerns;
- actively tackle environmental issues of specific concern, including climate change as well as the maintaining of biodiversity and ecosystems;
- carrying out environmental management (structured experience sharing, capacity development, etc.);
- actively tackle sustainability issues, including ecological, economic and social concerns;
- adopting measures for the organisation and implementation of conferences and events in a sustainable way.

Additionally, all projects funded by the Programme should:
- contribute to the implementation of the reviewed European Union Strategy for Sustainable Development (2009), which shall be proved by each project applicant in a conclusive and transparent way which shall be assessed as project selection criterion;

- consider the principles of the Community Policy regarding the protection and improvement of natural heritage and biodiversity as well as related amendments, such as the Flora-Fauna-Habitat directive and the Birds directive being the "cornerstone of Europe's nature conservation policy" (European Commission, 2013: online22);
- consider greater use of renewable energy.

Appropriate management arrangements of the IPA BG-MK Programme shall support environmentally sustainable development of the cross-border cooperation area. Besides respecting the legally required standards, the programme seeks to avoid all effects that are unsustainable or unfavourable to the environment at all levels of the programme implementation cycle. Negative impacts shall be avoided to the highest degree possible.

The positive effects and potentials for synergies of the IPA BG-MK Programme for the purpose of optimising its contribution to an environmentally sustainable development shall be exploited at best and, wherever possible, be strengthened. Wherever achievable, preference will be given to the planning and realisation of environmentally friendly solutions and projects.

The Programme is implemented via a number of projects. The assessment of the quality of the eligible project proposals should be based on a set of quality criteria which are common to all Priority Axes and Investment Priorities. The contribution of each project to these principles will be addressed in a qualitative manner in the frame of project selection and programme monitoring and evaluation. The policy aimed at sustainable development will be screened throughout all stages of the programme implementation – both at programme and project level.

3.4 Relations to other relevant programmes and strategies

The Bulgaria-the Former Yugoslav Republic of Macedonia IPA CBC Programme (2014-2020) is designed in the framework of the European strategy for a smart, inclusive and sustainable growth and of the Common Strategic Framework 2014 to 2020, in which employment, demographic change and education are addressed as issues of cross-border relevance. Additionally, sustainable development, climate change mitigation and natural disasters (developing integrated cross-border natural risk management) as well as biodiversity are outlined as relevant issues.

The framework of the Programme also includes the European Territorial Cooperation (ETC)[23] strategy that, in general – and Cross-border cooperation, in specifics – contributes under the ETC goal "*to the thematic objectives of developing an economy based on knowledge, research and innovation, including through the fostering of cooperation between businesses, particularly between SMEs, and through the promotion of the establishment of systems for crossborder information exchange in the area of ICT; promoting a greener, more resource efficient and competitive economy, including through the promotion of sustainable crossborder mobility; fostering high employment that results in social and territorial cohesion, including through activities supporting sustainable tourism, culture and natural heritage as part of a territorial strategy aimed at achieving employment-friendly growth; and developing administrative capacity*".

[22] Cf. EU COM (2013): The Habitats Directive.
[23] As defined in regulation 1299/2013.

In this context, the Instrument for Pre-Accession Assistance (IPA), as an instrument of the implementation of the EU cohesion policy, supports cross-border co-operation along the external borders of the Union and its general objective aims at supporting "*beneficiaries [...] in adopting and implementing the political, institutional, legal, administrative, social and economic reforms required by those beneficiaries in order to comply with the Union's values and to progressively align to the Union's rules, standards, policies and practices, with a view to Union membership*".

The overall context for the cooperation programmes and the strategic anchor of the IPA CBC is the EU Cohesion policy framework that supports the objectives of the Europe 2020 Strategy.

The **IPA CBC Programme Bulgaria-the Former Yugoslav Republic of Macedonia** (2014-2020) is also directly linked to other EU policy documents which are developed in order to support EU 2020 Strategy. The ex ante evaluation assess the coherence (see chapter 2.2.1: *External coherence including contribution to Europe 2020*[24]) of the Programme to these documents, hereafter identified:

- EU Strategy for the Danube Region (EUSDR);
- INTERREG;
- Horizon 2020 – Framework Programme for Research and Innovation 2014-2020;
- Programme for the Environment and Climate Action (LIFE Programme) for the period 2014-2020;
- Programme for the Competitiveness of Enterprises and Small and Medium-sized Enterprises (SMEs) 2014-2020 (COSME);
- Community Mechanism for Civil Protection (CMCP).

The Programme is also related also with a number of national and regional level planning strategies/programmes and documents of both countries. The ex ante evaluation also applies the assessment of the external coherence to the following documents:

- National Development Programme: Bulgaria 2020;
- National Reform Programme of the Republic of Bulgaria in the implementation of strategy Europe 2020, 2014;
- the (draft) EC Partnership Agreement (PA) of the Republic of Bulgaria[25];
- Bulgarian Position Paper (PP);
- Bulgarian OP Human Resources Development 2014-2020;
- Bulgarian OP Environment 2014-2020;
- Bulgarian OP Transport and Transport Infrastructure 2014-2020;
- Bulgarian OP Innovation and Competitiveness 2014-2020;
- Bulgarian OP Science and Education for Smart Growth 2014-2020;
- Bulgarian OP Regions in Growth 2014-2020;
- Bulgarian OP Good governance 2014-2020;
- Bulgarian Rural Development Programme (RDP) 2014-2020 Bulgaria;
- The Strategy for Regional Development of the former Yugoslav Republic of Macedonia 2009-2019;
- NPAAC 2014-2016;
- the (draft) EC Country Strategy Paper (CSP) 2014-2020 for EU assistance to the Former Yugoslav Republic of Macedonia[26].

[24] Ex ante evaluation IPA CBC Bulgaria-the Former Yugoslav Republic of Macedonia, Final Report– DRAFT, 30 June 2014.

[25] Draft Partnership Agreement of the Republic of Bulgaria outlining the Support from the European Structural and Investment Funds for the 2014-2020 Period, submitted to the EC in April 2014.

Finally it has to be noted that the Programme is connected with other international, community, regional and national strategies/programmes/plans and documents related to the environment. See chapter 4 for the assessment of the consistency of the Priority Axes and Specific Objectives of the IPA CBC Bulgaria-the Former Yugoslav Republic of Macedonia Programme 2014-2020 to the objectives of the whole environmental policy/legislation framework considered.

4 Environmental policy framework: relevant plans, programmes and Environmental protection objectives which are relevant to the Programme and identification of SEA Objectives

For each of the defined environmental issues (**1) air and climate; 2) biodiversity, fauna and flora; 3) water; 4) soil; 5) population and human health; 6) cultural/natural heritage and landscape**) and cross-cutting themes[27], this chapter presents an overview of the environmental policy framework that has been taken into account for the identification of all of the relevant **environmental protection objectives**, in order to evaluate the consistency of the IPA CBC Bulgaria-the Former Yugoslav Republic of Macedonia 2014-2020 with international, EU, regional and national environmental goals and objectives. The choice of environmental policies is based on the relevance of their objectives to each of the defined environmental issues and cross-cutting themes.

Besides the specific policies for each of the defined environmental issues, superordinate strategies, plans and programmes, at EU and regional level, will be also considered. Ad example:

- The **7th EU Environmental Action Programme (EAP)** "*Living well, within the limits of our planet*" - which will be guiding European environment policy until 2020 - and its key objectives:
  - To protect, conserve and enhance EU's natural capital;
  - To turn the EU into a resource efficient, green and competitive low-carbon economy;
  - To safeguard EU citizens from environment-related pressures and risks to health and wellbeing;
  - To maximize the benefits of EU environment legislation;
  - To improve the evidence base for environmental policy;
  - To secure investment for environment and climate policy and get the prices right;
  - To improve environmental integration and policy coherence;
  - To enhance the sustainability of EU cities;
  - To increase the EU's effectiveness in addressing regional and global environmental and climate challenges.

[26] Draft Country Strategy Paper 2014-2020 EU assistance to the Former Yugoslav Republic of Macedonia, EUROPEAN COMMISSION, December 2013 (Ares(2013)3786995 - 20/12/2013).

[27] Issues like "use of renewable energy sources", "energy efficiency", "adaptation to climate change", "mobility and transport", "waste management and prevention", "risk management", "sustainable tourism", "sustainable use of natural resources" and "environmental education and awareness raising on environmental issues".

- The **Europe 2020 Strategy**[28] with the three priorities: smart growth: developing an economy based on knowledge and innovation; sustainable growth: promoting a more resource efficient, greener and more competitive economy; inclusive growth: fostering a high-employment economy delivering social and territorial cohesion;

- The renewed **EU Sustainable Development Strategy** with the overall aim to develop actions to enable the EU to achieve a continuous long-term improvement of quality of life through the creation of sustainable communities able to manage and use resources efficiently, able to tap the ecological and social innovation potential of the economy and in the end able to ensure prosperity, environmental protection and social cohesion.

- The **EUSDR** (EU Strategy for the Danube Region) **Action Plan** to make the **Danube Region** environmentally sustainable, prosperous, accessible and attractive, as well as safe and secure.

At national level there are a number of superordinate strategies/programmes, laws and documents that can be relevant for the identification of **environmental protection objectives**.

In this context, for Bulgaria, the environmentally relevant legal and policy framework considered includes, among all:

- the **National Development Programme "Bulgaria 2020"** (adopted by the Council of Ministers on 19/12/2012), a leading strategic and programming document which defines the objectives and policies for the development of the country by 2020. The main purpose is to achieve quality and balanced long-term economic growth. Three goals are set out:
  1. raising the standard of living through competitive education and training, creating conditions for quality employment and social inclusion and ensuring accessible and quality health care;
  2. building of infrastructure networks, providing optimal conditions for the development of the economy and quality and healthy environment for the population;
  3. enhancing the competitiveness of the economy by ensuring a favourable business environment, promotion of investments, application of innovative solutions and improving resource efficiency.

- the **National Regional Development Strategy (NRDS) 2012-2022,** fundamental document defining the strategic framework of the government policy for attaining balanced and sustainable development of the country's regions and for overcoming the intra- and interregional differences/disparities in the context of the all-European policy of cohesion and achieving smart, sustainable and inclusive growth. The key strategic goal of NRDS is to achieve sustainable integrated regional development based on the utilization of local potential and cohesion between the regions in an economic, social and territorial aspect.

- the **"Guidelines for Mainstreaming the Environment Policy (EP) and the Climate Change Policy (CCP) into the Funds of the Cohesion Policy, the Common Agricultural Policy and the Common Fisheries Policy for the period 2014-2020",**

[28] Including the underpinning **flagship initiative Resource Efficient Europe** to help decouple economic growth from the use of resources, by decarbonising the economy, increasing the use of renewable sources, modernising the transport sector and promoting energy efficiency.

developed by the Ministry of Environment and Water, Bulgaria (approved by the Council of Ministers on 01.03.2013);

For The Former Yugoslav Republic of Macedonia the environmental strategic framework includes:

- the **National Programme for Adoption of the Acquis Communautaire 2014-2016**, particularly the part that describes the process by which the Former Yugoslav Republic of Macedonia aligns its legislation, institutional structures and work practices with the requirements of the Environmental European legislation (Chapter 27 of the *Acquis communautaire*).
- the **Strategy for Regional Development of the Former Yugoslav Republic of Macedonia 2009-2019**, which defines the development of cross-border cooperation as one of the goals for the regional development policy. The Priority 2.6. "Development of cross-border cooperation as well as cooperation between the planning regions" proposes to: encourage the mutual regions cooperation for the preparation/implementation of joint projects in the field of infrastructure, environment, protection of natural and cultural heritage and other areas of common interest.
- the **Law on the Environment**, aimed to ensure protection and improvement of the environment, for the purpose of exercising the right of citizens to a healthy environment. The objectives of this law is:
  - ✓ Preservation, protection, restoration and improvement of the quality of the environment;
  - ✓ Protection of human life and health;
  - ✓ Protection of biological diversity;
  - ✓ Rational and sustainable utilization of natural resources;
  - ✓ Implementation and improvement of measures aimed at addressing regional and global environmental problems.

In the following paragraphs, for each of the defined environmental issue (and related cross-cutting themes), are available the **relevant environmental legislation and policies** and their corresponding qualitative **environmental objectives,** as well as the resulting **guiding questions** which have been used as a valid instrument for the environmental assessment (chapter 8).

4.1 Air and climate

For the environmental issue **Air and Climate** the main pressure is air pollution that needs to be reduced in order to win the battle against climate change as to prevent from acidification, eutrophication and ground-level ozone pollution. At the international level climate change has been addressed by the United Nations Framework Convention on Climate Change (UNFCCC). The long-term objective is to stabilise atmospheric greenhouse gas concentrations at a level that would prevent dangerous anthropogenic interference with the climate system. The **Kyoto Protocol** sets international binding emission targets for GHG emissions. The first commitment period ended in 2012, while the follow-up protocol **Kyoto II** defines the second one from 2013 to 2020.

"Use of renewable energy sources", "energy efficiency", "adaptation to climate change" and "mobility and transport" are themes interlinked and tightly related to this issue where they have been analysed. Other cross-cutting themes integrated in the environmental issue Air and Climate are" "risk management" and "environmental education and awareness raising on environmental issues"

The following table shows the list of EU, Bulgarian and Macedonian relevant legislation and policies on Air and Climate, framework from which the related environmental objectives and the corresponding evaluation questions have been driven:

Relevant EU legislation and policies	Relevant Bulgarian legislation and policies	Relevant Macedonian legislation and policies	Environmental Objectives	Evaluation questions
EU **Directive on ambient air quality and cleaner air** for Europe (2008/50/EC) Thematic Strategy on **Air pollution** (COM(2005) 446) **EU climate and energy package 2020** **EU Energy Efficiency Directive** (2012/27/EU) **EU Renewable Energy Directive** (RED) (2009/28/EC) **EU Strategy on adaptation to climate change**	**Climate change mitigation Act** **Energy Strategy of Bulgaria to 2020** **Energy Act** **National action plan for renewable energy sources 2020** **Energy from Renewable Sources Act** **Third National Action Plan on Climate Change 2013-2020** **Ambient Air Purity Act** **Strategy for the development of**	**Law on Ambient Air Quality** **Law on the Environment** **Strategy for energy development until 2030** **National Strategy for Sustainable Development** Law for fire prevention	***Reduction of air pollution***	Will the specific objective have an effect on the reduction of air pollution?
			Reduction of the GHG emissions	Will the specific objective have an effect on the reduction of the GHG emissions?
			Improvement of energy efficiency and increase of use of renewable energy resources	Will the specific objective have an effect on the improvement of energy efficiency and increase of use of renewable energy resources?
			Support of environmentally friendly transports	Will the specific objective have an effect on the support of environmentally friendly transports?
			Promotion of fire fight management and prevention	Will the specific objective have an effect on the promotion of forest fire fight

(COM(2013) 216) **EU White Paper for Transport** (COM(2011)144)	**the transport system of the republic of Bulgaria until 2020** **National Strategy for the Development of Forestry**			management and prevention?
			Promotion of resilience to climate change and climate-related disasters	Will the specific objective have an effect on the promotion of resilience to climate change and climate-related disasters?
			Promotion of responsible behaviour of the public by involving the citizens into fighting climate change	Will the specific objective have an effect on the promotion of responsible behaviour of the public by involving the citizens into fighting climate change?

The protection of air and climate is reflected in several regulations at the EU level. First of all the **EU Directive on ambient air quality and cleaner air for Europe** (2008/50/EC) in order to attain "levels of air quality that do not give rise to significant negative impacts on, and risks to human health and environment", establishes specific long-term objectives for air pollution and proposes measures for achieving them by 2020:

- 47% reduction in loss of life expectancy as a result of exposure to particulate matter;
- 10% reduction in acute mortalities from exposure to ozone;
- reduction in excess acid deposition of 74% and 39% in forest areas and surface freshwater areas respectively;
- 43% reduction in areas or ecosystems exposed to eutrophication.

In addition the EU **Thematic Strategy on Air pollution** (COM(2005) 446) sets objectives for reducing certain air pollutants (as SO_2, NH_3, VOC, NOx and PM 2.5).

In light of the Kyoto protocol that have been ratified by the EU Member States the EU adopted the **climate and energy package 2020:** a set of binding legislations which aims to ensure the European Union meets its ambitious climate and energy targets for 2020:

- A 20% reduction in EU greenhouse gas emissions from 1990 levels and a 20% improvement in the EU's energy efficiency, main goals linked to the **EU Energy Efficiency Directive** (2012/27/EU);
- Raising the share of EU energy consumption produced from renewable resources to 20%, objective promoted by the **EU Renewable Energy Directive** (RED) (2009/28/EC);

Not least, in the climate and energy policy framework for 2030, the European Commission proposes that the EU set itself a target of reducing emissions to 40% below 1990 levels by 2030.

In the contest of climate policy the overall aim of the **EU Strategy on adaptation to climate change** (COM(2013) 216) is to contribute to a more climate-resilient Europe. This means enhancing the capacity to respond to the impacts of climate change at local, regional, national and EU levels, developing a coherent approach and improving coordination.

As already mentioned, “mobility and transport” is viewed as a cross-cutting theme and is also related to the Air and Climate issue due to his high contribution to climate change. The transport related carbon emissions must be reduced and according to the roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system (**EU White Paper for Transport** (COM(2011)144) – sustainable mobility must be promoted. The roadmap of 40 concrete initiatives for the next decade, proposes to reduce Europe's dependence on imported oil and cut carbon emissions in transport by 60 % by 2050).

In Bulgaria:

The main priorities of the **Energy Strategy of Bulgaria to 2020** can be summarized in the following five directions: to guarantee the security of energy supply; to attain the targets for renewable energy; to increase the energy efficiency; to develop a competitive energy market and policy for the purpose of meeting the energy needs, and to protect the interests of the consumers.

The principal purposes of the **Energy Act** are to create conditions for:

- high-quality and secure supply of electricity, heat and natural gas to the general public;
- energy development and energy security through efficient use of energy and resources;
- generation, import, export, transmission, distribution and trade in electricity, heat, natural gas, oil and oil products shall be carried out under the guaranteed protection of the life and health of citizens, the property, the environment, the security of supplies, etc..

The **National action plan for renewable energy sources 2020** has the following objectives:

- promoting the development and use of technologies for production and consumption of: energy from renewable and alternative energy sources; biofuels and other renewable fuels;
- diversification of energy supplies;
- increase the capacity of small and medium producers of energy from renewable and alternative sources of energy and producers of biofuels and other renewable fuels;
- environmental protection;
- create conditions for achieving sustainable development at local and regional level.

The objectives of the **Energy from Renewable Sources Act** include among all:

- promotion of production and consumption of energy produced from renewable sources;
- creating conditions for achieving sustainable and competitive energy policy and economic growth through innovation, and implementation of new products and technologies;
- creating conditions for achieving sustainable development at regional and local levels;
- environmental protection and restricting climate change.

The **Climate Change Mitigation Act** (promulgated in March 2014) codifies the entire regulation in the field of climate change mitigation and fully transposes the current European legislation on climate change.

The main strategic objective of the **Third National Action Plan on Climate Change 2013-2020** is to outline the framework for action in the fight against climate change for the period 2013-2020, and to turn the country's efforts to actions that reduce the negative impact of

climate change and the implementation of commitments. The main goal of the plan is reducing greenhouse gases in Bulgaria and implementation of existing EU legislation in the field of climate change.

The goal of the **Ambient Air Purity Act** (reinforced by the Environment Protection Act) is to protect the people's and their generation's health, the animals and the plants, their communities and habitats, the natural and cultural values from harmful effects, as well as to prevent the occurrence of dangers and damages to society in case of changes in the ambient air quality resulting from various activities.

The vision of the **National Strategy for the Development of Forestry 2013-2020** is to have vibrant, productive and multifunctional forests, sustainable, competitive and innovative forestry and biodiversity preserved, quantity and quality of water resources in forest areas. The sector will contribute to the economic development of the country and to mitigate the effects of climate change and ensure the maintenance of a healthy environment. One of the strategic objectives is to Increase the contribution of the forest sector in the green economy. Realization of the vision is to achieve strategic objectives in the medium term as ensuring sustainable development of the forestry sector by achieving optimal balance between environmental functions and their ability to provide long-term tangible benefits and services.

In relation to the cross-cutting theme of “mobility and transport” one of the strategic goals of the **Strategy for the Development of the Transport System of the Republic of Bulgaria for the period until 2020** is the development of sustainable transport sector through: the *reduction of the negative impact of transport on the environment and change; the integration of the Bulgarian transport system in Europe; the provision of high level of safety and security of transport systems*.

In the Former Yugoslav Republic of Macedonia:

The goals of the **Law on Ambient Air Quality** are the following:

- to avoid, prevent and reduce harmful effects on human health and the environment as a whole, including also biological diversity, natural wealth and historical and cultural heritage;
- to provide appropriate information on the quality of ambient air;
- to prevent and reduce pollutions that may lead to climate change;
- to maintain the quality of ambient air where it is good and improve it in other cases;

The **Law on the Environment** regulates areas of relevance for air quality and air emissions, especially in the sections on monitoring, environmental impact assessment and integrated pollution prevention and control (IPPC). Three chapters of the law refer to:

- integrated environmental permits for the operation of installations having impacts on the environment;
- general environmental audits;
- adjustment permits with adjustment plans.

The **Strategy for energy development until 2030** defines the most favourable long term development of the energy sector with a view of providing a reliable and good quality energy supply to the consumers. The following priorities have been taken into account for the realization of the above mentioned core objective:

- Maintenance, revitalization and modernization of the existing and construction of new; modern infrastructures for the purposes of energy production and utilization;
- Improvement of the energy efficiency in the production, transmission, and utilization of energy;
- Utilization of domestic resources (reserves of lignite, hydropower potential, wind and solar energy) for electricity production;
- Increase of natural gas utilization;

- Increase of the utilization of renewable energy sources;
- Establishment of economic energy prices;
- Integrating the energy sector of the Republic of Macedonia in the regional and European market.

The **National Strategy for Sustainable Development** identifies the climate change as one of the key cross-cutting issues affecting several sectors, such as energy, agriculture, industry.

The main objective of **Strategy on RES until 2020** is to provide information on the potential and possible exploitation of RES.

4.2 Biodiversity, fauna and flora

One sphere of environmental policy that the Programme could not neglect concerns Biodiversity, fauna and flora.

At the international level the **UN Convention on Biological Diversity (CBD, 1992) with its commitments (Nagoya protocol - 2010, Cartagena protocol on biosafety - 2000**) aims to the conservation of biological diversity, the sustainable use of the components of biological diversity. The protection of endangered species in another international objective. In relation to this is useful to remark the **IUCN Global Species Programmes** that provides the "red list of threatened species" in order to assess the conservation status and the degree to which they are endangered by extinction.

The cross-cutting themes integrated in this environmental issue are "sustainable tourism", "adaptation to climate change", "environmental education and awareness raising on environmental issues" and "sustainable use of natural resources".

The following table shows the list of EU, Bulgarian and Macedonian relevant legislation and policies on Biodiversity, fauna and flora, framework from which the related environmental objectives and the corresponding evaluation questions have been driven:

Relevant EU legislation and policies	Relevant Bulgarian legislation and policies	Relevant MK legislation and policies	Environmental Objectives	Evaluation questions
EU 2020 Biodiversity Strategy **EU Habitats Directive** (92/43/EEC) **EU Birds Directive** (2009/147/EC) EU Thematic Strategy on sustainable use of natural resources (COM(2005) 670)	Environment Protection Act **Protected Areas Act** **Biological Diversity Act** **National priority action framework for Natura 2000** **National Strategy for the Development of Forestry**	**Law on nature protection** **Biodiversity Strategy and Action Plan** **Spatial Plan of the Republic of Macedonia** **Law on the environment** Law for fire prevention	***Preservation of biodiversity, habitats and ecosystems and their services***	Will the specific objective have an effect on the preservation of biodiversity, habitats and ecosystems and their services?
			Preservation of the natural diversity of fauna, flora, and habitats in protected areas and Natura 2000 sites	Will the specific objective have an effect on the preservation of the natural diversity of fauna, flora, and habitats in protected areas and Natura 2000 sites?
			Protection of endangered species (plants	Will the specific objective have an effect on the

EU Strategy on adaptation to climate change 2010 Communication of the EC on tourism	National Wetland Protection Plan for the Period 2013-2020 Tourism Act		***and animals)***	protection of endangered species (plants and animals)?
			Decrease in loss of biodiversity	Will the specific objective have an effect on the decrease in loss of biodiversity?
			Promotion of responsible behaviour of the public by involving the citizens in protecting biodiversity and natural areas	Will the specific objective have an effect on the promotion of responsible behaviour of the public by involving the citizens in protecting biodiversity and natural areas?
			Promotion of tourism that would ensure high degree of nature conservation	Will the specific objective have an effect on the promotion of tourism that would ensure high degree of nature conservation?

The **EU Biodiversity Strategy**[29], adopted in 2012, calls to halt the loss of biodiversity and ecosystem services in the EU by 2020. There are six main targets, and 20 actions to help Europe reach its goal. The six targets cover:

- Full implementation of EU nature legislation to protect biodiversity;
- Better protection for ecosystems, and more use of green infrastructure;
- More sustainable agriculture and forestry;
- Better management of fish stocks;
- Tighter controls on invasive alien species;
- A bigger EU contribution to averting global biodiversity loss.

Biodiversity conservation and protection of wild birds and natural habitats are the core of the two **EU directives: Habitats and Birds**. In particular, the Habitats Directive establishes the Natura 2000 network of protected areas which aims to promote and assure long-term protection of threated species and habitats.

In Bulgaria:

The National priority action framework for Natura 2000 sets specific strategic conservation priorities for the period 2014-2020 to be implemented in the territory of protected areas "Natura 2000". These strategic priorities are: 1) Management planning of Natura 2000 protected areas; 2) Sustainable management of Natura 2000 protected areas; 3) Sustainable use of ecosystem services for optimum public benefits, and other factors for socio-economic development of regions; 4) Elaboration, development and maintenance of a shared vision for the ecological network Natura 2000 in Bulgaria; 5) Technical assistance.

[29] "Our life insurance, our natural capital: the EU biodiversity strategy to 2020".

The purpose of the **Protected Areas Act** is to conserve and preserve protected areas as a national and universal human wealth and asset and as a special form of conservation of Bulgarian nature, conducive to the advancement of culture and science and to public welfare. Protected sites shall be managed for the purpose of preservation of the features of the landscape and provision of opportunities for tourism and public appreciation

The **Biological Diversity Act** have the following objectives:

- conservation of natural habitat types representative of the Republic of Bulgaria and of Europe and habitats of endangered, rare and endemic plant and animal species within a National Ecological Network;
- conservation of the protected plant and animal species of the flora and fauna of the Republic of Bulgaria, as well as of those as are subject to use and trade;
- conservation of the genetic resources and the diversity of plant and animal species outside the natural surroundings thereof;
- regulation of the introduction of non-native and the reintroduction of native plant and animal species into the wild;
- regulation of trade in specimens of endangered species of wild flora and fauna;
- conservation of centuries-old and remarkable trees.

In the Former Yugoslav Republic of Macedonia:

The **Law on nature protection** regulates the nature protection by protecting the biological and landscape diversity, and the protection of the natural heritage, in protected areas and outside of protected areas. The objectives of this Law are:

- Determination and monitoring of the state of nature;
- Conservation and restoration of the existing biological and landscape diversity in a state of natural balance;
- Establishment of a network of protected areas for the purpose of sustainable protection of the features on the basis of which they have acquired the status of natural heritage;
- Providing for sustainable use of natural wealth in the interest of the present and future development, without significant damage of parts of the nature and with the least possible disturbance of natural balance;
- Prevention of harmful activities of individuals and legal entities and disturbance in nature as a result of technological development and performance of activities, i.e. providing for the best possible conditions for protection and development of the nature;
- Providing for the citizen to exercise their right to healthy environment.

National targets for protected areas are included in the **Biodiversity Strategy and Action Plan** (BSAP), prepared in 2004 and **Spatial Plan of the Republic of Macedonia** (2004). According to the Spatial Plan of the Republic of Macedonia, Sectoral study for protection of nature is foreseen by 2020, the total area of protected areas occupies about 11.5% of the national territory.

Moreover, tree of the objectives of the **Law on the environment** are:

- Preservation, protection, restoration and improvement of the quality of the environment;
- Protection of biological diversity;
- Rational and sustainable utilization of natural resources.

4.3 Water

The main general objective for this issue is the protection of all the different water body types (surface, transitional, coastal waters and groundwater). In relation to the issue "Water" the analysis takes also into account the following cross-cutting themes: "risk management", "sustainable use of natural resources", "sustainable tourism", "environmental education and awareness raising on environmental issues", "adaptation to climate change" and "waste management and prevention".

The following table shows the list of EU, Bulgarian and Macedonian relevant legislation and policies on Water, framework from which the related environmental objectives and the corresponding evaluation questions have been driven:

Relevant EU legislation and policies	Relevant Bulgarian legislation and policies	Relevant MK legislation and policies	Environmental Objectives	Evaluation questions
EU Water Framework Directive (2000/60/EC) **EU Groundwater Directive** (2006/118/EC) **EU Floods Directive** (2007/60/EC) **EU Urban Waste Water Directive** (91/271/EEC) EU Thematic Strategy on sustainable use of natural resources (COM(2005) 670) **EU Nitrate Directive** (91/676/EEC) **EU Landfill Directive** (99/31/EC) **EU Waste Framework Directive** (2008/98/EC) EU Strategy on adaptation to	Environment Protection Act **Water Act** **National Strategy for Management and Development of the Water Sector** **Strategy for the management and development of water supply and sewerage** **National Wetland Protection Plan for the Period 2013-2020** Tourism Act **West Aegean River Basin Management plan (2010-2015)** Management Plans for River Basins for the period 2016-	**National Environmental Action Plan** **Law on Waters** Law on Waste Management National Waste Management Plan (2009 - 2015) Law on the environment	***Reduction of water pollution from point and diffuse sources***	Will the specific objective have an effect on the reduction of water pollution from point and diffuse sources?
			Reduction of eutrophication	Will the specific objective have an effect on the reduction of eutrophication?
			Improvement of ecological and chemical status of water bodies	Will the specific objective have an effect on the improvement of ecological and chemical status of water bodies?
			Promotion of sustainable use of water resources	Will the specific objective have an effect on the promotion of sustainable use of water resources?
			Reduction of flood risks	Will the specific objective have an effect on the reduction of flood risks?
			Promotion of sustainable tourism towards water resources preservation	Will the specific objective have an effect on the promotion of sustainable use of sustainable tourism towards water resources preservation?

climate change 2010 Communication of the EC on tourism	2021 Flood Risk Management Plans National Waste Management Plan Waste Management Act National Strategy for the Development of Forestry		***Promotion of responsible behaviour of the public by involving the citizens into sustainable water use***	Will the specific objective have an effect on the promotion of responsible behaviour of the public by involving the citizens into sustainable water use?

The EU **Water Framework Directive** (WFD) is the main EU policy for the "Water" issue. The Directive aims to different aspects:

- Improvement of the ecological and chemical state of all water bodies to achieve good qualitative and quantitative status by 2015;
- Prevention and reduction of water pollution;
- Promotion of sustainable water resource use;
- Contribution to mitigate the effects of floods and droughts.

In order to achieve the good status of water bodies, Member states have to adopt and continuously revise management plans for river basin districts.

Complementary to the WFD the **EU Groundwater Directive** (2006/118/EC) includes quality standards for the chemical state of groundwater and aims to reduce and prevent indirect pollution resulting from the penetration of pollutant into the soil.

Other EU directives are relevant for the water sector and are the basis for several of the protection objectives mentioned above. The **EU Urban Waste Water Directive** aims for a better management of waste waters and provides for the mitigation of negative effects of discharges of urban waste water. The **EU Nitrates Directive** promotes the protection from water pollution caused, in particular, by nitrates from agricultural sources.

The **EU Floods Directive** (RL 2007/60/EG) aims at prevention and limitation of floods, possible risks and resulting negative impacts on human health, environment, cultural heritage, infrastructures and economic activities after flood events.

The objective of the **EU Landfill Directive** is to prevent or reduce as far as possible negative effects on the environment from the landfilling of waste, by introducing stringent technical requirements for waste and landfills. The Directive is intended to prevent or reduce the adverse effects of the landfill of waste on the environment, in particular on, water, soil and human health. Also the disposal of the **EU Waste Framework Directive** concerns the environmental issue "Water" as discharged harmful substances (waste) pollute water bodies and soil. More specifically, this Directive aims to reduce the amount of waste generated and to promote sustainable waste management contribution to the protection of the environment and of human health from adverse effects. It introduces the "polluter pays principle" and the

"extended producer responsibility", including two new recycling and recovery targets to be achieved by 2020: 50% preparing for re-use and recycling of certain waste materials from households and other origins similar to households, and 70% preparing for re-use, recycling and other recovery of construction and demolition waste.

In Bulgaria:

The objective of the **Water Act** is to ensure integrated water management in the interest of society and for protection of public health, as well as to create conditions to:

- ensure a sufficient supply and good quality of surface waters and groundwater for sustainable, balanced and equitable water use;
- reduce the pollution of waters;
- protect surface waters and groundwater and the waters of the Black Sea;
- eliminate the pollution of the marine environment with natural or synthetic substances;
- eliminate the discharges, emissions and losses of priority hazardous substances;
- prevent or reduce the harmful consequences for human life and health, the environment, cultural heritage and economic activity associated with water-related damage and loss.

The long-term strategic objective of the country in the water sector is “Sustainable use of water resources, providing optimum levels for present and future needs of the population and the economy, and aquatic ecosystems”. Main aims of the **National Strategy for Management and Development of the Water Sector** (to 2037) are: 1) Ensure the provision of water for households and businesses in terms of climate change leading to drought; 2) Maintaining and improving the condition of surface and underground waters; 3) Improving performance in integrated water management as economic resource; 4) Reduce the risk of flood damage.

The main objective of **Strategy for the management and development of water supply and sewerage** is to improve the management of water and wastewater sector and to improve the quality of water and sewerage services. It is based on this four objectives: 1) Creating conditions for effective management of the sector and an integrated approach to solving problems; 2) Creating conditions for the involvement of the private sector, the interests of society; 3) Application of structural management approach, taking into account regional planning and to ensure economies of scale; 4) Improving the quality of water and sewerage services and reaching levels and standards of these services in the European Union.

In the Former Yugoslav Republic of Macedonia:

The **National Environmental Action Plan** (NEAP 2) identified some policy and technical priorities for actions such as:

- finalising the legislation, establishing a new organisational set up for water resource management, protecting water quality and maintaining the water balances of the three natural lakes: Ohrid, Prespa and Dojran in cooperation with the neighbouring countries;
- protection of surface and groundwater from pollution by urban and industrial wastewaters, protection of the water quality of the reservoirs, especially those whose water is used for drinking water supply, recreation, sport and tourism;
- improvement of rural drinking water supply and access to healthy drinking water;
- investment in upgrading urban water supply systems;

- improvement of urban public sewage systems through physical rehabilitation of the systems, upgrading, extension and modernisation;
- extension and construction of rural sewerage systems and construction of isolated wastewater treatment plants;
- improvement of the condition of irrigation systems through improvement of flood protection and erosion protection systems;
- improvement of the water regime by construction of new multipurpose hydro-power systems;
- introduction of water-saving measures for water consumption – pricing policy, introduction of irrigation methods for water saving, use of other sources for supply to industries, etc.;
- improvement of the state monitoring network for waters and creating conditions for extending and populating the data base;
- establishment and operation of local networks for water monitoring by local self-governing units;
- protection of surface and underground waters from diffuse sources of pollution.

Under the **Law on Waters**, the Ministry of Environment and Physical Planning (MEPP), in cooperation with public utilities, local and regional authorities, has identified the poor state of existing sewerage networks and wastewater treatment plants, as well as the need to provide new ones. The relevant activities have been planned for the period 2007-2015 for agglomerations of more than 2 000 people and in the period 2014-2025 for agglomerations of less than 2 000. Construction of sewerage networks is envisaged for the period 2008-2015 for larger agglomerations, and by 2025 for smaller ones. The development of detailed designs for new wastewater treatment plants will be provided through technical assistance projects, including construction in accordance with the adopted programmes. The construction has been planned to continue until 2025 by when full compliance with the Urban Wastewater Directive should be achieved.

4.4 Soil

As recognized by the Seventh Environment Action Programme, soil degradation is a serious challenge. This Programme provides that by 2020 land is managed sustainably in the Union, soil is adequately protected and the remediation of contaminated sites is well underway and commits the EU and its Member States to increasing efforts to reduce soil erosion and increase soil organic matter and to remediate contaminated sites.

At the international level, the **UN Convention to combat Desertification** (UNCCD, 1994) aims to prevent and reduce soil degradation through the preparation of national and regional action programmes for its implementation

In relation to the issue “Soil” the analysis takes into account also the following cross-cutting themes: “risk management”, “sustainable use of natural resources”, “waste management and prevention”, “environmental education and awareness raising on environmental issues” and “sustainable tourism”.

The following table shows the list of EU, Bulgarian and Macedonian relevant legislation and policies on Soil, framework from which the related environmental objectives and the corresponding evaluation questions have been driven:

Relevant EU legislation and policies	Relevant Bulgarian legislation and policies	Relevant MK legislation and policies	Environmental Objectives	Evaluation questions
EU **Thematic Strategy on Soil protection** (COM(2006) 231) **EU Thematic Strategy on sustainable use of natural resources** (COM(2005) 670) EU Landfill Directive (99/31/EC) EU Waste Framework Directive (2008/98/EC) EU Floods Directive (2007/60/EC) 2010 Communication of the EC on tourism	Environment Protection Act **Soils Act** Disaster protection Act Tourism Act Waste Management Act **National Waste Management Plan** **National Plan for Reduction of biodegradable Waste for Landfilling** National Strategy for the Development of Forestry	**Law on Environment** **Law on Land Survey and Registration** **Law on Agricultural Land** **Law on Building Land** **Law on Spatial and Urban Planning** **Law on Waste Management** **National Waste Management Plan (2009 - 2015)** **Law on Mineral Resources**	***Preservation of the soil functionality***	Will the specific objective have an effect on the preservation of the soil functionality
			Reduction of soil degradation and pollution	Will the specific objective have an effect on the reduction of soil degradation and pollution
			Promotion of sustainable use of soil resource	Will the specific objective have an effect on the promotion of sustainable use of soil resource
			Reduction of waste generation, increase in waste recover and recycling of all waste	Will the specific objective have an effect on the reduction of waste generation, increase in waste recover and recycling of all waste
			Promotion of sustainable tourism towards land preservation	Will the specific objective have an effect on the promotion of sustainable tourism towards land preservation?
			Promotion of sustainable land management preventing risk and hazards	Will the specific objective have an effect on the promotion of sustainable land management preventing risk and hazards?
			Promotion of responsible behaviour of the public by increasing education and awareness on soil protection	Will the specific objective have an effect on the promotion of responsible behaviour of the public by increasing awareness on soil protection?

The overall objective of the EU **Thematic Strategy for Soil Protection** is the protection, the preservation of its capacity to perform its functions and the sustainable use of soil, based on the following guiding principles:

(1) Preventing further soil degradation and preserving its functions:

- when soil is used and its functions are exploited, action has to be taken on soil use and management patterns, and
- when soil acts as a sink/receptor of the effects of human activities or environmental phenomena, action has to be taken at source.

(2) Restoring degraded soils to a level of functionality consistent at least with current and intended use, thus also considering the cost implications of the restoration of soil.

The strategy calls for soil protection by preventing and reducing contamination and degradation processes such as desertification, erosion or sealing: objectives outlined also in the Proposal for a Soil Framework Directive (COM(2006) 232).

Also the overall objective of the **Thematic Strategy on sustainable use of natural resources**, to reduce the negative environmental impacts generated by the use of natural resources, is taken into account in the identification of the environmental objectives for the "Soil" issue.

In Bulgaria:

The purposes of the **Soil Act** are:

- prevention of soil degradation and damage to soil functions;
- lasting protection of soil functions;
- restoration of damaged soil functions.

The same Act explicates that, soil protection, use and restoration shall be based on the following principles:

- an ecosystem and comprehensive approach;
- sustainable use of soils;
- a priority of preventive control to forestall or limit soil degradation and damage to soil functions;
- applying good practices in soil use;
- the polluter pays for the damage caused;
- public awareness of the environmental and economic benefits of soil protection from degradation and of measures to preserve soils.

The main objective of the **National Waste Management Plan for the programming period 2014-2020** is to break the link between economic growth and waste, improve the hierarchy of waste management by developing the first sub-program and measures to prevent waste generation, set concrete targets for preparation for reuse, recycling and other recovery of specific waste streams. The plan sets 10 strategic objectives, including on the prevention and reduction of waste, increasing quantities of recycled and recovered waste, environmentally friendly waste disposal and others. Furthermore, the main goal of the **National Plan for Reduction of biodegradable Waste for Landfilling** is the reduction of the amount of biodegradable organic waste incoming for disposal.

In the Former Yugoslav Republic of Macedonia:

Under the **Law on Environment**, every citizen is entitled to have access to environmental information, including data on land cover. The law also facilitates uniform access to such information, both at national and European levels. The aims of the law relevant to land management include rational and sustainable utilisation of natural resources, preservation of

a clean environment and remediation of damage, prevention of environmental risks and hazards, combating desertification and mitigating the effects of droughts.

Based on the **Law on Land Survey and Registration**, regular annual land survey information is provided on the types of land cover. The **Law on Agricultural Land** regulates agricultural land use, disposal, protection and change of use. The aims of this law include rational use of agricultural land as a limited natural resource and its protection. As a resource of general interest for the country, agricultural land enjoys special protection and may be used only under the terms and in a manner provided for by the law.

Building land is also regarded a resource of general interest for the country under the law and the terms and the manner of its use are therefore legally regulated and controlled **Law on Building Land.**

All development activities have to be based on spatial and urban plans developed under the **Law on Spatial and Urban Planning**. These plans are intended to provide for land planning, development and use, as well as protection and improvement of the environment and nature, the protection of immovable cultural heritage, and protection against damage by war, natural and technological disasters and accidents. As activities of public interest under the law, elaboration, adoption and implementation of the Spatial Plan of the Republic of Macedonia, as well as the application of other relevant regulations of national legislation, international agreements and other documents ratified by the Republic, have the ultimate goal of providing sustainable development for the country.

The objectives of the **Law on Waste Management** aims to provide:

- avoidance and reduction to the maximum possible extent of the amount of waste generation;
- re-use of usable components of the waste;
- sustainable development through protection and saving of natural resources;
- prevention of negative impacts of waste on the environment, human life and health;
- environmentally acceptable waste disposal; and
- high level of protection of the environment, human life and health.

The management of waste originating from mining is subject to regulation by the **Law on Mineral Resources.**

Principal goals and objectives of the **National Waste Management Plan (2009 - 2015)** are:

- solving waste problems at source according to the “holder’s responsibility of generated waste”;
- establishment of a separate collection and recovery system of valuable constituents in selected waste and end-of-life products according to the “producer’s responsibility principle”;
- utilisation of valuable constituents of waste as a substitute for non-renewable natural resources and reduction of greenhouse gas emissions;
- gradual establishment of a rational network of waste management facilities for app. 8,7 million tonnes of municipal, industrial, agriculture, medical and other types of hazardous and nonhazardous waste, in particular by means of:
  - segregation of hazardous and non-hazardous waste fractions at source and their separate treatment and final disposal;
  - improvement of MSW collection efficiency;
  - disposal of all collected municipal solid waste on landfills previously conditioned or compliant with EU standards;

- priority start and execution of projects related to the management of high risk medical waste and animal by-product, and industrial hazardous waste;
- disposal of stabilised, non-reactive residues from waste treatment processes on landfills as the final goal;
- closure/remediation of existing non-compliant municipal waste dumps and remediation of contaminated sites and other environmental burdens;
- rational and environmentally safe use of land and protection of natural and cultural heritage.

4.5 Population and human health

The environment is a major determinant of human health and the prevention and reduction of adverse effects is a main goal at international and EU level. At the international level, in 2010 was signed the **Parma Declaration on Environment and Health** (WHO, World Health Organization) pledging to reduce the adverse health impact of environmental threats. In Europe, the major environment-related health concerns are related to outdoor and indoor air pollution, poor water quality, poor sanitation, waste management and hazardous chemicals. In this context, the cross-cutting themes considered under this issue are: “risk management”, “environmental education and awareness raising on environmental issues” and “ waste management and prevention”.

The following table shows the list of EU, Bulgarian and Macedonian relevant legislation and policies on Population and Human Health, framework from which the related environmental objectives and the corresponding evaluation questions have been driven:

Relevant EU legislation and policies	Relevant Bulgarian legislation and policies	Relevant MK legislation and policies	Environmental Objectives	Evaluation questions
EU Health Strategy "Together for Health" **Third EU health programme** (2014-2020) **EU Environmental Noise Directive** (2002/49/EC) EU Waste Framework Directive (2008/98/EC) EU Landfill Directive (99/31/EC) EU Floods Directive (2007/60/EC) EU Urban Waste	Environment Protection Act **Disaster protection Act** **Waste Management Act** National Waste Management Plan National Plan for Reduction of biodegradable Waste for Landfilling Water Act	**Law on noise protection** Law on Waste Management National Waste Management Plan (2009 - 2015) **Law on the environment** Law on Waters	***Reduction of diseases caused by environmental risks***	Will the specific objective have an effect on the reduction of diseases caused by natural hazards?
			Prevention of environmental noise exposure	Will the specific objective have an effect on the prevention of environmental noise exposure?
			Promotion of controls of environmental related health risks and hazards	Will the specific objective have an effect on the promotion of controls of environmental related health risks and hazards?
			Promotion of risk prevention and management of natural and man-	Will the specific objective have an effect on the promotion of risk

Water Treatment Directive (91/271/EEC)			***made disasters***	prevention and management of natural and man-made disasters?
			Promotion of sustainable waste management to protect human health	Will the specific objective have an effect on the promotion of sustainable waste management to protect human health?
			Promotion of environmentally-responsible behavior of the public by involving the citizens into the solution of environmental problems	Will the specific objective have an effect on the promotion of environmentally-responsible behavior of the public by involving the citizens into the solution of environmental problems?

The **EU Health Strategy "Together for Health"** supports the overall Europe 2020 strategy one prerequisite of which is a population in good health. The EU Health Strategy has 3 main objectives:

- fostering good health in an ageing Europe;
- protecting citizens from health threats;
- supporting dynamic health system and new technologies.

The Strategy also express the need to protect human health tackling health risks and determining factors, including the environment.

The **third EU health Programme** (2014-2020)[30] is the main instrument the EC uses to implement the EU health strategy. The Programme has **4 overarching objectives**. It seeks to:

1. Promote health, prevent diseases and foster supportive environments for **healthy lifestyles** taking into account the 'health in all policies' principle;
2. Protect Union citizens from serious **cross-border health threats**;
3. Contribute to innovative, efficient and sustainable **health systems**;
4. Facilitate access to **better and safer healthcare** for Union citizens.

The Seventh Environment Action Programme recognizes that human health and well-being must be protected from environmental affects. In this content, in many **EU Directives** (Noise Directive, Landfill Directive, Floods Directive, Waste Framework Directive, etc.) human heath protection is a main objective. In particular, the **Environmental Noise Directive** relates to the assessment and management of environmental noise. As part of the effort to tackle noise pollution, the European Union has laid down a common approach to avoiding, preventing or reducing on a prioritised basis the harmful effects on human health from environmental noise.

[30] Adopted with the EU Regulation No 282/2014 of 11 March 2014.

In Bulgaria:

The **Disaster Protection Act** settle providing in case of disasters caused by natural phenomena and/or human activity, leading to negative consequences for the life or health of the population, property, economy and the environment and which the capacity of the system servicing the routine activities related to protection of society would be insufficient to prevent, bring under control and overcome.

The **Waste Management Act** promotes and provides that waste shall be managed for the purpose of prevention, mitigation or limitation of the harmful impact of waste on human health and on the environment.

In the Former Yugoslav Republic of Macedonia:

The objectives of the **Law on noise protection** are:

- Creating healthy conditions for the people and the environment from noise
- Taking measures and actions to avoid, prevent or reduce noise
- Taking measures to protect against noise imposed by the nearby environment
- Removal or reduction of harmful situation that result from exposure to noise environmental
- Providing a basis for the development of measures to reduce the noise from major sources, especially road, rail, aircraft, equipment used outdoors and means of mechanical work.

In addition, also the **Law on the environment** has two objectives related to the issue Population and Human Health:

- Protection of human life and health;
- Implementation and improvement of measures aimed at addressing regional and global environmental problems.

4.6 Cultural/natural heritage and landscape

The protection and preservation of cultural heritage (sites, monuments and groups of buildings) and natural heritage (natural features, geological and physiographical formations and natural sites) is ensured at the international level by the **UNESCO World Cultural and Natural Heritage Convention 1972**. The Convention initiated the World Heritage Programme which promote the conservation of several tangible and intangible significant sites.

The protection of the landscape is also interlinked and included in the protection of natural and cultural heritage can be considered.

The cross-cutting themes hereafter considered are “sustainable tourism”, “risk management” and “environmental education and awareness raising on environmental issues”.

The following table shows the list of EU, Bulgarian and Macedonian relevant legislation and policies on Cultural/natural heritage and landscape, framework from which the related environmental objectives and the corresponding evaluation questions have been driven:

Relevant EU legislation and policies	Relevant Bulgarian legislation and policies	Relevant MK legislation and policies	Environmental Objectives	Evaluation questions
EU Landscape convention 2000 **2010 Communication of the EC on tourism** EU Floods Directive (2007/60/EC)	Environment Protection Act Biological Diversity Act Water Act Protected Areas Act **Strategic Plan for the Development of Cultural Tourism** **Tourism Act** Disaster protection Act	Law on nature protection Law on Spatial and Urban Planning **National Tourism Development Strategy 2009-2013**	***Protection and rehabilitation of cultural and natural heritage***	Will the specific objective have an effect on the protection and rehabilitation of cultural and natural heritage?
			Promotion of sustainable management and planning of cultural and natural landscape	Will the specific objective have an effect on the promotion of sustainable management and planning of cultural and natural landscape?
			Promotion of sustainable use of natural resources towards sustainable tourism	Will the specific objective have an effect on the promotion of sustainable use of natural resources towards sustainable tourism?
			Promotion of responsible behaviour of the public by increasing education and awareness on heritage and landscape preservation and protection	Will the specific objective have an effect on the promotion of responsible behaviour of the public by increasing awareness on heritage and landscape preservation and protection?

The aims of the **European Landscape Convention** are to promote cultural and natural landscape protection, management and planning, and to organise European co-operation on landscape issues.

After the Agenda for a sustainable and competitive European Tourism, 2007, the EC Communication **"Europe, the world's No 1 tourist destination – a new political framework for tourism in Europe"** (COM(2010) 352) identifies four priorities for action:

- stimulate competitiveness in the European tourism sector;
- promote development of sustainable, responsible, high-quality tourism;
- consolidate Europe's images as a collection of sustainable, high-quality destinations;
- maximise the potential of EU financial policies for developing tourism.

This European action framework aims first of all to encourage the prosperity of tourism in Europe., but it must also respond to concerns relating to social matters, territorial cohesion and the protection of and capitalisation on natural and cultural heritage.

In Bulgaria:

The purpose of the **Strategic Plan for the Development of Cultural Tourism** is to create a plan for sustainable development of the regions in order to meet the needs of Bulgarian and foreign tourists who are in search of new places and experiences, establishing social contacts with local people learning of local products and others.

In addition, the **Tourism Act** regulates the social relations associated with the implementation of governance and control in tourism, the interaction of the State and municipalities in the implementation of activities related to tourism, as well as the participation of not-for-profit legal entities and natural persons in the said activities.

In the Former Yugoslav Republic of Macedonia:

The **National Tourism Development Strategy 2009-2013** has a main vision: *by 2013 Macedonia has to become famous travel and tourism destination in Europe based on cultural and natural heritage, as well as to become famous for the high quality of its products and services.*

4.7 SEA Objectives and Evaluation Questions

The table below summarizes, for each environmental issue (and cross-cutting theme), the **qualitative SEA Objectives** and related **Evaluation Questions** defined taking into account the above mentioned environmental legislation and policy framework, all the corresponding environmental objectives and Programme's characteristics.

As already mentioned (see chapter 2), these Objectives and Evaluation Questions form the basis of the methodological approach to assessing the environmental effects of the CBC Operational Programme (OP) Bulgaria- the Former Yugoslav Republic of Macedonia 2014-2020.

Environmental Issue	SEA Objectives	Evaluation questions
Air and Climate	1. *Reduction of air pollution* 2. *Reduction of the GHG emissions* 3. *Improvement of energy efficiency and increase of use of renewable energy resources* 4. *Support of environmentally friendly transports* 5. *Promotion of fire fight management and prevention* 6. *Promotion of resilience to climate change and climate-related disasters* 7. *Promotion of responsible behaviour of the public by involving the citizens into fighting*	1. *Will the specific objective have an effect on the reduction of air pollution?* 2. *Will the specific objective have an effect on the reduction of the GHG emissions?* 3. *Will the specific objective have an effect on the improvement of energy efficiency and increase of use of renewable energy resources?* 4. *Will the specific objective have an effect on the support of environmentally friendly transports?* 5. *Will the specific objective have an effect on the promotion of forest fire fight management and prevention?* 6. *Will the specific objective have an effect on the promotion of resilience to climate*

Environmental Issue	SEA Objectives	Evaluation questions
	climate change	*change and climate-related disasters?* 7. *Will the specific objective have an effect on the promotion of responsible behaviour of the public by involving the citizens into fighting climate change?*
Biodiversity, Flora and Fauna	1. *Preservation of biodiversity, habitats and ecosystems and their services* 2. *Preservation of the natural diversity of fauna, flora, and habitats in protected areas and Natura 2000 sites* 3. *Protection of endangered species (plants and animals)* 4. *Decrease in loss of biodiversity* 5. *Promotion of responsible behaviour of the public by involving the citizens in protecting biodiversity and natural areas* 6. *Promotion of tourism that would ensure high degree of nature conservation*	1. *Will the specific objective have an effect on the preservation of biodiversity, habitats and ecosystems and their services?* 2. *Will the specific objective have an effect on the preservation of the natural diversity of fauna, flora, and habitats in protected areas and Natura 2000 sites?* 3. *Will the specific objective have an effect on the protection of endangered species (plants and animals)?* 4. *Will the specific objective have an effect on the decrease in loss of biodiversity?* 5. *Will the specific objective have an effect on the promotion of responsible behaviour of the public by involving the citizens in protecting biodiversity and natural areas?* 6. *Will the specific objective have an effect on the promotion of tourism that would ensure high degree of nature conservation?*
Water	1. *Reduction of water pollution from point and diffuse sources* 2. *Reduction of eutrophication* 3. *Improvement of ecological and chemical status of water bodies* 4. *Promotion of sustainable use of water resources* 5. *Reduction of flood risks* 6. *Promotion of sustainable tourism towards water resources preservation* 7. *Promotion of responsible behaviour of the public by involving the citizens into sustainable water use*	1. *Will the specific objective have an effect on the reduction of water pollution from point and diffuse sources?* 2. *Will the specific objective have an effect on the reduction of eutrophication?* 3. *Will the specific objective have an effect on the improvement of ecological and chemical status of water bodies?* 4. *Will the specific objective have an effect on the promotion of sustainable use of water resources?* 5. *Will the specific objective have an effect on the reduction of flood risks?* 6. *Will the specific objective have an effect on the promotion of sustainable use of sustainable tourism towards water resources preservation?* 7. *Will the specific objective have an effect on the promotion of responsible behaviour of the public by involving the*

Environmental Issue	SEA Objectives	Evaluation questions
		citizens into sustainable water use?
Soil	1. *Preservation of the soil functionality* 2. *Reduction of soil degradation and pollution* 3. *Promotion of sustainable use of soil resource* 4. *Reduction of waste generation, increase in waste recover and recycling of all waste* 5. *Promotion of sustainable tourism towards land preservation* 6. *Promotion of sustainable land management preventing risk and hazards* 7. *Promotion of responsible behaviour of the public by increasing education and awareness on soil protection*	1. *Will the specific objective have an effect on the preservation of the soil functionality* 2. *Will the specific objective have an effect on the reduction of soil degradation and pollution* 3. *Will the specific objective have an effect on the promotion of sustainable use of soil resource* 4. *Will the specific objective have an effect on the reduction of waste generation, increase in waste recover and recycling of all waste* 5. *Will the specific objective have an effect on the promotion of sustainable tourism towards land preservation?* 6. *Will the specific objective have an effect on the promotion of sustainable land management preventing risk and hazards?* 7. *Will the specific objective have an effect on the promotion of responsible behaviour of the public by increasing education and awareness on soil protection?*
Population and Human Health	1. *Reduction of diseases caused by environmental risks* 2. *Prevention of environmental noise exposure* 3. *Promotion of controls of environmental related health risks and hazards* 4. *Promotion of risk prevention and management of natural and man-made disasters* 5. *Promotion of sustainable waste management to protect human health* 6. *Promotion of environmentally-responsible behavior of the public by involving the citizens into the solution of environmental problems*	1. *Will the specific objective have an effect on the reduction of diseases caused by natural hazards?* 2. *Will the specific objective have an effect on the prevention of environmental noise exposure?* 3. *Will the specific objective have an effect on the promotion of controls of environmental related health risks and hazards?* 4. *Will the specific objective have an effect on the promotion of risk prevention and management of natural and man-made disasters?* 5. *Will the specific objective have an effect on the promotion of sustainable waste management to protect human health?* 6. *Will the specific objective have an effect on the promotion of environmentally-responsible behavior of the public by involving the citizens into the solution of environmental problems?*

Environmental Issue	SEA Objectives	Evaluation questions
Cultural/Natural Heritage and Landscape	1. *Protection and rehabilitation of cultural and natural heritage* 2. *Promotion of sustainable management and planning of cultural and natural landscape* 3. *Promotion of sustainable use of natural resources towards sustainable tourism* 4. *Promotion of responsible behaviour of the public by increasing education and awareness on heritage and landscape preservation and protection*	1. *Will the specific objective have an effect on the protection and rehabilitation of cultural and natural heritage?* 2. *Will the specific objective have an effect on the promotion of sustainable management and planning of cultural and natural landscape?* 3. *Will the specific objective have an effect on the promotion of sustainable use of natural resources towards sustainable tourism?* 4. *Will the specific objective have an effect on the promotion of responsible behaviour of the public by increasing education and awareness on heritage and landscape preservation and protection?*

An assessment of the **consistency of the Priority Axes and Specific Objectives of the IPA CBC Bulgaria-the Former Yugoslav Republic of Macedonia Programme 2014-2020 to the** defined **SEA Objectives** is given in a matrix summarizing the integration of the environmental objectives in the Draft OP (see matrix at the following page). This consistency assessment has been carried out on the basis of the approach described in the table below:

Coerence level	Quality assessment
High	
Neutral	
Uncertain	
Low	

SEA Objectives	Priority Axis 1 "Environment"		Priority Axis 2 "Tourism"			Priority Axis 3 "Competitiveness"
	SO 1.1 Environmental protection and sustainable use of the common natural resources of the CBC area	**SO 1.2** Risk prevention and mitigation the consequences of natural and manmade hazards and disasters in the CBC region	**SO 2.1** Enhancing the tourism potential of the region through better preservation and sustainable utilization of natural and cultural heritage	**SO 2.2** Raising the competitiveness of the CBC region's tourist offer	**SO 2.3** Promoting cooperation among regional actors in the area of sustainable tourism	**SO 3.1** Improving the competitiveness of regional businesses
Reduction of air pollution						
Reduction of the GHG emissions						
Improvement of energy efficiency and increase of use of renewable energy resources						
Support of environmentally friendly transports						
Promotion of fire fight management and prevention						
Promotion of resilience to climate change and climate-related disasters						
Promotion of responsible behaviour of the public by involving the citizens into fighting climate change						
Preservation of biodiversity, habitats and ecosystems and their services						
Preservation of the natural diversity of fauna, flora, and habitats in protected areas and Natura 2000 sites						
Protection of endangered species (plants and animals)						
Decrease in loss of biodiversity						
Promotion of responsible behaviour of the public by involving the citizens in protecting biodiversity and natural areas						
Promotion of tourism that would ensure high degree of nature conservation						
Reduction of water pollution from point						

and diffuse sources						
Reduction of eutrophication						
Improvement of ecological and chemical status of water bodies						
Promotion of sustainable use of water resources						
Reduction of flood risks						
Promotion of sustainable tourism towards water resources preservation						
Promotion of responsible behaviour of the public by involving the citizens into sustainable water use						
Preservation of the soil functionality						
Reduction of soil degradation and pollution						
Promotion of sustainable use of soil resource						
Reduction of waste generation, increase in waste recover and recycling of all waste						
Promotion of sustainable tourism towards land preservation						
Promotion of sustainable land management preventing risk and hazards						
Promotion of responsible behaviour of the public by increasing education and awareness on soil protection						
Reduction of diseases caused by environmental risks						
Prevention of environmental noise exposure						
Promotion of controls of environmental related health risks and hazards						
Promotion of risk prevention and management of natural and man-made disasters						
Promotion of sustainable waste management to protect human health						
Promotion of environmentally-						

responsible behavior of the public by involving the citizens into the solution of environmental problems						
Protection and rehabilitation of cultural and natural heritage						
Promotion of sustainable management and planning of cultural and natural landscape						
Promotion of sustainable use of natural resources towards sustainable tourism						
Promotion of responsible behaviour of the public by increasing education and awareness on heritage and landscape preservation and protection						

5 Current state of the environment and its likely evolution without the implementation of the Programme (zero-option scenario)

5.1 Information basis

Alongside other **data sources**, the data used in the Environmental report is primarily based on statistical sources.

Data used for the description of the **current state of the environment** within the cross-border area and its **likely evolution without Programme implementation (zero-option scenario)** [31] are based on the analysis of secondary data. The evaluation of the initial status and trends is mainly based on data at national level. Nevertheless, when regional/territorial specific environmental information and database has been available, the evaluation is undertaken at that level. The description of the current state of the environment include also an overview of the relevant environmental characteristics of areas likely to be significantly affected as well as of any existing environmental problems which are relevant to the Programme including, in particular, those relating to any areas of a particular environmental importance (e.g. areas designated pursuant to **Directives 2009/147/EC and 92/43/EEC)**[32]. In order to depict the current state of the environment within the Programme, the *status quo* of the environmental issues has been considered. The description cover only those environmental issues[33] which have been identified as relevant in, as well as in the case of the assessment of likely significant effects on the environment. The main characteristic of these **environmental issues** has been **described using corresponding indicators.** Alongside other sources (as an example: ESPON 2013 Database), the description is based on data provided by Eurostat Publications as well as on data published by European Environmental Agency (EEA). An outline of the environmental state (and trends) for the cross-border region is given using as a basic source the publication of EEA **"The European Environment-State and Outlook 2010"**. In other cases other national data sources mentioned in the following list has been be used:

- Statistical Reference Book, 2010-2013, National Statistical Institute of the Republic of Bulgaria (NSI);
- Statistical Yearbook, 2010-2012, National Statistical Institute of the Republic of Bulgaria (NSI);
- Bulgarian District Development Strategies (2014-2020) – Vidin, Montana, Vratsa, Sofia,Pernik, Kyustendil.
- Study on Strategic Evaluation on Transport Investment Priorities under Structural and Cohesion funds for the Programming Period 2007-2013- Bulgaria
- Environmental statistics, 2013 issued by the State statistical office in Former Yugoslav Republic of Macedonia
- National Water Strategy 2010, Former Yugoslav Republic of Macedonia

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[31] The zero-option scenario describes the anticipated development of environmental factors in the Programme area without the implementation of the future OP 2014-2020. Thus, it forms the baseline for the subsequent assessment of the potential effect of the Programme on the environment. The possible evolution of the environment has been estimated on the basis of data trends providing an appropriate forecast horizon up to 2020.

[32] Relevant for the procedure of **Compatibility Assessment (CA**) that has been carried out on the Programme with the object and purpose of the conservation of the protected areas of the ecological network "Natura 2000" (according to the Bulgarian legislation: Ordinance on CA).

[33] The description of the cross-cutting themes has been integrated into the description of the respective environmental issues. For the most relevant cross cutting themes a wider description is provided in Annex I.

Furthermore, secondary sources (background documents, specific sector database, etc.) has been gathered during detailed and systematic **literary review**.

5.2 Air and climate

The cross-border region is especially **high vulnerability towards the intensified effects of climate change**. Climate change is very relevant for both sides and adequate measures are EU and national priorities and there is a need to raise awareness and measures on climate changes as it has impact on economy and life.
An additional contributor to the climate change is the emission of pollutants in the air as direct result of the economic activity within the countries.
Due to decline of industrial activities and measure to control emission gas emission, the area is characterized with a relatively clean environment.
In the cross-border region, the biggest polluter Bobovdol power station in has drastically reduced the harmful emissions in 2012 after introducing the sulfur dioxide control installation in 2012.
Nevertheless, **Air pollution** caused by transport remains an environmental challenge to be addressed in the border districts by raising awareness and by implementing measures on the safeguards of clean environment[34]. In fact, a negative effect on the air quality is the intense traffic in the bigger towns and major connection roads as well as the massive use of solid fuel (timber, coal) by the households[35].
Climate change is a significant threat for regions, especially for those parts where agriculture, tourism, forestry and hydro energy are well developed like in the Bulgarian - the former Yugoslav Republic of Macedonia border region. Climate changes bear risks of drought, fires, land erosion and floods.
Bulgaria as a whole is among the countries in the EU that are expected to be most severely affected by climate changes. The former Yugoslav Republic of Macedonia as a whole is even higher on the scale for climate change affection than Bulgaria. The border area is part of a region for which 6th degree of vulnerability to climate changes has been established, according to the index that has been applied for the whole of EU

In the following countries descriptions it will be taken in exam the features and the available data on the current state of climate system and air pollution status of Bulgaria and Macedonia.

Bulgaria

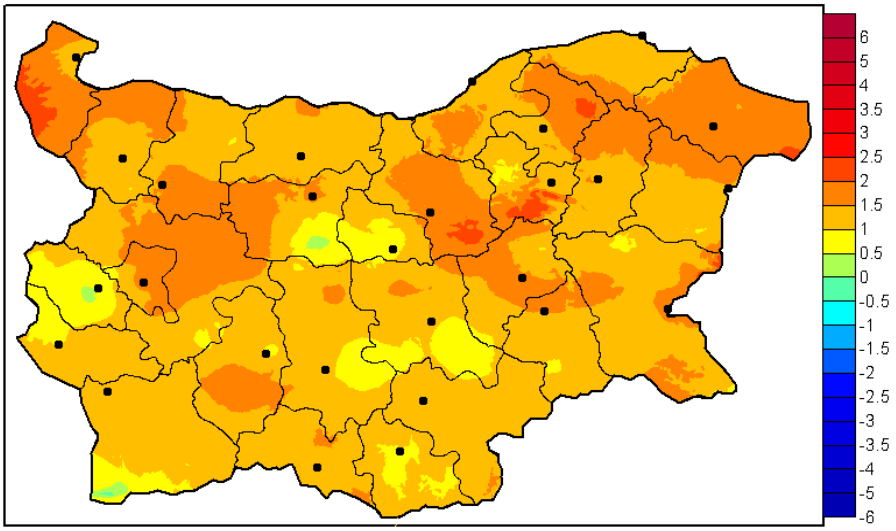
The **climate** in the cross-border region is diverse, from moderate-continental, transitional-continental and mountainous to Mediterranean along the river valleys.

Particularly, in **Bulgaria** the **climate** is **temperate continental** with a transition towards a subtropical climate in its Mediterranean version (in the southern parts of the country), with four seasons.

In recent years, increased frequency of extreme weather and climate events were registered. In 2012, the average annual temperature in Bulgaria is 1,3 ± 0,3 º C above normal climate rate (average annual temperature for the period 1961-1990), which keeps the trend of more than 1 º C in the last 5-6 years. According to simulations of climate change made on the basis of the main emission scenarios temperatures in Bulgaria are expected to increase between 2 and 5 degrees by the end of the 21st century.

[34] Ibidem, p.18
[35] Cfr. Region descriprion BG_MK, p.15 -16

Deviation of the annual climatic norm (10,5 ° C) of air temperature in Bulgaria in 2012



Source: NIMH (National report on the status and conservation of the environment,2014)

The **increase of the temperature** impacts on environmental and socio-economic systems will be damaging. The larger changes and the rate of changes in climate, the more adverse effects will predominate.

In Bulgaria the adverse impacts are related, for example, the winter tourism, increased floodingand droughts and the prevalence of pests and diseases. Positive impacts could be possible growth of productivity in agriculture and forestry and decreased need for heating energy. According to The "Fifth National Communication of Bulgaria on Climate Change" from the year 2010 the average temperature in the country could rise. Extreme weather events, such as storms, droughts and heavy rains, are likely to increase[36]

Air quality status

Concerning to the **emission of pollutants**, for a 10 year period the atmospheric **concentration of nitrogen dioxide** has **decreased with 53%,** of **sulphur dioxide with 65%** (mainly because of the decrease of Thermal power plant emissions as a result of installing sulphur-cleaning installations), of ammonium with 62%, of the non-metal volatile organic compounds with 85%[37].

According to the Statistical Reference Book 2013 published by the National Statistical Institute[38], the Emission of pollutants in the air are:

Emissions of pollutants in the air (thousand tons) 2012 - Bulgaria

	Sulphur oxides	Nitrogen oxides	Non-methane volatile organic compounds	Methane	Carbon oxide	Carbon dioxide	Dinitrogen oxide	Ammonia oxides
Industrial	283	54	0	1	2	34.740	7	0

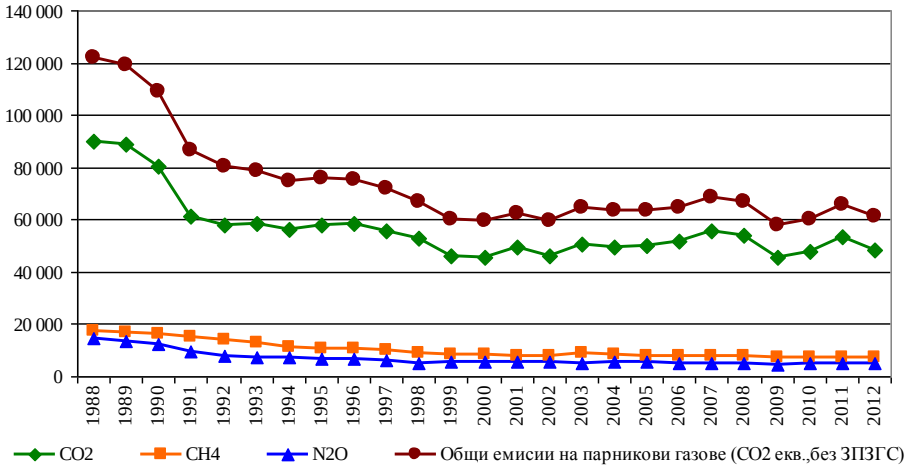
[36] Cfr.EEA 2012, url. http://eea.government.bg/bg/output/unfccc/NIR-12-eng.pdf
[37] Cfr, EEA(National report on the status and conservation of the environment, 2014

heating processes								
Industrial processes	36	27	17	442	25	3.698	0	3
Other sources	10	47	272	333	419	16.081	39	43
Total	**329**	**127**	**290**	**775**	**446**	**54.519**	**47**	**46**

Source: Statistical Reference Book 2013 published by the National Statistical Institute[39] 2012

In 2012 the **total GHG emissions** are **61,045.63 Gg CO2-eq.** or 50.1% of the emissions in the base year.

Trend in emissions of GHGs - CO2, CH4 and N2O and total GHG emissions (including HFCs, PFCs and SF6) for the period 1988-2012, Gg CO2 - eq.



Source: EEA, National inventory report on GHG emissions for 2012

Over the past century, atmospheric concentrations of **carbon dioxide** (CO2), methane (CH4), **nitrous oxide** (N2O) and halogenated hydrocarbons, i.e. greenhouse gases, have increased as a consequence of human activity. Greenhouse gases prevent the radiation of heat back to space and cause warming of the climate. According to the Fourth Assessment Report of the International Panel of Climate Change (IPCC 2007), the atmospheric concentrations of CO2 have increased by 35%, CH4 concentrations have more than doubled and N2O concentration has risen by 18%, compared with the pre-industrial era[40].

Transport is a major source of emissions of nitrogen oxides, as their quantity reaches 28.3% of national emissions. As regards other substances, precursors of ozone, transport is a less important source, as only carbon monoxide emissions represent 9.25% of national emissions.

Macedonia

According to **Air Quality** Assessment Report, country is split in **two zones, East** and **West zone** and **Skopje agglomeration region**. The Eastern zone cover North east, South east, Vardar and East statistical region, relevant for the CBC BG-MK Programme where three MK

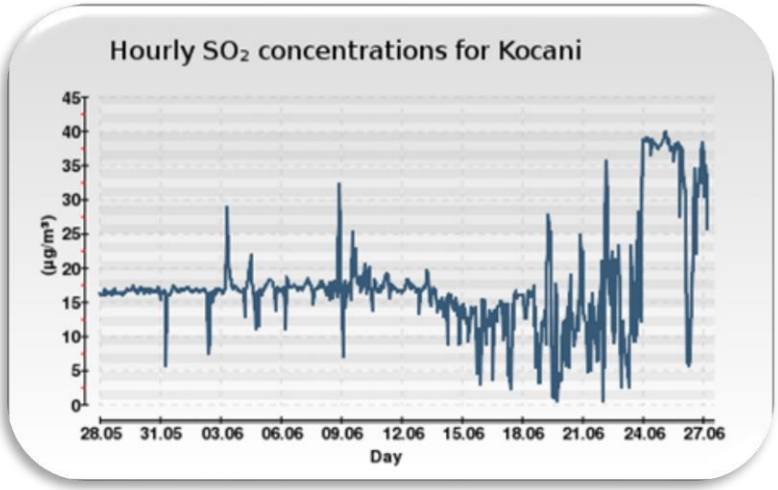
[39] Cfr.Statistical Reference Book 2013 published by the National Statistical Institute, p.253

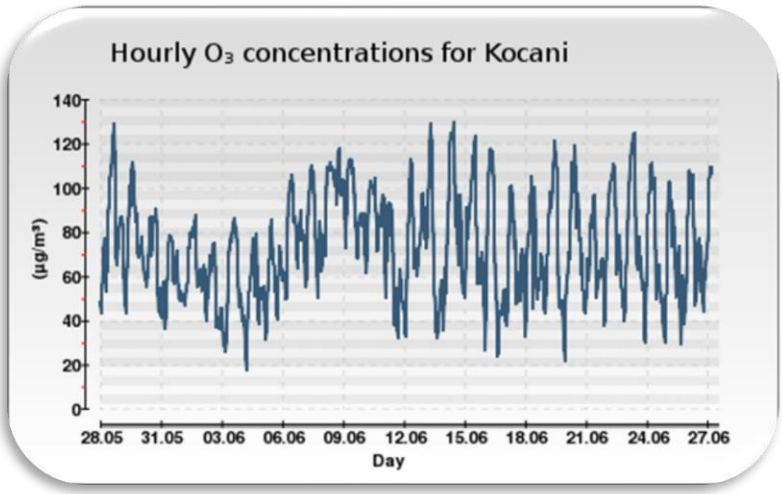
[40] Cfr. National inventory report 2012 for Greenhouse Gas Emissions - Submission under the UNFCCCand the Kyoto Protocol, p. 25. url: http://eea.government.bg/bg/output/unfccc/NIR-12-eng.pdf

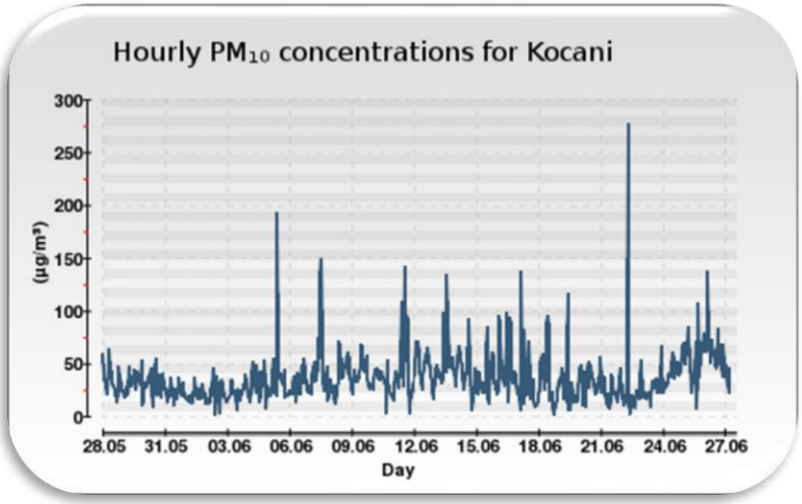
regions are part of. Concentration measurements of six pollutants from 17 monitoring sites are collected hourly, where relevant to the CBC BG-MK region are two in Kocani (traffic type station) and in Kumanovo (industrial type station).

For the **Kocani station** presented are data from 28.05 to 27.06.2014. Kumanovo station is not working in the last mounts. SO2 was all period below the 24h llimit value for protection of human health (125 µg/m3). PM10 varies all period but around the 24h llimit value for protection of human health (50 µg/m3). Each week extremes were recorded as 176, 96, 193, 141 and lastly 276 µg/m3. O3 varies all period but around 80 µg/m3 which is below the target value for the protection of human health (120 µg/m3). Each week extremes were recorded as 106, 129, 118, 130 and lastly 121 µg/m3.

Pollutants emissions in Kokani







In 2010, in Kocani station the **SO2, annual average concentration** was 28 µg/m3 in 2005/22 µg/m3 ; Kumanovo station 22µg/m3 in 2005/27 µg/m3 in 2009. No exceedances of the critical levels were observed in during the whole reported period. It can be noticed that there is decreasing trend for all stations.Measured concentrations compared to assessment thresholds. Daily average - health protection. The daily SO2 concentrations were between LAT (50 □g/m3) and UAT at measurement stations in Kocani, Kumanovo. Winter mean – vegetation protection. During the assessment period (2005-2010) the UAT (12 mg/m3) was exceeded at all measurement stations. Nevertheless, the winter mean thresholds should be applied only in background areas which are away from emission pollutions sources.
NOx, No major sources of NOx in MK part of the BG-MK cb region are registrated in period 2005-2010.
NO2, annual average concentration: Kocani station 18 µg/m3 in 2005/13 µg/m3 in 2010; Kumanovo station 24 µg/m3 in 2006/13 µg/m3 in 2010. There are no exceedances of the LV and UAT at any of the measuring locations. Measured concentrations compared to assessment thresholds. Hourly average - health protection. The UAT is exceeded only at measuring station **Kumanovo**. The station of **Kumanovo** is located near the entrance road to the city. The distance to this road is approximately 35 m and the distance to the motorway is 600 m which means that the traffic affect the concentrations of NO2. Annual average - health protection. In Eastern zone there is no exceedances of LAT.
Ozone, Maximum 8-hour daily concentrations of O3 for the period 2005 – 2010: Kocani station 120 µg/m3 in 2005/115 µg/m3 in 2010; Kumanovo station 170 µg/m3 in 2006/150 µg/m3 in 2010. High concentrations of ozone are observed in the Eastern zone. AOT40 May-July: Kocani station 24000 µg/m3 in 2005/0 µg/m3 in 2010; Kumanovo station 9000 µg/m3 in 2006/23500 µg/m3 in 2010. The AOT40 value for protection of vegetation was exceeded everywhere in the analyzed period. The long term objective for the protection of human health are exceeded everywhere, also for the long term objective for the protection of vegetation has been exceeded everywhere.

In the **Former Yugoslav Republic of Macedonia**, in the period from 2002 to 2011, variable trend of falling and rising of the emissions was recorded for **SO2 - sulphur dioxide and NOx - nitrogen oxides**, while emissions of CO - carbon monoxide and TSP - total suspended particulates were rising in the period from 2002 to 2008, and the trend has been falling in the course of the years afterwards. This was mainly due to the variable and often discontinuous operation of business entities, especially in energy production, industrial processes, metallurgy, etc., being the main sources of air pollution, and not to special measures and programmes for reduction of emissions of these pollutants in the air. The biggest emission of

air pollutants is found in the sector of Combustion processes, in the magnitude of 60%. Emissions from the Transport sector during the last years have ranged between 30% and 40%, Production processes range from 30% to 5%, and polluting substances from other sectors contribute with less than 5% given the fact that there is insufficient data on these emissions. There is a **variable trend** – in the period 2002-2011, there was a downward trend in the emissions of SO2, followed by an increase in 2006 and 2007, a decrease in 2008, and a slight increase in 2009. With regard to the last years, a downward trend was noted in the quantities of this pollutant in 2010, and then an increase in emissions again in 2011, which was due to the total quantity of consumed lignite. The variable trend of the total sulphur dioxide emission is a result of the discontinuous operation of certain production, industrial, energy and metallurgical facilities. The combustion processes contribute the highest percentage in the emissions of SO2, which is a result of the combustion of low-quality and low-calorie lignite, as well as sulphur-containing liquid fuels that are used for heat production and in transport. There was a general trend of approximately equal quantities of emissions of nitrogen oxides in the period from 2002 to 2005, followed by an upward trend in the period 2006-2007, whereas the quantity of emissions slightly decreased in the period 2008 to 2010. In 2011, an increase in nitrogen oxide emissions was recorded again, resulting from increased quantity of fuels applied in combustion processes. In this case, too, such variable trend in the emitted quantity of nitrogen oxides is not a result of prepared plans and programmes for reduction of emissions, but rather of the change in the quantity and the quality of fuels in energy generation processes and combustion in the vehicles. The highest percentage of nitrogen oxides emission is received by combustion of low quality and low-calorie lignite (combustion processes) and by the combustion of fuels in vehicles, i.e. transport. There was an increasing trend of carbon monoxide emissions from 2002 to 2007. There was a falling trend from 2007 to 2008, maintained at almost the same level in 2009 as well. The next two years saw another decline in the emission of this polluting substance due to reduced emissions from traffic. The highest CO emissions are generated in the sectors - Combustion processes, Production processes and Transport. The emissions are due to improper combustion of fuels used in these sectors, as well as to the age structure of the vehicle stock in the country. Namely, over 43% of the total number of vehicles are over 20 years old. Nevertheless, in the period from 2011 to present, 312 buses have been procured for public transport compliant with the EURO 4 standard, resulting in reduced CO emissions from the transport. There is a slight trend of increase in the emissions of suspended particles from 2002 to 2006, while in 2007 and 2008, the trend was slightly falling, followed by a slight increase in the trend in 2009. In 2010 and 2011, there was increase in emissions of TSP originating from combustion processes in the sector of production processes. Namely, the higher emission in 2011 compared to other years was due to the fact that data taken into account were calculated by the EMEP/CORRINAIR methodology through adequately identified emission factors, and thus correspondence and compatibility was attained to compare data with other EU countries. It is important to point out that there is no production of ODS in the Country. After conducting activities towards reduction and elimination of ODS, the total consumption of ODS in 2012 was 98.3% lower than the quantity registered in 2003.
More specifically, following table shows the air pollutants by SNAP sectors (SNAP - Selected Nomenclature for Air Pollution):

Air pollutants for 2011 in tonnes

SO_2	NO_x	CO	TSP	NMVOC	NH_3	Sectors
Sulphur dioxide	Nitrogen oxides	Carbon monoxide	Total suspended particulate matters	Non-methane volatile organic compounds	Ammonia	
89.39	35.07	65.90	20.63	27.48	10.81	
83.86	19.28	3.38	11.16	0.10	0.00	Combustion in energy and transformation industries
2.34	0.92	36.21	1.46	6.32	0.03	Non-industrial combustion plants
2.99	2.29	4.29	0.50	0.38	0.00	Combustion in manufacturing industry
0.06	0.03	0.14	6.98	1.03	0.00	Production processes
0.00	0.02	0.00	0.00	5.61	-	Extraction and distribution of fossil fuels and geothermal energy
0.00	0.00	0.00	0.00	5.27	0.00	Solvent and other product use
0.01	11.25	21.15	0.51	4.38	0.29	Road transport
0.12	0.90	0.71	0.01	0.21	0.00	Other mobile sources and machinery
0.00	0.00	0.00	0.02	0.11	0.02	Waste treatment
0.00	0.37	0.00	0.00	4.07	10.47	Agriculture

Source: Assessment of the current state of air quality;: Ministry of Environment and Physical Planning 2011

Climate change in Macedonia

In the **Former Yugoslav Republic of Macedonia climate change** represents a significant threat of the region, providing a great impact on agriculture, tourism, forest and hydro-energy system. Both awareness raising and strong measures are needed to be jointly taken in the area of risk prevention, flood-protection and forest protection from fire and other climate change effects in the regions.

The country does not yet have a comprehensive countrywide climate policy or strategy. Substantial efforts are required in order to integrate climate change into other sectoral policies and strategies. The country regularly associated itself with EU positions in the international context. It has also previously associated itself with the Copenhagen Accord, but has not yet put forward a mitigation commitment by 2020. The country should consider making mitigation commitments consistent with those of the EU and its Member States for the purpose of the post-2020 climate agreement to be reached by 2015. It is also invited to start reflecting on its climate and energy framework for 2030 in line with the European Commission's Green Paper 'A 2030 framework for climate and energy policies' As regards

alignment with the climate acquis, implementing legislation on consumer information on fuel consumption and CO2 emissions for new passenger cars was adopted. The country identified 40 installations for the purpose of future implementation of an emissions trading system. Significant efforts are required to strengthen the country's monitoring, reporting, and verification capacity. The country participated regularly in climate work under the Regional Environmental Network for Accession (RENA). Efforts to raise awareness and promote cooperation between stakeholders should be intensified

Climatic factors - existing state of climatic regions and sub-regions within the selected area and trends in climate change, including greenhouse gases (GHG), focusing on energy and transport.

In spite of the relatively small country area, the climate is diverse. The following, more homogeneous climate regions and sub-regions are differentiated: sub-Mediterranean climate (50 - 500 m); moderate-continental-sub-Mediterranean climate (to 600 m); hot continental climate (600 - 900 m); cold continental climate (900 – 1,100 m); sub-forest-continental-mountainous climate (1,100 -1,300 m); forest-continental mountainous climate (1,300 – 1,650 m); sub-alpine mountainous climate (1,650 – 2,250 m) and alpine mountainous climate (hs >2,250 m).
The **South-East Region** is characterized by two climate zones: Sub-Mediterranean transitioning to a greater or smaller degree with the Eastern-Continental climate. Their inter mixture provides the region with a special feature – long hot summers with high midday temperatures and a reduced degree of annual precipitation, reduced winter temperatures and winds from all directions. This region is characterized by northwest and southwest winds and less frequently by northern and southern hot winds. The South-East region is also characterised by a large number of sunny days and a high light intensity that has a positive effect on the fruit production. There are around 230 sunny days. On average, the sunshine lasts for 2.377 hours annually. Fog occurs on no more than 20 days on average. Due to the Sub-Mediterranean influences from the Aegean Sea and the Continental climate influence, the climate conditions in the region are characterised by a reduced amount of annual precipitation, greater aridity, varying rainfall and lower winter temperatures. The Radovish - Konche micro-region is characterised by a temperate- continental climate. Due to the strong difference in altitude (400- 707 m), certain climate elements vary between the changed Mediterranean climate in the fields and the mountain climate in the mountains. The average annual temperatures in the plane areas vary from 12.5 to 13oC, and i n the highest areas of the mountain massifs up to 7,5oC. The warmest months are July and August, with an average temperature of 23oC, while the coldest is anuary with an average of 1, 2oC. Average annual precipitation registers at 563 mm, with great variations from year to year, however, differences exist between the mountain and plane regions. In relation to the total annual number of sunny hours, the micro-region has a total of 2.326 sunny hours annually, i.e. 6.4 hours per day. The Gevgelija micro-region is characterised by a Mediterranean and Continental climate, leading to warm days throughout the year. This micro-region has over 240 sunny days during the year, making it sunniest region in the MK.
The climate in the *East Region* is arid, i.e. the area is dominantly arid – dry. Characteristic for this type of climate are the long and dry summers, often with temperatures as high as +41°C, and mild, wet winters, with rare occurrences of extremely low temperatures, which can be as low as -22 °C. This is the result of the contact between the influences of the Mediterranean and the continental climate. Continental climate is predominant in the Maleshevo region. Average annual precipitation in the region varies between 506 mm in Kochansko Pole to 672 mm in Maleshevia. Precipitation is distributed unevenly, regarding both time of the year and quantity. Rainfall is maximal in the months of April and May, and minimal in the summer months of July and August. The average mean annual temperature in the plains is 12.9 °C, and in Maleshevia - 8.7 °C. Snow falls from December until March. Fog is rare in this region,

except in Maleshevia, where there is an average of 3 to 5 foggy days per year. Climatic conditions in this region are favourable for the development of agriculture, especially for rice growing.

The climate in the **North Eastern** region is primarily moderately continental to mountainous. The temperature differences are in compliance with the altitude and they result generally in a moderately cold winter, moderately hot summer, cool spring and relatively warm autumn, which in a specific segment of the region is due to the geographical disposition and to certain impacts forcing from the Aegean Sea through the Kriva Reka. On the other hand, the high regions of the Osogovo area are suffering the impacts of the step climate. Significant rainfalls in comparison with the surrounding areas are observed in the area of Kriva Palanka, which is due to the absolutely high altitude which is a natural condenser of the water steam brought thereabove by the western and southern winds. In Kratovo, additionally, one can feel the impact of the southwest winds resulting in a warm and rainy weather, whereas the northeastern winds blowing from the mountainsides impose the occurrence of a dry and cold weather. The climate in the municipality of Staro Nagoricane may be defined as moderate with modified mediterranean impacts under the pluviometric regime. In this area, the summer is the most droughty period of the year, with the minimum of the rainfalls occurring in August and the average monthly quantity of rainfall reaching 27 mm.

Air temperature changes

During the 1950s, higher air temperatures were recorded at all the meteorological stations. These hot years were followed by a colder period, from 1961 to 1998. Following this period, and after 1996 in particular, average annual temperatures increased and are continuously higher than the long-term average. The hottest year recorded on MK territory was 1994. Significantly higher average annual temperatures than the multi-annual average were also recorded in 1999, 2002, 2003 and 2007. The country was most affected by disasters in Europe in 2007, with a rate of 488 affected people per 1000 inhabitants, which means that almost half of the population was affected by wildfire. During July 2007, daily temperatures reached 43°C and caused more than 200 fires destroying over 2000 hectares of forests, and almost 1000 excess deaths. Under conditions of heat–wave, an increase of temperature of 1°C above the heat cut-point (30.8°C) leads to an increase in mortality of 4.8%. The intensity, length and number of heat waves have increased by a factor of six to eight since the 1960s. Climate change projections of the main climate elements (temperature and precipitation) have been made up to year 2100, i.e. for the periods 1996-2025 (‘2025’), 2021-2050 (‘2050’), 2050-2075 (‘2075’), and 2071-2100 (‘2100’) in comparison with 1961-1990 (reference period ‘1990’). Several climate models and emissions scenarios have been applied. According to the results, the average increase of temperature in MK is between 1.0°C (0.9-1.1) in 2025, 1.9°C (1.6-2.2) in 2050, 2.9°C (2.2-3.6) in 2075, and 3.8°C (2.7-5.4) in 2100. The highest increase in air temperature by the end of the century at the country level is projected for the summer season.

Precipitation changes

The annual amount of precipitation in the period 1971 to 2000 was lower than in the period 1961 to 1990 for all meteorological stations in the country. Climate change projections of the main climate elements (temperature and precipitation) have been made up to year 2100, i.e. for the periods 1996-2025 (‘2025’), 2021-2050 (‘2050’), 2050-2075 (‘2075’), and 2071-2100 (‘2100’) in comparison with 1961-1990 (reference period ‘1990’). Several climate models and emissions scenarios have been applied. The average sum of precipitation is expected to decrease from -3% (-1 - -6) in 2025, -5% (-2 - -7) in 2050, -8% (-4 – -12) in 2075 to -13% (-5 - -21 in 2100 in comparison with the reference period. The most intensive decrease in precipitation by the end of the century at the country level is projected for the summer

season. Practically no change in precipitation is expected in winter, but a decrease in all other seasons is.

Wind climate changes
Practically no change is expected in wind speed over the country according to calculations with four GCMs.

Droughts
Frequent and intensive droughts exacerbate social and economic conditions in the rural parts of southern and eastern regions of the country. For example, a prolonged drought in 1993 damaged most of the crop yields and in many cases resulted in a total crop failure. At the countrywide level, the damage caused by this drought amounted to 7.6% of the total national income. The country has difficulties coping with extreme hydrological events (droughts and floods) due to a lack of finance, technical, and institutional capacities as well as legal instruments. Analysis of climate change impact on water resources points to reduced discharges with significant regional variability. Even average climate change can cause large problems in water resource management in river basins where water resources are insufficient, such as the Strumica river basin.

Zero-option scenario:

For Bulgaria and the former Yugoslav Republic of Macedonia no scenario have been developed to date and no major changes are anticipated for 2020 (EEA SOER 20120).

5.3 Biodiversity, fauna and flora

The bordering regions of Bulgaria and Former Yugoslav Republic of Macedonia are rich in nature reserves and protected areas.

Bulgaria
Bulgaria is one of the **richest countries in biological diversity** in Europe with high amount of endemic species (e.g. 5% in case of plant species of the entire flora, or almost 9% of invertebrates – excluding insects). Bulgaria also offers almost all main types of natural habitats represented in Europe. Bulgaria is one of the countries with the greatest biodiversity in Europe.

A variety of landscapes, geology and microclimates and thousands of years of human activity have resulted in a **rich diversity of species**, communities and natural habitats. Bulgaria contains three bio-geographic areas (Alpine, Black Sea and Continental), a variety of communities and ecosystems and almost all major European habitat types. Bulgaria's genetic plant and animal resources play an important economic, cultural and biological role. They represent a variety of wild and semi-wild relatives of crops, local types and breeds, many of which are under threat.

Some major risk could affect this asset, in fact still exist a lot of anthropogenic threats to the biodiversity in Bulgaria. The loss and degradation of the natural habitats and ecosystems, as well as pollution of air, soils and waters are the main dangers for the biodiversity. Sectors like forestry, industry – energy and mining, agriculture, tourism have in some cases quite negative impacts to the biodiversity especially on the local level. These includes also e.g. illegal collection of edible mushrooms, medicinal plants, snails, reptiles and amphibians, sport hunting of big animals and birds etc. Changes in land's ownership also creates some threats for the biodiversity – especially if farmers and local authorities are not fully informed about and warned to protect and restore land, taking into account the necessity to preserve

the biodiversity within and outside of the protected areas. The fires represent quite significant adverse effect to the biodiversity at present.

Over the past few years the protection of the environment and biodiversity is one of the top priorities of Bulgaria. **In 2012, the area of protected natural scenery in Bulgaria amounts to 583.876** Hectares or 5.3 % of the country's territory and compared to 2011 there is an increase by 1 754 ha. At the end of 2012 in Bulgaria exist 973 protected natural areas, which is by 19 more compared to the previous year.[41]

Protected Natural Scenery in 2013

PROTECTED NATURAL AREAS	NUMBER	AREA (HA)
Total Natural Areas	**1.009**	**584.587,1**
Reserves	55	77.044,1
Natural landmarks	344	16.844,2
Protected areas	561	79.353,4
National parks	3	150.362,3
Natural parks	11	256.455,7
Maintained reserves	35	4.518,0

Source: Republic of Bulgaria- NSI, Statistical Reference Book 2014.

The diversity of Bulgarian flora and fauna has a significant economic dimension as a biological resources of importance to the Bulgarian people and the national economy. The most important source of flora and fauna is **Bulgaria's forests which cover a third of the country**. Although there is still no economic assessment of the ecosystem services they offer, they play a vital environmental role as a source of oxygen, water, timber and non-timber products, including grassland, forest fruit and herbs, habitats for plant and animal species and a place for tourism, sports and recreation.[42]

The implementation of the **NATURA 2000 network** in Bulgaria will bring the significant positive effects to the biodiversity protection. On the other hand, it is also possible to suppose further pressures to the biodiversity out of the protected areas due to economic development of the country.

The following table illustrate the number and surface which is under Natura 2000 in Bulgaria on 2012.

Protected Zones from "Nature 2000" in 2012

	NUMBER	AREA (HA)			SHARE OF PROTECTED ZONES IN THE TOTAL COUNTRY'S TERRITORY (%)
		TOTAL	TERRITORY	AQUATORY	
By directive of birds					

[41] Source: Republic of Bulgaria- NSI, Statistical Reference Book 2013.

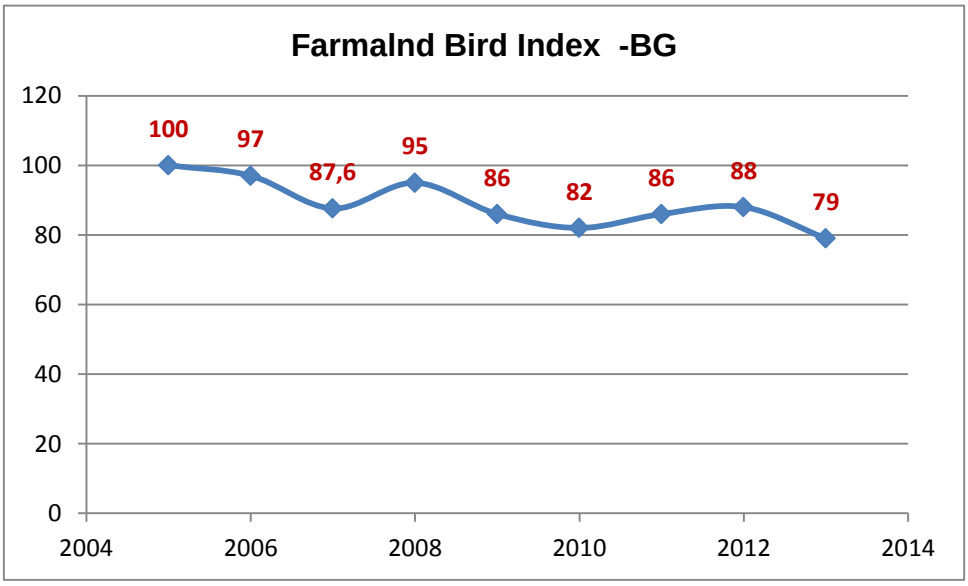
[42] http://www.eea.europa.eu/soer/countries/bg/soertopic_view?topic=biodiversity

	Number	Area (ha)			Share of protected zones in the total country's territory (%)
		Total	Territory	Aquatory	
Approved by Decision of the Council of Ministers	118	2.566.588	2.512.559	54.029	22,6
of which: announced by Order of the Minister of environment and water	114	1.781.026	1.729.192	51.937	15,7
By directive of habitats					
Approved by Decision of the Council of Ministers	231	3.391.225	3.330.115	61.110	30,0
of which: announced by Order of the Minister of environment and water	-	-	-	-	-
Total by both directives					
Approved by Decision of the Council of Ministers	336	3.905.989	3.808.430	97.559	34,3
of which: announced by Order of the Minister of environment and water	114	1.781.026	1.729.192	51.937	15,7

Source: Republic of Bulgaria- NSI, Statistical Reference Book 2013.

Bulgaria has some of the most diverse cave fauna in Europe, with 33 species of bat. The first ever trend projections for **38 common bird** species were published in 2007, along with an index of birds in agricultural habitats – an important indicator of sustainability in farmland management. Of the 38 species tracked in the period 2005-2007, a total of **17 were classified as farmland birds**. In the first eight years of its existence, the **FBI index declined as shown on the figure below**, highlighting the risk of decreasing of birds in agricultural area, and loss of biodiversity.

Index of farmland birds in Bulgaria (17 species), (%)



Source: Bird Life Bulgaria – www.bsp.org\monitoring

The **cross-border region** has unique flora and fauna, rich species kinds, including mammals, birds, reptiles, insects, plants, and mushrooms also with numerous endemic species. The part of the Bulgarian largest national park – **The Rila and Prin National Park** – is located in the **Kyustendil district**. Also there is the presence of the seven Rila Lakes, the Stob Pyramids, Parangalitsa (the oldest nature reserve in the country), as well as the biggest (2873 ha) nature reserve of Bayuvi Dupki (Djindjirica).

Former Yugoslav Republic of Macedonia

The abundance of ecosystems, habitats, communities and species places the former Yugoslav Republic of Macedonia at the top of countries with **impressive biodiversity in Europe**. Key ecosystems represent dryland/grasslands, wetlands, forests and mountainous sites. The traditional and low intensity farming practices have contributed significantly to the creation and maintenance of this exceptional richness.

Richness and heterogeneity of species and ecosystems, and the high degree of relicts and endemism are the main characteristics of **biological diversity in the Country**. Besides the fact that the diversity of flora and fauna has not been completely studied, yet, according to the available findings, it shows great richness - over 17 000 taxa of flora, fungi and fauna, of which over 950 are Macedonian endemics.

Number of endemic and threatened species among the higher plants, 2010 Higher plants found on the territory of MK are Balkan, Southern-Balkan and local, Macedonian endemics. The highest number of endemic plant species (114) is registered among the dicotyledons. In MK, the national Red List of threatened wild plant species has not been prepared yet. The World Red List of IUCN contains 72 taxa from MK, of which 19 are local endemics.

The basic characteristic of fauna in MK is the high degree of taxonomic diversity represented by 10 354 species and 228 subspecies or a total of 10 582 taxa. As for the fauna of vertebrates on the territory of MK 113 species are registered which are included in the European Red List. The National Red List of threatened species has not been prepared yet. Among the vertebrates, highest percentage of endemism, 34.5%, is shown in the class of fish, and for the rest of the classes, 4 endemic taxa are registered only among the mammals. Out of a total of 20 endemic species of fish, 17 are included in the category of globally threatened species.

Number of threatened species of fungi, 2010 Out of the total number of registered self-growing fungi on the territory of MK (about 1 250 species), the greatest portion belongs to the types Myxomicota (10), Oomycota (20), Zygomicota (35), Ascomycota (130) and Basidiomycota (1 050). The preliminary Red List of threatened species of fungi includes 67 species belonging to the type Basidiomycota.

The process of developing Natura 2000 network will also integrate Important Birds Areas (IBAs), Important Plant Areas (IPAs) and Prime Butterfly Areas (PBAs). IBAs. According to current estimations there are 33 bird species listed in Annex 1 of the Bird Directive which are found in the country. Out of them, 16 species are considered in a critical status and 2 species are already extinct (Gypaetus barbatus, Tetrax tetrax). The first designation in 1989 comprised 10 Important Bird Areas (IBA) with a total area of 2 709 km² (10% of country's territory). The new proposal by Birdlife International (2008) comprises 21 sites with a total area of 6 538 km² (25% of country's territory). IPAs. There are 42 Important Plant Areas (IPAs) identified in MKwith a total area of 459 425 ha (17,9% of country's territory). Grasslands are found in 80% of the identified areas. Most common are dry pastures, found in 20 IPAs, and alpine and sub-alpine pastures found in 12 IPAs. PBAs. There are 8 Primary Butterfly Areas (PBAs) which are proposed currently and 3 of them are already protected at

national level. MK protected areas system is not yet representative and comprehensive for safeguarding its botanical and avian diversity.

The number of **protected areas** has risen during the past decade, from 7.4 % of the national territory in 1991 to 8.7 % in 2008 the protected areas coverage is 2 220.5 km2[43]. The first three categories of protected area – strict nature reserve, national park and monument of nature – have been established and there is only one multi-purpose area (Jasen), while the fourth and the fifth categories of protected area – nature park and protected landscape – have not yet been established. Upon finalisation of a re-evaluation of the natural heritage of the Republic, the objects of nature included in the categories of landscape of outstanding natural characteristics and individual flora and fauna species will be incorporated into the six categories of protected areas under the Law on Nature Protection.

Number and area of protected areas, 2008 status

PROTECTED NATURAL AREAS	Number	Area (KmQ)
Total	**83**	**2 220.5**
National park	3	1 130
Strict nature reserve	4	126.8
Landscape of outstanding natural characteristics	3	23.4
Individual flora and fauna species	12	26.5
Monument of nature	60	634.3
Multi-purpose area	1	279.5

Source: EEA- The European environment – state and outlook 2010

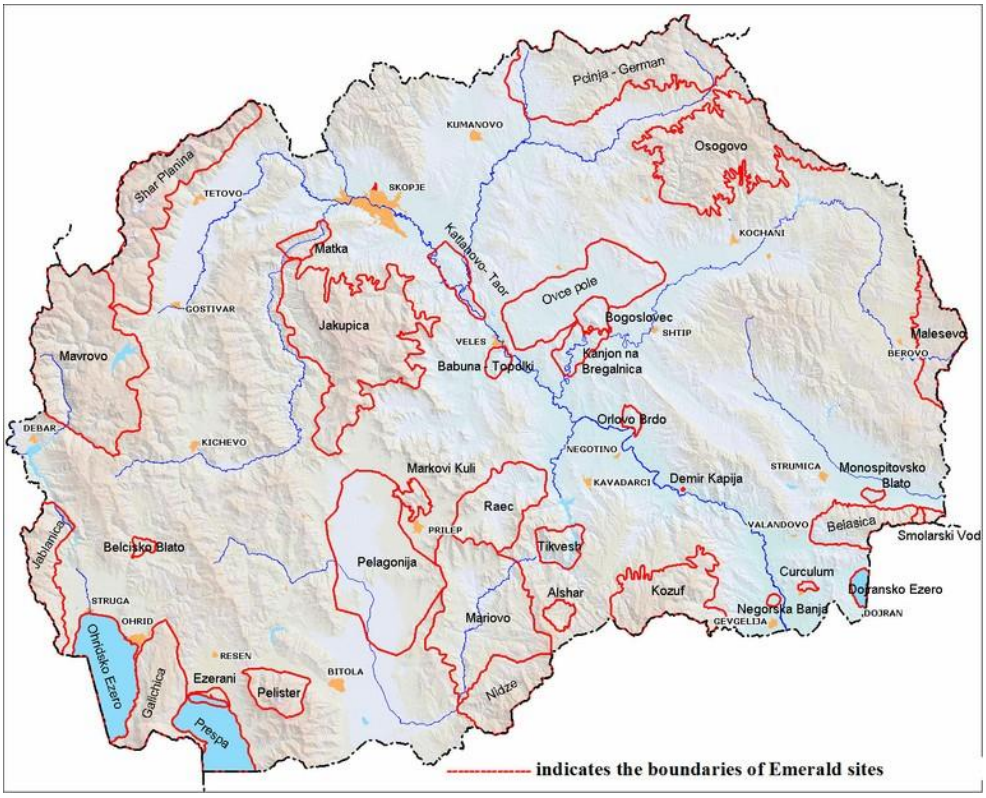
In accordance with the provisions of the Convention on the Conservation of European Wildlife and Natural Habitats (Bern, 1979) and the Law on Nature Protection, four projects that aim to establish the **National Emerald Network** in the Republic were implemented between 2002 and 2008. This was an important enabling activity/mechanism for the establishment of a **coherent European Natura 2000 network.**

For the purpose of compatibility of the National Emerald Network with Natura 2000, the areas have been categorised into three type.

- ✓ Important Wild Bird Area corresponding to Special protected areas (SPAs) for birds under Natura 2000. Four areas have been included in the Emerald network.
- ✓ Important wild species and habitats area corresponding to Special areas for conservation (SACs) under Natura 2000. Five areas have been included in the Emerald network.
- ✓ Important bird, other species and habitats areas – 26 areas have been included in the Emerald network.

[43] Source: http://www.eea.europa.eu/soer/countries/mk/soertopic_view?topic=biodiversity

National Emerald Network of the Republic of Macedonia



Source: EEA- The European environment – state and outlook 2010

The former Yugoslav Republic of Macedonia component of the Green Belt, relevant to the **cross-border region** includes protected area Dojran Lake (also in Ramsar from 2008), Smolare Waterfall, Kolesino Waterfall but also covers non-protected areas as core area between Vinica and Delcevo, Belasica, Plackovica, Maleshevski and Osogovo Mountains.

The Nature Conservation Programme (2011-2016) of Swiss Agency for Development and Cooperation (SDC) is addressed to support the nature conservation activities and activities for local development of the Bregalnica Region and some interventions on national level. The programme shall contribute to nature conservation in the country in order for country to reach the NATURA 2000 requirements (EU pre-condition). The overall goal of the Nature Protection Programme is to assist the country in conservation of its outstanding biodiversity and natural ecosystems through promotion of their sustainable management and use. To achive this goal, the Programme will support activities for ensuring the strategic and planned documents that will contribute to sustainable land use planning and management of the Region, development of sustainable tourism in low-level protected areas, as well as support of cross-broder initiatives present in the Region.

Protected areas on the former Yugoslav Republic of Macedonia side of the cross-border region

NAME OF PROTECTED NATURAL AREAS	Area (Ha)	Proclamation Year
Ploce-Litotelmi	23.2	2003, 2010
Dojransko Ezero/Dojran Lake (Ramsar site from 2007)	2,729.0	1977, 2011
Monospitovsko Blato, plant Osmunda regalis	851.0	1987
Zvegor, Delcevo, geomorphological features	5.0	1986
Lokvi-Golemo Konjari	15.0	2003, 2010

NAME OF PROTECTED NATURAL AREAS	Area (Ha)	Proclamation Year
Karshi Bavchi, rocks, Berovo	15.0	1967
Murite, special forest assemblages, Berovo	62.0	1987
Gol Chovek, type of tree, Gevgelija	0.0	1987
Orashac, Kumanovo, paleontological type	3.0	
Morodvis, platanovi stebla, Kocani	0.0	1986
Konche, special forest assemblages, Radovis	0.0	1986
Smoloarski Vodopadi (waterfalls Smolare)	695.0	2006
Koleshinski Vodopad (waterfall Koleshino)	254.0	1985
Platan, v. Kolesino, Strumica	0.0	1986
Platanovi Stebla, Star Dojran	2.0	1970
Crna Dudinka, black mulberry, Lesnovski Manastir	0.0	1962
Platanovi i Brezovi Stebla, sycamore and birch, Strumica	0.0	1986
Sostoina od platan, v. Mokrino, Strumica	0.0	1988
Div Dab/Div Prnar, wild oak/wild kermes oak, Kozuv-Gevgelija	0.0	1997
Dab, oak, v. Beli-Kochani	0.0	1983
Crna Topola, black poplar tree, v. Macevo	0.0	1983
Gladnica, fir trees, Gevgelija	68.0	1988
Dab, oak, v. Orasac	0.0	1999
Kuklica, Kratovo	55.0	2006, 2008
Cham Chiflik, Crimean pine-special reserve	405.0	1969
TOTAL country side of the cb region	5,182.2	
TOTAL country	229,722.5	

Emerald sites on the former Yugoslav Republic of Macedonia side of the cross-border region

NAME OF PROTECTED NATURAL AREAS	Area (Ha)
Dojransko Ezero	2,696
Smolarski Vodopad	810
Monospitovsko Blato	1,082
Alshar	3,133
Belasica	16,710
Blato Negorski banji	625
Osogovski Planini	56,630
Churchulum (Bogdanci)	652
German-Pchinja	63,490
Klisura na Bregalnica, Type A	7170
Maleshevski Planini	19,140
Ovche Pole, Type A	41,360
TOTAL country side of the cb region	213,498
TOTAL country	754,383

In the three districts involved on the cooperation territory (North- East, East, South-East), there are also other natural protected areas, according to national legislation, which represent a sound basis for potential tourism attractions

Nort East Region

***Kuklici – The Stone Dolls-Kratovo*.** This natural wonder was probably created by erosion, the power of the wind, and climate influence. The legend connected to this phenomenon says that the figures are in fact wedding guests who were turned into rocks

Pehchevo waterfall.Only two of these waterfalls actually belong to Bregalnica, and the rest are its confluents Crn Doll, Zh'tachka River and Spikovski Andak. While walking towards the waterfalls the feeling that you are within areas untouched by human hand follows you everywhere. Even the governed path to the waterfalls made of wood and stone and the benches can not break this filling.

Belasica Mountain contains two geomorphologic properties that are declared natural monuments – Smolare and Kolesino Waterfalls

South East Region

Watershed of Struma River – important fresh water ecosystem rich in endemic fauna elements; here is also found the most significant swamp of the region, the Monospitovo Swamp, which is seriously endangered. The Monospitovsko Blato is an area of wetland ("blato" means "marsh"), devoted to conservation, nature and eco-tourism, with distinctive long wooden jetty-like plank platforms built out over the marsh for bird-watching and fishing, and an incredibly rich variety of wildlife – insects, flowers, fish, birds, lizards, mammals, amphibians... – some I unique to this place

Smolare waterfall is the biggest permanent waterfall in the country, with a waterfall of above 38 meters located on the River Lomnica on the northern slopes of one of the oldest mountains in the Balkans. The paths that run through the forests are neatly marked, while the waterfall itself is an excellent challenge for all the enthusiasts of sport-canyon, thanks to the many spectacular opportunities for rope-descending along the waterfall

Koleshino Waterfall is located on the river Baba, above the Village of Koleshino, in the mountain of Belasica, near the city of Strumica. The inhabitants of the Kolesino village arranged an access path to a natural rarity.

Doiran Lake is a lake with an area of 43.1 km² shared between MK (27.3 km²) and GR (15.8 km²).. It is the smallest of the valley lakes in the country, with a maximum depth of 10 meters. This is the warmest lake where water temperature reaches up to 27 C, and there is transparency from 1 to 3.6 m. Water in the lake comes from underground springs and rivers: Golema River, Toplec etc. Blue-green algae are most prevalent with the phytoplankton in the lake. In August and September of their mass is so high that the entire surface of the lake is covered with water flower. Dojran abounds in fish and largest fresh water production in Europe. Fish fauna in Dojran is represented by 15 types, one of which is endemic.

Areas with a potential for cross-border cooperation activities (included also in the IUCN Strategy for South-east Europe) are:

Osogovo Mountains – a massif characterised with rare flora elements and a biocorridor for large mammals and endangered fauna elements;

Belasica Mountains – an important complex of plant, animal and fungi species prioritised for protection according to the European documents (Directive on conservation of wild flora and fauna and natural habitats);

Malesevo Mountains: relief composition predisposed of geological base consisting of metamorphic rocks. The terrain is characterised with round peaks and vegetation of beech and pine forests.

Zero-option scenario:

For the **Bulgaria** side of the OP the Outlook 2020 highlight how "the area covered by protected areas is set to increase in stages from 2008-2018 to reach about 7 % of the country's surface area, mainly at the expense of the natural monuments and protected sites categories. Plans are also envisaged for the adoption of 48 new protected area management plans and an update of the 30 plans currently being implemented.[44]"

For the **Former Yugoslav Republic of Macedonia**, "current government plans[45] envisage a significant increase in protected areas and their integrated protection through capacity building with management bodies and the adoption and implementation of management plans in the coming period – 2010-2020. Also According to current projections, 194 areas and objects of nature will be protected by 2020 reaching a total of 263 protected areas and objects, in all 296,963 km2 or 11.5 % of the surface of the Republic. The establishment of the Natura 2000 and National Ecological Network is of particular relevant as this will create conditions for full achievement of international criteria, as well as the requirements of the relevant EU *acquis* concerning the protection of natural heritage and conservation of biological diversity in the Republic[46]

5.4 Water

The area of the CBC OP is rich in water resources: rivers, the biggest of which are Struma, Mesta, Bregalnica, Strumica (Strumeshnica); lakes (part of Dojran lake, Vodoca, Mantovo; 233 lakes in Rila and 186 in Pirin, of which the most popular are the Seven Rila lakes); *thermal waters*, available across the whole cooperation area.
There are still problems with the *supply of drinking water* mainly due to the old supply and distribution systems (leading to up to 55% losses) and to the lack of drinking water treatment facilities.

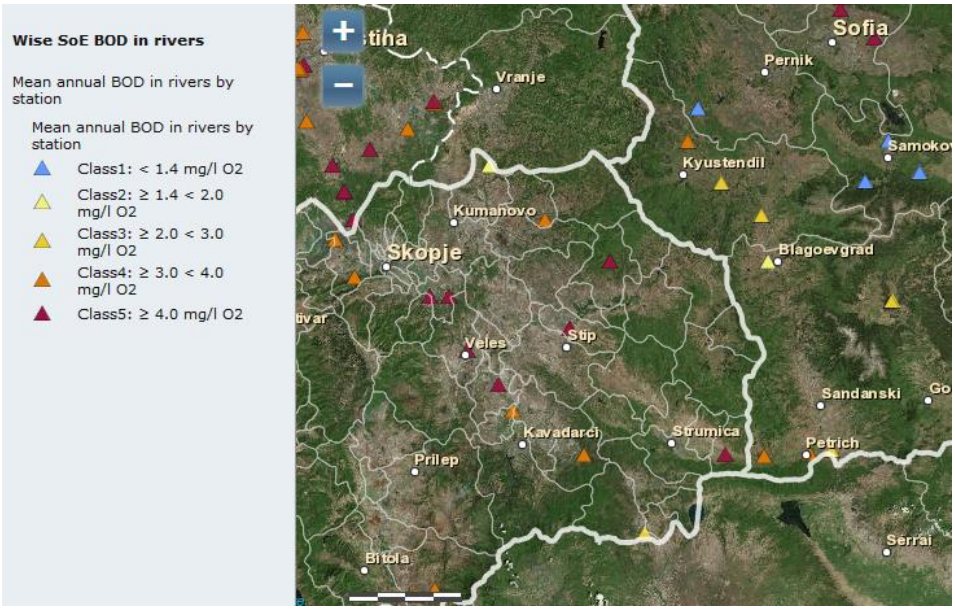
The biggest environmental problems of the border region are the **pollution of the rivers**. There are highly polluted river sections particularly within the catchment area of the *Struma and Bregalnica river* resulting mainly from the direct flow of waste waters from industry (and mine sites) and households, mine deposits and the use of pesticides and fertilizers in agriculture. Waste water treatment facilities are insufficient.. Despite the progress made in previous years, there are still many settlements (especially in the rural and mountainous areas) which are not connected to sewerage system Bulgaria.

[44] See http://www.eea.europa.eu/soer/countries/bg/soertopic_view?topic=biodiversity

[45] See the National Strategy for Biodiversity Action Plan, NEAP 2, the Spatial Plan of the Republic, the National Strategy for Sustainable Development, the National Strategy for Rural Areas Development

[46] See http://www.eea.europa.eu/soer/countries/mk/soertopic_view?topic=biodiversity

WISE SoE BOD in rivers in Cross Border Area Bulgaria and Former Yugoslav Republic of Macedonia



Source: European Environmental Agency[47]

Bulgaria

Water management in the Republic of Bulgaria is carried out at national and basin level. The following regions water management at basin level are designated:

- Danube region with the center in Pleven;
- Black Sea region with the center in Varna;
- East Aegean Region with the center in Plovdiv; and
- West Aegean Region with the center in Blagoevgrad.

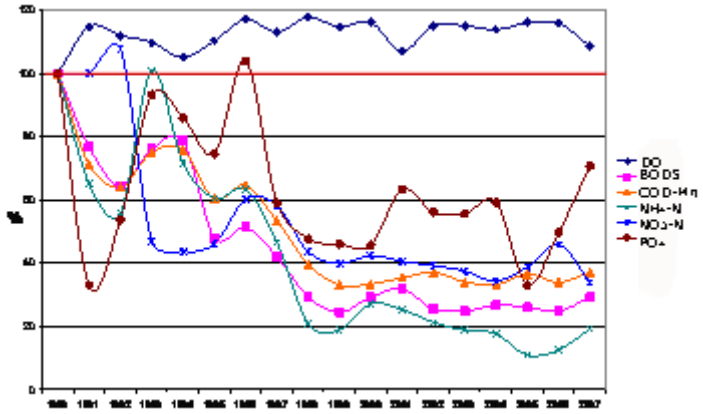
The indicative activities of the CBC Programme have the potential to affect the surface water bodies at one of the basin directorates, namely:

- **West Aegean Region Directorate** for Water Management (which is relevant for the Blagoevgrad and Kyustendil districts).

Surface waters are in good condition. The rivers are contaminated in areas around big settlements, especially those with no treatment plants for wastewater. Transition to market economy and the decline in production from industry and agriculture has led to a reduction in pollutants discharged into water, including reducing the loads of major nutrients (nitrogen and phosphorus). As a result, nearly 75 % of the length of rivers in the country meet the standards for good quality. The improvement of water quality started 1998 - there is a clear trend of sustainability and slight improvement of all indicators for water quality between 1998 and 2007.

[47] See http://www.eea.europa.eu/data-and-maps/explore-interactive-maps/wise-soe-bod-in-rivers

Change of the concentration of the main indicators:
NH4-N, NO3-N, DO, COD-Mn, BOD5, PO4 (1990 = 100%) for the period 1990-2007.



Source: EEA- The European environment – state and outlook 2010[48]

Nevertheless it is important to note that In relation with the quality of the water, the specific Districts in which the Programme will be implemented has a number of river parts with **destroyed ecological status**. The Ogosta artificial lake, in **Montana District**, and the Ogosta river valley are polluted with heavy metals, mainly arsenic and lead.

Groundwater

Groundwater quality assessment for 2007 has been carried out in compliance with European Water Framework Directive by groundwater bodies (GWBs) and by River Basin Districts.

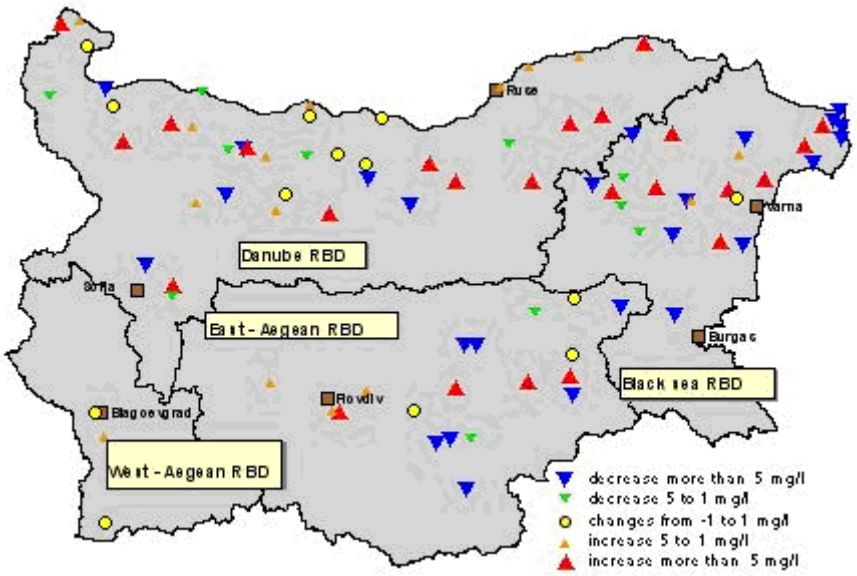
Groundwater status was estimated as mean values of Nitrate contents of all the country for a four-year period, corresponding to the different groundwater monitoring types of points. Nitrates are the main pollutant of groundwater in the country. Groundwaters were classified by nitrates content in four quality classes for the average nitrate concentrations in groundwater

The results of trend analyses by monitoring station types shows prevalence of trend of decrease in water type 0 phreatic (shallow) groundwater; for type 1, deep phreatic groundwater slow predominance have increasing trends, while decrease trends are predominantly detected in Captive groundwater. Increasing trends predominate for Type 3 - Karstic groundwater (inclusive Karstic springs) with 64,71%.[49]

[48] Cfr http://www.eea.europa.eu/data-and-maps/data/waterbase-rivers-6

[49] Cfr. EEA, Bulgaria State and Outlook 2010, Fresh Water (http://www.eea.europa.eu/soer/countries/bg/soertopic_view?topic=freshwater)

Trend classes between previous and current monitoring period for Nitrates \u2013 time periods 2000-2003 and 2004-2007



Source: EEA- The European environment – state and outlook 2010[50]

In general is possible to underline how due to the geographical location, specific atmospheric circulation and landscape structure, the **water balance in Bulgaria is unfavorable**. Concerning water resources per capita, Bulgaria takes the bottom position on the Balkan Peninsula. Bulgaria also faces serious challenges, mainly related to the location of Bulgaria in the dry area in relation to global climate change, unequal distribution of water resources in its territory, high degree of amortization of water supply systems and low level of building of sewerage systems. Long-term priorities are a reduction of the negative effects of the increasing air temperature and decreasing rainfall. Building of the sewerage and wastewater treatment plants lags in comparison to building of the water supply system, and many aquatic ecosystems in Bulgaria are still at risk.

Water supply is carried out by water suppliers and through self-supply. Main **water users are**: agriculture, industry and domestic sector (households and services).
The level of water use in the country is mainly determined by **water usage of the energy production**, which requires significant volumes of water for cooling processes.
After use, water is discharged into public sewerage network and water bodies. Two categories are distinguished – wastewater and water from cooling processes. Wastewater discharged into water bodies is formed by public sewerage network (incl. of non-point sources), economic units and households.
Wastewater treatment is done locally or in urban wastewater treatment plants. The estimate on population supplied with services on wastewater discharge and treatment is based on information from PWS operators and municipalities with organized discharge of water into urban wastewater treatment plant (UWWTP). It is possible that the share of this population to be overestimated due to settlements with partially built sewerage network. Population, whose waters are transported in tanks to the sewerage system or UWWTP, is not included.

[50] Cfr http://eea.government.bg/eng

Water abstraction, water use, wastewater (Million m^3/year)

	2008	2009	2010	2011	2012
Gross fresh water abstraction	**6.425**	**6.121**	**5.960**	**6.385**	**5.715**
Water use - total	5.168	4.911	4.821	5.178	4.559
Agriculture, hunting and forestry (incl. fishing)	291	326	309	348	296
of which: Irrigation	272	296	283	322	262
Industry	4.530	4.245	4.180	4.497	3.927
of which: For cooling in energy production	3.848	3.624	3.560	3.795	3.284
Other activities (services)	76	68	68	66	66
Households	271	271	264	266	271
Wastewater discharged into water bodies – total	793	757	811	791	787
Cooling water discharged into water bodies	3.550	3.308	3.241	3.560	3.055

Source NSI Statistical References 2014, RoB, Sofia, 2014

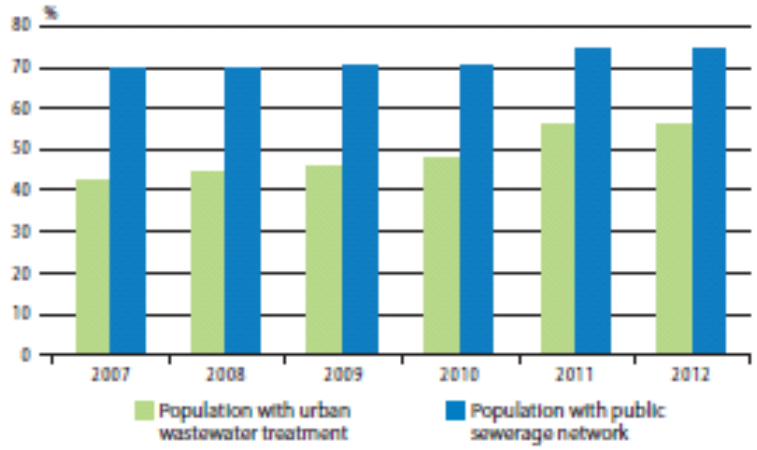
The **water supply system** is well developed in Bulgaria and provides connection for the 98.8% of population of the country. However, due to the unfavourable conditions of the water supply network, Bulgaria observes high percentage of water losses during distribution of the water that amount to 59.5% in average.

The border region is in a much better position in terms of availability of water supply resources and infrastructure compared to many of other areas and localities in both countries. However, the obsolescent equipment, mostly asbestos pipes, leads not only to health and hygienic problems but also to ineffective operation (water losses, frequent need of repairs, etc.). Considering the activities planned e.g. within operational programmes the situation should improve during next years.

Regarding the **sewerage system** in Bulgaria only 69.2% of population is connected to the network. Connection to sewerage system is more favourable for towns, in which 70,5% of the population is connected to the sewerage network, while in the villages the percentage hardly reaches 2.1%. Only 39.9% of the total population of Bulgaria is connected to waste water treatment plans.

Only the main settlements (bigger municipalities) have sewerage systems in the cross-border region. The majority of waste waters produced in the region flow directly to the rivers causing damages and significant environmental problems. As this issue is strongly connected with improving of the water quality, the significant improvement can be expected during next years.

Basic indicators related to population and the water services (%)



Source NSI Statistical References 2014, RoB, Sofia, 2014

Former Republic of Macedonia

The hydrographical territory of the **Former Yugoslav Republic of Macedonia** is a unique natural basin in the Balkan Peninsula and wider area, due to 84% of the available water quantities being domicile waters while only 16% are external waters.

The 2013 EU report recorded that in the area of water quality, the national water strategy was adopted, together with amendments to implementing legislation. Alignment with the acquis in this area is still lagging behind and administrative capacity remains insufficient at both central and local levels. Further steps were taken towards drafting river basin management plans, and the protection and restoration water resources. River basin management structures are not yet operational. The lack of coordination between the competent authorities in the water sector continues to hamper implementation of the legislation. There was no progress in addressing the gaps in the water monitoring system. The 2013 programme for water resources provides limited financial allocations for infrastructure investment. Preparation for infrastructure investment is lagging behind and funding is low compared with the needs of the sector. No progress was made in applying the polluter pays' principle or on establishing an appropriate water pricing system. This lack of progress continued to hamper the operation of water treatment facilities and put at risk investment in the sector.

Surface waters[51] cover 477 km2, that represent 1,88 % of the territory (188 m2/ha). There are about 35 rivers, 53 natural and artificial lakes. In the country there are 1.100 larger sources of water. Country belongs to areas that have sufficient water resources in relations to quantities of water resources. However, their distribution is quite unequal. The rivers flow into three different river basin districts: the *Aegean, the Adriatic and that Black Sea basin district.* The *Aegean* basin district is the largest, covers 87 % of the territory or 22.075 km2 and is divided on *Vardar River Basin and Strumica River Basin.* Vardar, the largest river in *Vardar River Basin*, drains 80 % of the territory or 20.661 km2. It consists of Vardar River Basin with its tributaries on the territory of MK up to the MK-GR state border, and Lake Dojran Basin on the territory of the MK. Most important tributaries of River Vardar are: Treska, Lepenec, Pcinja, Bregalnica, Crna Reka, Bosava and Dosnica. In Vardar River Basin there is the smallest natural lake in the state, Dojran Lake, which is shared with GR. The

[51] Source of data for water sector: national water Strategy 2010 and regional strategies from three related regions for the cbc programme Bulgaria-Former Republic of Macedonia (North- East, East, South-East).

Strumica River Basin includes Strumica, Cironska and Lebnica River Basin up to the MK-BG state border. It covers 1.649 km2 or 6,4 % of the MK territory. The major part of the total river basin (75 %) is situated in MK the remaining part in BG and GR. The main tributaries to River Strumica are Vodoca, Turija , Radoviska and Podareska. This area presents the poorest part in water resources of the whole state. The river has a total length of 114 km, of which 81 km in MK and 33 km in BG. It is the Struma's largest tributary. *Adriatic basin district* is the second largest. The main river is Crn Drim. Adriatic basin district covers an area of about 3.359 km2 or 13 % of the territory. It receives water from Lakes Prespa and Ohrid. This region is the richest with water resources. The *Danube River basin* district is the smallest with only 44 km2 or 0,14 % of the territory. It covers the northern side of Mount Skopska Crna Gora. This is the source of the river Binach ka Morava which, joining the Morava, and later, the Danube which flows into the Black Sea. The Binachka Morava River Basin includes the Binachka Morava River Basin on the territory of MK up to the MK-SRB state border. It has not significant impact on the availability of the water resource in the country.
Country is divided on 16 water management divisions. The largest division is Sredna and Dolna Bregalnica that covers 12,48 % of the total area and the smallest is Dojran that covers only 0,45 % of the area. There are 11 water management divisions in the Vardar River basin, 4 in the Crn Drim River Basin and 1 in Strumica River Basin. Small area of Binachka Morava River Basin is included in water divisions Pcinja and Skopsko.

Groundwater is divided in two kinds of lithological formations – *Quaternary and Neogene formations* and *carbonate formations*. Aquifers formed in Quaternary and Neogene formations are separated into three hydrogeological classes - 11, 12 and 13. This type of aquifers is dispersed through the whole county and cover about 5.000 km2 (19,5 % of total area). In terms of the representation of the underground water reserves that can be interesting to organized commercial exploitation, classes 12 and 13 are appropriate. The most important are formations in alluvial sediments of major rivers Vardar, Crna Reka and Bregalnica, that are spread in areas Poloshka, Skopska, Gevgelijsko-Valandovska, Pelagoniska, Kochanska, Strumicka depression, which are classified in class 13. Aquifer capacity in class 12 is less than 15 l/s and capacity in class 13 is 20-40l/s. The most important is region Valandovo-Gevgelijsko in the southern part where aquifer capacity reaches 100 l/s. In these parts hydraulic connection with surface water bodies is especially important. *Carbonate* aquifers in karst area are classified in class 32 and 33, where aquifer capacity is 10-100 l/s. For class 33 karst springs are characteristic, that have capacity more than 100 l/s, even more than 1000 l/s. There is registered about 40 springs with capacity more than 100 l/s. The total area of this kind of aquifers is about 2620 km2 (10,2 % of total area). About 2520 km2 are spread in western part, and only 100 km2 in the eastern part. The total average capacity of the sources of this type of groundwater is about 25 m3/s. This type is spread very asymmetrical – almost totally absent in the eastern part of county. These aquifers are characterized by a module on the expiry of underground (q) most often within 6 and 12 l/s/km2, rainfall infiltration between 20 and 40 % and effective porosity between 3 and 5 %. Aquifers formed from different types of formations with middle permeability are classified in classes 41 and 42. This type covers small area – about 900 km2 (3,5 % of total area). Aquifer capacity is normally between 2 and 10 l/s. Module on the expiry of underground most is between 1 to 1,5 l/s/km2. Total capacity is estimated at 1,0 to 1,3 m3/s. Low water permeability is characteristic of class 60. It covers the greatest part of county. Aquifers are formed from different types of intrusive and metamorphic rocks, which are characterized by a developed porosity only at the shallow surface. This type covers about 16000 km2 (62 % of total county area). Source capacity is less than 2 l/s and the total capacity is estimated at 2,5 to 3,0 m3/s. These aquifers are characterized by a module on the expiry of most underground (q) between 0,1 and 0,2 l/s/km2. Characteristic rainfall infiltrations is between 0,8 and 1,2 % and effective porosity less than 0,5 %. Classes of very low water permeability or even anhydrous courts are class 70 and 80. These classes cover

about 1200 km2 (or about 4,6 % of total area). In these classes are mainly formations as clay, marl, Eocene sediments and some kind of slate. The sources are rare (or completely absent) with poor capacity.
According to data from the cadaster of the source which date in '70s, there are 4.400 sources registered on the whole territory of the country. Total capacity is 992 x 106 m3/year or 31,5 m3/s. Data on water level and water temperature are gauged at groundwater monitoring stations. Data on number of sources is underestimated, but **estimation of total capacity is quite good**.

Surface and groundwater quality Water resources are **relatively clean in their upper course**, and rapidly worsen along their middle and lower courses. This situation is the result of unpurified waste water discharged chiefly by human settlements, but also by industry and agriculture. Often, the water bodies do not comply with the quality class objectives set for them (Economic Commission for Europe, 2002). According to the Law on Waters the categorization and classification of the waters is done in line with international standards. The corresponding "Book of Regulations" (ordinance) classifies the waters from "purity" to "pollution" in five classes and defines the permitted use criteria of the respective water class. The categorization enumerates the country's waters by river basins, lakes and groundwater and defines which quality class applies in which water course district. In accordance to monitoring data on the quality of rivers in the country obtained from the RIMSYS program in 2009 water quality in rivers in terms of oxygen indicators is shown through analysis of dissolved oxygen, BOD 5 concentrations and COD concentrations with comparison to prescribed values in Classification of Waters. Surface water monitoring of rivers in MK is performed by the Republic Institute for Health Protection/ Chemicals Hazard Information & Packaging and the Hydro Meteorological Administration. The first two focus more on parameters of sanitary importance, namely microbiological parameters, the third one focuses on hydrological as well as water quality parameters. The objectives of River Monitoring System Project includes the long-term assessment of water quality and discharges as well as the establishment of an effective forecasting and alarm system. The specific objective is to document long-term changes at 18 locations in the most important rivers in the country. Total of 20 automatic monitoring stations are located on rivers, lakes and reservoirs. Analyses are performed 12 (8) times per a year (on monthly base).
There are high concentrations of BOD 5 at certain measurement points on *Vardar and Crna Reka rivers*, which for the period 2001-2004 correspond to class 4 water quality. The highest concentrations of BOD 5 measured on Vardar river were recorded in 2001 and 2002, and on Crna Reka in 2004. In the period 2001-2004, lower concentrations were registered for the river Bregalnica, which are in accordance with the values for categorisation of this river. **Significant decrease in concentrations of BOD5 was recorded in 2009 and 2010**, followed by slight increase in the concentration of BOD5 in the period 2011 to 2012, corresponding to class II and III water quality. concentrations of N mg/l at certain measurement points on the rivers Vardar, Bregalnica and Crna Reka, for the period from 2001 to 2012, which correspond to water quality between classes II and V. In 2001, higher concentrations of N mg/l were recorded on the river Vardar, corresponding to class V water quality. Nitrite concentrations had a falling trend in the period between 2003 and 2012 thus complying with the provisions of the Decree. High orthophosphate concentrations at the measurement points on the river Vardar are recorded, which in the period from 2005 to 2010 decreased significantly, while in the period 2011-2012 there was slight increase in the concentration of orthophosphates. Analyzed data on the period 2001-2012 lead to the conclusion that the quality of waters matches the values specified in the Decree on categorisation of waters in MK. The orthophosphate concentrations in the rivers Bregalnica and Crna Reka, in the period between 2001 and 2008, show minimum upward trend, while in the period 2009-2011, a slight downward trend was recorded.

State of surface waters in accordance to biological quality elements. Biological monitoring is performed in 9 rivers in 18 monitoring stations. For quality assessment the structure and abundance of aquatic flora and structure and abundance of benthos invertebrate fauna are used: The state of a given biotope is defined with the use of bioindicator organisms and determination of the state of biocenosis. Collection of biological material is carried out 5 times a year (in February, April, June, August and October) with the inclusion of four seasons and with the selection of the most appropriate index period for sampling of the material. Index period is determined on the basis of findings from the longer periods observations, with more frequent frequency of sampling (10 times per year) in four seasons. Analysis carried out in 2009 places samples in three quality classes (first class has the best and third the worst quality). Results show that 85,5% of samples can be placed in the second quality class, 7,2% in the third class and 7,2% in first class. Monitoring results of the year 2009 for River Strumica in Novo Selo has shown second class quality for 100% of samples. The maximum values of saprobe index which indicate worsening of water quality in the rivers have been identified in October and August, and the lowest values of the index in April. From April to October, in almost all measuring points the value of saprobe index has increased, so **the water quality has deteriorated**. River Strumica in Novo Selo is in the list of most drastic deterioration of water quality with permanent heavy pollution. River Pcinja in Pelince is in the list of rivers with measuring points where most of the year there is the best water quality.

State of surface waters in accordance to oxygen consuming substances. During the assessed period from 1988 to 2006, **no reduction in BOD 5 and concentrations of ammonium in rivers was tracked in the country**. The results of the analysis show that monitored concentrations of dissolved oxygen in 2009 are within the prescribed limit values for the classification of waters.

State of surface waters in accordance to nutrients in surface waters. For water quality in rivers in terms of nutrients, the annual average concentrations of ammonia, nitrites and nitrates in rivers are analyzed. During the assessed period from 1988 to 2006, no reduction in concentrations of ammonium in rivers was tracked in the country. Annual mean concentrations of nitrates and orthophosphates have remained relatively stable since the beginning of 1990's. It has been found out that the concentration of these parameters is higher at certain measuring points of river Vardar. The results of the analysis of the monitoring results of the year **2009 for rivers show that the concentration the nutrients in monitoring stations are within the prescribed limit** for the classification of waters.

State of surface waters in accordance to hazardous and dangerous substances. The concentrations of hazardous and dangerous substances in the year 2009 (iron, cadmium, zinc, lead, copper, nickel, chromium and manganese) show no major deviations in comparison to measurements in 2007 and in 2008 and are also within the prescribed concentrations for classification of waters.

Drinking water quality. The percentage of safe samples in all years is over 90% (91.5% - 95%), which indicates that **the sanitary-hygienic condition of the drinking water is within the limits of the expected quality**. The percentage of unsafe samples, according to the physical-chemical
analysis, ranges from 3.4% to 7.5%, and the percentage of unsafe samples, according to the microbiological analysis, ranges from 0.8% to 1.6%.

Bathing water quality. Natural and some of the artificial lakes comply with the relevant standards for bathing waters quality and thus the quality of lake water is at **constantly satisfactory level** (there is a difference between national and international standards for

bathing water and they need to be harmonized with the EU Bathing Water Directive 76/160/EC). However, there are still parts at which rivers entering the lake contribute to deterioration of the stat us of water quality of the lake. The percentage of samples with inadequate quality is still high (especially for physicochemical parameters). Settlements around the three natural lakes are among the rare ones with wastewater treatment plants available in the country.

Groundwater quality. In the country currently there are problems in terms of rational use rational use and groundwater protection in frame of sustainable resources and environmental management. The management is often lacking appropriate researches and up to now there was no national Strategy for management of groundwater. Generally **there is no consideration of threat due to potential excessive extractions or pollution**, etc. Although in today's living conditions in all spheres of social life enormous efforts were made in retaining and creating a healthy environment, nevertheless, in view of the protection of ground waters the country still falls behind developed countries. On the basis of the results of groundwater monitoring generally the groundwater quality is at relatively high level. Nevertheless that should not be the ground not to create an inert condition with respect to the question of the groundwater protection.

The water supply system. The annual water resources per capita are about 3,150 m^3/year, which categorize the country in the middle category of the European countries upon the available water resources per capita. Also, these data are close to the limit threshold of water resources needed for sustainable development. The average value for annual water resources per capita for Europe is 10,680 m3/year. **Irrigation is the major user of the total water demands** in the country, about 40%. Even though the data that 88,9 % of the total number of individual households are supplied with drinking water from public water pipeline represent statistically high indicator, the mere fact that at the beginning of the 21 century, in the heart of Europe, still a part of the households drink water which is neither biologically nor chemically examined, represents a worrying indicator. According to the Census 2002, the number of dwellings connected to public water supply system is 597.014, which presents 86 % of all dwellings, while 7 % of dwellings are connected to air compressed water tank or other resource. The **percentage of connections to public water** supply systems in the municipalities-urban areas is much higher then the average, it **varies from 82 % (Berovo, Kumanovo) to 100 % Skopje-Center municipality**. Total number of population connected to public water supply systems is 1.200.000 inhabitants. Regarding the rural areas the percentage of the connected dwellings to the public water supply systems is very different, from 10 % up to 100 %. According to the available data, **average percentage is about 70%**, while total number of population connected to public water supply is 250.000 inhabitants. For drinking water supply springs, groundwater and surface water or combined resource are used. Only city of Kriva Planka from towns in programming area for CBC Programme is supplied with spring water. Groundwater is used for supplying the cities: Stip (with pretreatment), Kocani, Probistip, Gevgelija, Delcevo, and Radovis. Surface water is used after treatment of the raw water for the cities: Kumanovo, Strumica, Berovo, Vinica, and Kratovo. Groundwater and surface water is used for Delcevo and Vinica. Rural water supply systems are mainly supplied from springs and groundwater, but lately, very often they use surface water.

South east region lacks natural water springs and there is a deficiency of potable water for sanitary and drinking needs. Despite this deficiency, the old system had established a norm for a large supply of water, as well as significant losses. The water supply norm is 350-450 l/capita/day and water losses, an aging network, inefficient and unorganised enterprises, as well as low payment - under 40%. The strategic approach for solving the problem should be directed towards the rehabilitation of water supply networks, their modernisation, and a

reduction of the technical and uncharged water losses by gradual increase of the fee for water and improvement of the services provided by the Public enterprises.
The water supply in the **North eastern region** deserves attention with all its specific features and characteristics. Some of the inhabited places are facing a lack of tap water. The urban areas are connected to central water supply systems. The water supply issue in the rural areas is being resolved in the individual settlements, partially and in a steplike arrangement. In north east region Reservoir Lipkovo with the capacity of 2.250.000 km^2 water in addition to irrigation provide water supply for the citizens of the municipality of Kumanovo. Zletovska Reka runs over the mountain area and possesses a good water potential, with its average annual flow capacity of 1.98 m^3/sec. Regional multipurpose hydrosystem Zletovica was complited ricently (I phase) aiming to utilize this water potential, precisely intended for water supply to more than 200.000 residents in the eastern and northeastern region.
The total water supply network in the **East Region** has a length of 384 km, and is primarily located in urban municipality centres. According to the data of the Census 2002, 94.4% of households in the region have a supply of drinking water. Coverage of the population with drinking water supply in urban areas varies from 90% in Shtip to 100% in Vinica. In rural areas, this index has a value of 10% to 80%. Multiple settlements in the region have problems concerning supply of drinking water. This is the result of various factors, such as: high average per capita consumption, water losses of more than 50% along the water supply systems, due to their age (most systems are older than 15 years), insufficient capacity of reservoirs, water treatment plants and other facilities. The problem regarding provision of sufficient quantities of drinking water in this region can be solved through better utilisation of large man-made reservoirs in the region, as well as through reconstruction and sanitation of existing water supply systems and reservoirs, thus reducing water losses in the system. With completion of the I phase of the water supply system Zletovica, the drinking water supply problems of municipalities Probishtip, Shtip and Karbinci are partially solved. The number of dwellings in the East Region raised by 17.50% in the period 1994-2002, a growth rate smaller than the average increase in the number of dwellings in the country of 20.2%.

The status of sewerage system. With the Census of population, households and dwellings, 2002, data on the equipment of dwellings with sewage system for waste waters are collected as well. The data that as many as **40,1 % of the total number of dwellings are not equipped with installations** which conduct the waste waters from the households to public sewage show that little care for the protection of the living environment from the waste waters from households is taken in Former Republic of Macedonia. Bigger part of the constructed sewage network does not lead to modern system of drains. In this case the competent institutions and the local self-government units must provide some possibilities how to deal with this important issue.
The south east region has only one wastewater treatment plant, located in Dojran and in some small residential areas. The construction of another treatment plant in Strumica is on going. Complete technical documentation has been provided for the construction of a wastewater treatment plant for the city of Gevgelija, which has been financed trough European Funds.
The **North eastern** planning region is characterised with the highest rate of coverage of the population with waste water treatment plants (up to 60%) - Kumanovo is being regarded an urban center. The communal water in the other urban and rural places are discharged directly into the recipient, with no prior treatment whatsoever. Unfortunately, such practice is widely spread in all regions in the country and, although the North eastern region is featured by a relatively better condition, the resolving of this issue both at a national and regional level, shall constitute an integral part of the development in future. The pollution of Kriva Reka with heavy metals such as lead, zinc and cadmium in June 2009 and the pollution of 5th degree, strongly affected the living organisms in the entire region. Some of the rural

inhabited places have got no waste water systems or convenient septic tanks. The issue relating to waste water draining is especially critical in the municipality of Lipkovo.
The primary and secondary wastewater collection network in **East region** has a total length of 250 km and is located primarily in urban municipal centres. Coverage of population with the canalisation network in urban areas varies from 80% to 100%, and in rural areas form 0% (septic tanks) to 80%. Some rural areas have neither wastewater collection systems nor appropriate wastewater septic tanks. **The situation with wastewater collection systems is, in general, relatively bad**, since there are leakages of part of the wastewater from the systems during transport, which increases the risk of soil and ground water contamination. Population coverage with wastewater treatment plants in the East Region is 0%. Construction of wastewater treatment plants that would provide treatment of wastewater in the East Region is one of the most important preconditions for economic development. Securing a high percentage of wastewater treatment will offer favourable conditions for development of organic agriculture, tourism and other economic branches. In regards to facilities in the dwellings, 25.2% of dwellings have no sanitary facilities. These dwellings are located primarily in the rural areas of the region. Hence, improvement of utility infrastructure is a priority in regards to improving living conditions in the regions.

In 2012, of the total discharged untreated wastewater from industry and mining, 2.4% were discharged in public sewers, 88.1% in watercourses, and the rest in reservoirs and the soil. **In 2012, there was no discharge of untreated wastewater from industry and mining in the lakes**. In the country only around 3-4% of the total wastewater quantity are treated. Out of a total of 92.5 thousand m3 of treated wastewater in 2012, approximately 90.7% originated from processing industry, and 9.3% from mining. The public sewage system is the main recipient of treated wastewater. In 2012, approximately 6.4% of the total wastewater quantities were discharged in watercourses, 93.6% in public sewage system, and the rest in water reservoirs and soil. It is important to point out that the treatment of wastewater greatly depends on the technical functionality of the treatment facilities, and the construction of new facilities shows no significant upward tendency, which, of course, indicates that it is necessary to make further efforts for improving the situation in this area.

Zero-option scenario:

Concerning **Bulgaria** is important to observe that “due to the geographical location, specific atmospheric circulation and landscape structure, the water balance in Bulgaria is unfavorable. Concerning water resources per capita, Bulgaria takes the bottom position on the Balkan Peninsula. Bulgaria also faces serious challenges, mainly related to the location of Bulgaria in the dry area in relation to global climate change, unequal distribution of water resources in its territory, high degree of amortisation of water supply systems and low level of building of sewerage systems. Long-term priorities are a reduction of the negative effects of the increasing air temperature and decreasing rainfall. Building of the sewerage and wastewater treatment plants lags in comparison to building of the water supply system, and many aquatic ecosystems in Bulgaria are still at risk.”[52]

For the **Former Yugoslav Republic of Macedonia** the data taken into account has confirmed that climate change is already having a negative effect on three aspects water quality:

- ✓ reduced hydrological resources result in less dilution flow in rivers, leading to degraded water quality;
- ✓ higher temperatures reduce the dissolved oxygen content in water bodies; and

[52] See http://www.eea.europa.eu/soer/countries/bg/soertopic_view?topic=freshwater

- ✓ in response to climate change, water uses, especially those for agriculture, increase the concentrations of pollutants released to waters.

The assessment projected a **significant future reduction in the water resources** of the country. More frequent drought periods and storm waters with increased intensity are expected. Total national water availability, especially in the catchment area of the Vardar river, is expected to decrease by approximately 18 % by 2100. Climate change manifested through extreme events like high temperatures and droughts is expected to **increase demand for drinking water**. The projected increase in drinking water demand for Skopje by 2100 could be around 30 %. Also climate change is expected to **increase demand for irrigation water**. Since the major irrigation systems are located in the most vulnerable regions of the country, these will be directly affected by the reduced water availability.

5.5 Soil

More than half of the Program area is mountainous (the entire Rila and Pirin mountains, part of Western Rhodopi, the mountains of Verila, Konyavska, Zemenska, Slavyanka, Plackovica, Belasica, Osogovo, Malesevska, Ograzden and Vlahina), with forests occupying 46.5% of the total area but also numerous valleys with fertile land. The area is rich in water resources: rivers, the biggest of which are Struma, Mesta, Bregalnica, Strumica (Strumeshnica); lakes (part of Dojran lake, Vodoca, Mantovo; 233 lakes in Rila and 186 in Pirin, of which the most popular are the Seven Rila lakes.

	Area (km²)	% of total country area
Republic of Bulgaria	**111 001.9**	
CBC region: BG side	**9 501.0**	**8.6%**
Blagoevgrad	6 449.5	5.8%
Kyustendil	3 051.5	2.7%
Former Yugoslav Republic of Macedonia	**25 713**	
CBC region: MK side	**8 586**	**33.4%**
East Region	3 537	13.8%
South-East Region	2 739	10.7%
North-East Region	2 310	9.0%
Programme Region Total	**18 087**	

Source: Bulgaria-National Statistical Institute; former Yugoslav Republic of Macedonia-State Statistical Office

The current condition of land use, land cover and organic farming

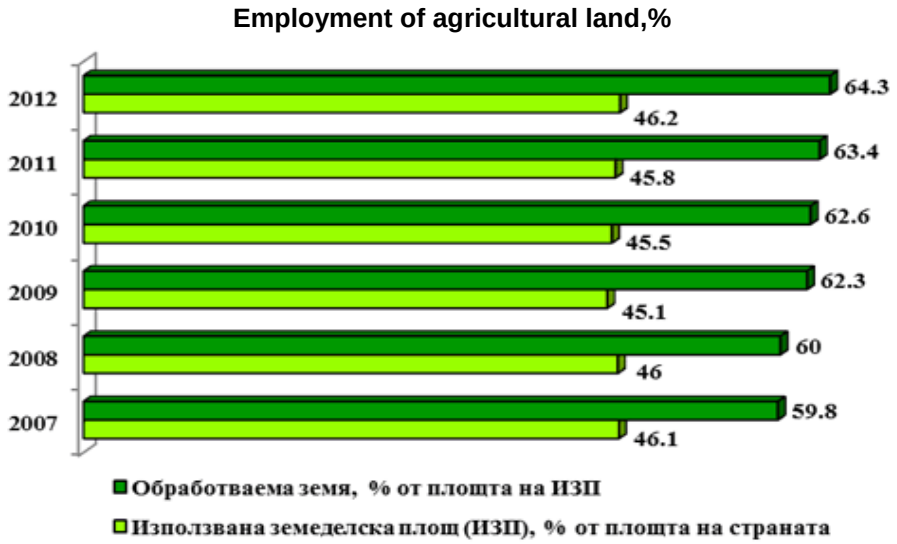
Out of 111 thousand hectares of Bulgaria in 2012:
- 32.2% were crop land and 16,8% grassland,
- 42.5% woodland,
- 1.01% waters and wetland, and
- 2.3% artificial land

Land cover overview (value in %)

LAND COVER	Total	Artificial land	Cropland	Woodland	Shrubland	Grassland	Bare land	Water	Wetland
Bulgaria	100	2.3	32.2	42.5	4	16.8	1.1	1	0.1

Eurostat, 2012

From the National report on the status and protection of the environment in Bulgaria in 2012, in the period 2007-2012, the land use in Bulgaria has been variable. In 2012 the utilized agricultural area (UAA)[53] was the 46.2% of the whole country and, compared to 2011, it increased by 0.7%. Uncultivated lands[54] occupy the 3.2% of the country, decreasing by 10.1% compared to the previous year. During 2012 the area of land for agricultural use (AFSJ)[55] results 5,481,222 ha representing approximately 50% of the territory the country. Arable land increased by 2.1% compared to 2011 occupying 3,294,685 ha and represent 64.3% of the UAA (Fig. below).



Source: MAF; Agricultural Report 2012

In the Former Yugoslav Republic of Macedonia, according to CORINE Land COVER Nomenclature, the highest percentage of the land, observed in level 1[56], is under forests and semi-natural areas that cover 15,548,855 ha, or 59.8% of the total surface area. The category agricultural areas takes 939,013 ha or 36.9% of the total area, the category water bodies takes 56,444 ha or 2.2% of the total area, the category artificial lakes covers 41,480 ha or 1.6% of the total area and the smallest area of 2 000 ha or 0.1% of the total area belongs to the category of water areas. According always to CORINE Land COVER, changes between 2000 and 2006 occupy a territory of around 35,565 ha or approximately 1.4% of the total national territory. During the period 2000-2006, major changes can be noted in artificial areas and water areas, accompanied by decreased agricultural areas and areas

[53] UAA includes arable land, permanent crops, permanent grassland areas under glass and kitchen gardens.

[54] Non-arable land: land not included in the rotation during the year and are not used for agricultural production more than two years.

[55] AFSJ - formed by arable land, permanent crops, permanent grassland for agricultural use (including mountain pastures and grassy surfaces with low productive potential), family gardens and uncultivated more than three years farmlands

[56] Due to the characteristics of the land on the territory of the country, out of 44 possible classifications under the CORINE Land COVER nomenclature, 31 classifications up to 3rd level of the nomenclature have been identified.

under forests and semi-natural areas. The agricultural land, which includes the cultivable land and the pastures, takes about 56.2% of the total area. The forests spread on around 43.8% of the total area of the country.

The agricultural land includes the areas used for agricultural production: the cultivable areas and the pastures. The data on the area of the agricultural land during the period of six continuous years show significant stability, without big differences from year to year.

Agricultural area by category of use in thousand hectares

	country level		development 2004-2012	Macedonia part CBC region	% cbc region from Macedonia total	east region	south east region	north east region
	2002	2012		2012				
Total	1 316	1 268	-4%	471	37%	178	121	173
Cultivated land	577	510	-13%	211	41%	77	55	79
Arable land and gardens	480	414	-16%	175	42%	63	47	65
Orchards	16	15	-7%	6	40%	4	1	1
Vineyards	28	21	-33%	8	37%	2	4	2
Meadows	53	60	12%	22	37%	8	2	12
Pastures	738	757	3%	260	34%	101	65	93

Source State statistical office

Areas under organic farming and the number of operators had been constantly growing in the period from 2005 to 2009, thus making the trend of organic agriculture increasing. In 2009, the areas under organic farming increased to 1 372 hectares and the share of organic production in the total cultivated area was 0.268%, while in the total agricultural area it was 0.135%.

Forest area - forests by species, 2012, in hectares

	Macedonia	MK part CBC BG-MK region	% cbc region from MK total	East Region	Southeast Region	Northeast Region
Total forest area	988 835	366 625	37%	155 227	141 216	70 182
Broad-leaved species	574 604	217 828	38%	82 807	80 193	54 828
Beech	229 773	82 105	36%	31 008	19 622	31 475
Oaks (all)	289 973	104 654	36%	50 525	33 507	20 622
Chestnuts	2 754	1 875	68%	-	1 875	-
Other hard broad-leaved species	48 634	28 744	59%	1 274	24 819	2 651
Other soft broad-leaved species	3 470	450	13%	-	370	80
Coniferous species	72 206	35 082	49%	16 496	9 180	9 406
Spruce	1 152	659	57%	-	317	342
Fir	5 703	1 403	25%	-	1 365	38
Black pine	47 452	25 180	53%	12 817	4 251	8 112
Scots pine	9 900	6 324	64%	3 545	1 934	845
Macedonian pine	4 270	0	0%	-	-	-
Other conifers	3 729	1 516	41%	134	1 313	69

Mixed forests	297 207	101 533	34%	49 855	45 847	5 831
Degraded forests	44 818	12 182	27%	6 069	5 996	117

Source State Statistical Office

Forest damages, 2012 Source State Statistic Office

	Forest fires (ha)	Damage by insects (m^3)	Natural disasters (m^3)	Illegal felling (m^3)
Macedonia	19 312	0	20 584	26 239
MK part CBC BG-MK region	6 457		5 885	5 645
% cbc region from MK total	33%		29%	22%
East Region	1 965	-	-	2 601
Southeast Region	3 412	-	4 159	3 044
Northeast Region	1 080	-	1 726	-

Source State Statistic Office

The current condition of soil conditions, processes of soil degradation and erosion, pollution of soil

The soil is a constituent part of the environment, together with the atmosphere and the hydrosphere, and it represents the most precious natural resource without which human, animal and plant life would be impossible. The soil has numerous ecological functions, which are of essential importance for the environment, but also for the economy and the development of the society as a whole. The influences on soil caused by human activities continuously increase. This leads to unsustainable level of soil erosion, as well as its chemical contamination and biological degradation. Additionally, the use of agricultural soils of good quality has changed with the spread of urbanisation and infrastructure development. The prevention of soil degradation presents a big challenge. This is achieved by special measures of soil protection and management policy, as well as by including the issues of soil protection in the other sector policies, i.e. agriculture, forestry, water management, transport and others.

On Bulgarian territory only local spots of polluted soils are in industrial areas and along the main transport infrastructure – the rail line Sofia – Thesaloniki and First class road E-79. Disrupted territories are at the places of raw material extraction (coal, rocks, inert materials). According to the National Report on the state and condition of the environment (2014 edition) soils in the country are in good ecological status in the period 2005-2012 as regards the availability of nutrients / organic matter, as well as contamination with heavy metals, metalloids and persistent organic pollutants (PAHs, PCBs and organochlorine pesticides). PCBs are below the limit of detection, and 98.9% of PAHs were below the MRLs.

In the period 2007-2012 a tendency of limiting the water erosion is observed, both in terms of size distribution and in terms of average annual soil loss. In 2012, there was little change in the average intensity of water erosion on agricultural land, which is 7,26 t/ha. the average erosion estimate during the year was 53.8 million tonnes, which is manifested in extent and intensity. The average intensity of water erosion in agricultural land varies depending on the ways of land management: 6,25 t/ha/y in pastures; 6,77 t/ha/y in the fields; 20,40 t/ha/y in plantations and in the areas occupied by other crops it is 7,24 t/ha/y.

Soil losses from wind erosion are retained, but areas with low risk are reduced at the expense of those with moderate and high risk.

According to the report of the European Environment Agency (Europe's Environment - the Dobris Assessment, 1995), the Former Yugoslav Republic of Macedonia is placed in the so-

called red zone of water erosion in Europe. 96% of the total area is afflicted by the process of erosion. Approximately 36.65% of the total area of the country is afflicted by the first three categories of erosion. The annual loss of soil represents annual average loss of cultivable soil layer of 20 mm thickness on an area of 8 500 ha, which represents 17 000 000 m³ loss of soil every year. In the Country, 16 sites with soil contamination have been identified, characterised as hotspots. Preliminary investigations were made on 16 sites, main investigations were conducted on eight sites, and remedial measures were partially conducted on three sites. Completion of measures has not been registered at any of the identified hotspots. In relation to the economic activities that contribute to the soil contamination, expressed in percentage, the biggest share belongs to mining and metallurgy with 31.3%, followed by energy production and organic-chemical industry with 12.5% and, finally, the refinery and the leather industry with 6.25%. In the cbc BG-MK region 4 Industrial contaminated sites-hotspots are recorded in Kriva Palanka, Makedonska Kamenica, Zletovo and Radovis from mining operation. The Buchim mine, operating in the Municipality of Radovish since 1979, is the only copper mine in the Former Yugoslav Republic of Macedonia and represents a "hot spot," indicating a high potential for soil and water contamination. Copper, gold and silver are extracted from ore by the flotation process, using sodium, potassium, sulphuric acid, and the bacteria Bacillus Ferrooxidacae. Cyanides have also been used in the past. Every year, over 70.000 tons of solid waste are produced, including metals from the flotation process, kept in a special waste storage site in the valley near the mine.

Zero-option scenario:

For Bulgaria no scenarios have been developed to date and no major changes are anticipated for 2020, however no significant alteration is expected in the proportions of areas and their long-term use. It is hoped that it will be possible to develop organic farming (by increasing the area under cultivation to reach average European levels); minimise farmland lying fallow due to a lack of interest by farmers and restrict irregular development in coastal and mountains resorts. The main driving forces that generate pressures on land use are economic sectors like agriculture, transport, as well as the high level of urbanisation. The pressure level of the specific driving forces varies in different parts of the country. The pressures on the agriculture area can be categorised as:

- land abandonment, mainly caused by changes in land ownership. Land managed by co-operatives and enterprises returned to private owners, only a small number of whom were interested in agriculture;
- low level or absence of support and subsidies for agriculture. As a result, some agricultural enterprises collapsed and new ones were not established;
- establishment of new reservoirs such as the Kozjak artificial lake of approximately13 km^2 – part of the country's strategy based on the Vardar Valley Project.

Urban spread of housing and commercial sites has occurred around larger cities, mainly the capitol Skopje and cities in the west of the country. A small part of land take is for transport development, mostly linked to the construction of highways.

For the Former Yugoslav Republic of Macedonia: although there are various policy documents that aim to protect land and the environment as a whole, there is no clear outlook for land use, which is likely to be influenced by different economic impacts. The current strategy for the support of agricultural development, which is almost certain to continue, will lead to the exploitation of abandoned agricultural land as well as better utilisation of existing agricultural land. There is also the possibility of moderate development of the transport network, as well as of commercial and industrial sites, to the detriment of arable land.

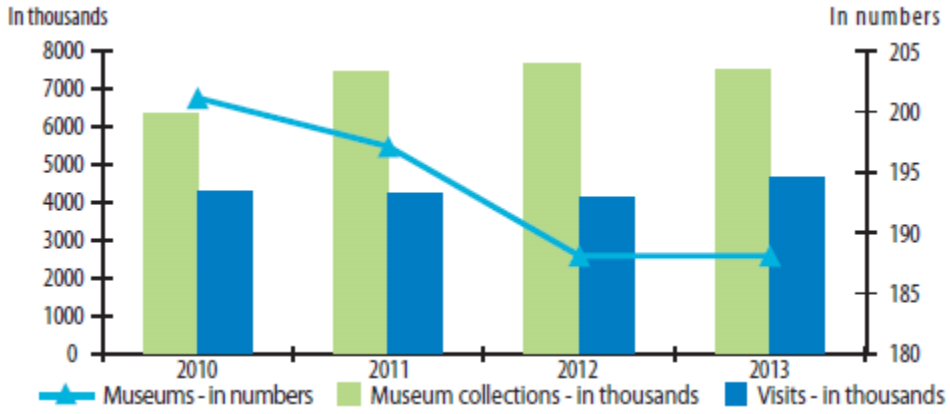
5.6 Cultural/natural heritage and landscape

The cultural/historical heritage of the cross-border region goes back to the traces left behind by the **Thracians, the Romans and the Byzantines**, although the historical landmarks from the Middle Ages are the most numerous and preserved (such as the architecture-historical reserves in Melnik, Bansko, Kovachevica, Dolen). Valuable archaeological remains from antiquity could be found in almost all of the municipalities: ruins of castles and sanctuaries across the countryside of Bansko, Belica, Razlog, Satovcha, the ancient town of Nikopolis ad Nestrum, etc.. on the Bulgarian side of the border; the ancient towns of Tiveriopolis (today Strumica), Astibo (nowdays Stip), Bargala (in the area of the river Kozjacka), archaeological sides "Vardarski Rid" near Gevgelija and "Isar" near Valandovo, etc. - in the former Yugoslav Republic of Macedonia. In relation to the monuments of the Christian culture, the eligible cross-border area is characterised by relatively high density of churches and monasteries (the Rozhen monastery, the churches in Rupite and Brestovo etc. - in the Bulgarian side of the border, as well as the church of the Holy Fifteen saints and the Veljusa monastery on the other side of border. The most famous sites are the Rila monastery (included in UNESCO's list of protected sites) and the St. Joakim Osogovski monastery (near Kriva Palanka). The astronomic observatory Kokino is an incredible specificity located in the North-East region dated 1800 years B.C., i.e. from the early Bronze Age. The megalith observatory in Kokino is included among the most valuable ancient observatories in the world. In 2005, the American space agency NASA ranked Kokino at the fourth position in the list of 15 observatories of such kind. The district of Kokino is one of the three future cultural areas in the country according the European Convention of Districts, brought in Firenze in 2000. Additionally, and bearing no less significance, Kokino has got an open possibility to have the values it possesses included in a portfolio of the participation in the provisional list of the world organization UNESCO, said list being open for applications to other localities having their natural and cultural significance confirmed. There are several internationally recognised cultural events on both sides of the border, including theatre festivals in Blagoevgrad and Strumica, art festivals in Bansko, Melnik, Kriva. Palanka and Strumica, the International Art Colony in Osogovo mountain (near Kriva Palanka).

Bulgaria

Museums are permanent institutions in public service which acquire, store, display and examine evidential material related to humanity and its environment. For the last observed year the museum collections (movable cultural property) (incl. those in the main storage fund, as well as in the research and ancillary materials fund, and in the exchange fund) decreased by 1.9%, but the number of visitors rose by 13.2%.

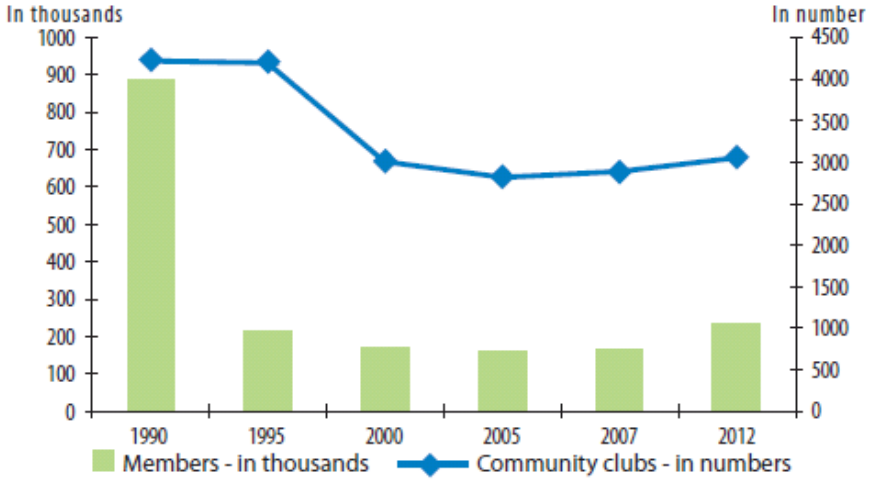
Museum and visitors in Bulgaria



Source: Republic of Bulgaria- NSI, Statistical Reference Book 2014.

The Community clubs are 'traditional self-governing Bulgarian cultural and educational associations in urban and village areas, which perform public cultural and educational tasks' (Art. 2.(1) of the Act on the community clubs).

Community clubs and members in Bulgaria



Source: Republic of Bulgaria- NSI, Statistical Reference Book 2014.

The part of the above mentioned richness is also located in the cross-border region. It has its unique culture. **The cultural heritage of the region includes monuments and sites** related to churches, old towns and old rural areas, archaeological sites, as well as monuments devoted to commemoration of historical events or figures. Remains from ancient civilizations can still be found in many places on both sides of the border. Ancient architecture, where it is preserved, has many similar features. A vast number and variety of important architectural, archaeological, and ethnological monuments of cultural importance exist in the border region.

Despite the very good potential of the cultural institutes and the community centres in the region, they suffer from a clear lack of financing, both public and private. There has been no investment in infrastructure due to budgetary constraints, and lack of a coherent state aid policy. Buildings are old and are not upgraded to accommodate the needs of modern

technologies. The implementation of the CBC OP will contribute to the improvement of the situation.

Former Yugoslav Republic of Macedonia

Richness and diversity of cultural heritage in the former Yugoslav Republic of Macedonia reflects a complex history from the early days of prehistory to present time. In the region archeologicals sites from diferent ages could be foud starting from the *old Neolithic period* in Stip area, *Neolithic period* in Cocev Kamen-Kratovo, Vinica Kale Fortress, *early Bronze Age* in astronomic observatory Kokino -Staro Nagoricino, *late Bronze Age* in Vardardarski Rid-Gevgelija from, *Iron Age* on locations in Vinica, Kocani, Isar Marvinci, *Roman Period* in Astibo-Stip, locations Blatec and Jakimovo – Vinica, Berovo, Church Complex of The Fifteen Holy Hieromartyrs of Tiberiopolis-Strumica, Banja Bansko, part of the Roman roads Via Egnatia and Via Axia (Via Militaris), *Late Antiquity* on location Vladimirovo-Pehcevo, Czar's Towers Strumica, Isar-Valandovo, Veljusa, and *Middle Age* in Isar Fortress – Shtip, Church 40 Martyrs of Sebaste- Bansko, Vodocki monastery. Throughout the region, there are preserved churches and monasteries dating from the XI – XVIII century, often decorated with beautiful frescoes, icons and iconostases. In addition to the individual monuments there are a number of urban and rural ensembles from the XIX and early XX^{h} century in Kratovo, Strumica etc.

Diversity of cultural heritage in the cross borer region with Bulgaria (3 planning regions) is quite represented where archeological sites prevails with above 300 locations (majority in the south east and east region), more than 120 religious buildings (above 50% located in the south east region) where 14 are monasteries, above 20 locations with significant architectural values, 13 museums, 14 monuments originating from XX century and about 40 performing arts and events. (detail data in excel file culture info MK).

Nr of Cultural site in Former Yugoslav Republic of Macedonian for geographical district

AREA	ARCHEOLOGICAL SITES	RELIGIOUS BUILDINGS	ARCHITECTURE	MUSEUMS	MONUMENTS	PERFORMING ARTS AND EVENTS
North-East region	4	10	7	3	2	8
South-East region	159	69	11	7	10	16
East region	145	46	3	3	2	13
Total	**308**	**125**	**21**	**13**	**14**	**37**

The exceptionally rich and diverse heritage is subject to evaluation and re-evaluation as a legal condition, while a new approach to preparing separate management plans for individual sites has also been initiated. This methodology enables a structured approach in heritage interventions and procedures. The current management structure on heritage protection issues has three divisions that are coordinated by the administration of the Ministry of Culture and financed from the national budget: the Cultural Heritage Protection Office (within the Ministry of Culture); the National Conservation Centre – Skopje and the Conservation Centre of the City of Skopje; as well as the 5 "mixed" museums/institutes for heritage protection in Bitola, Shtip, Prilep, Ohrid, Strumica (only in the cb BG-MK region). The importance of training in state-of-the-art conservation practices, the strengthening of management skills of professionals working in the field have been recognized and supported by the national authorities.

Within the efforts to align its practices in heritage protection with the best European models, the country undertakes significant steps in harmonizing and constantly reviewing its legislation on heritage protection and the related laws. Strategic initiatives, such as the National strategy for culture development 2013-2017, towards adopting an adequate and efficient heritage management model at institutional level are being revised and assessed, allowing new modalities of larger (decentralised) independence to be explored. Many partnerships have been developed - both at national, and international levels, resulting in multifaceted benefits deriving from the assistance in methodology, sharing of best-practices and exchange of experience. The country had embraced the Ljubljana Process methodology in prioritizing and assessing the values of its cultural heritage, thus enhancing the capacities of its heritage professionals and bringing out a wider set of values offered by heritage properties. The methodology and most importantly the principles of rehabilitation underpinning the heritage values had been recognized.

System for the classification of landscapes and landscape typology and distribution of natural attractions by region;

In the Former Yugoslav Republic of Macedonia the legal definition is: “Characteristic landscapes are parts of space, which, by their geographic features and human creations, are distinguished among the other environment, and have vacation, recreational, historical, cultural or scientific significance. Country has no specific articles concerning landscape in constitutions, but the protection of natural and cultural heritage is enshrined in the constitutions but “Law on Natural Rarities Protection” and partly “Law on Spatial and Urban Planning” are dealing with landscape. General laws dealing with landscape are: “Laws on National Park Protection”, “Law on Ohrid, Prespa and Dojran lake Protection”, “Law on Proclaiming the Ornithological Locality of ‘Ezerani’ on Prespa Lake as a strict Natural Reserve”, “Law on Proclaiming the Ornithological locality ‘Tikves’ in the Crna Reka Gorge as a strict Natural Reserve”, “Law on proclaiming part of wood areas of the Mountain Pelister as a National Park”, “Law on proclaiming the forest areas around the Mavrovo Pole field as a National Park”, “Law on Proclaiming the forest areas of the Mountain Galicica as a National Park” and “Law on Forests”. Country has no regional laws on landscape. responsible for landscape is the Ministry of Environment and Spatial Planning. “National Environmental Action Plan” is specific document to assist in framing landscape policy. In the country there are no regional or local authorities expressly vested with responsibility for landscape policies, but the “Administration of National Parks and Hunting Sites” was formed for the protection and promotion of the areas within National parks.

In particular, for the three Districts of the CBC area, some major details are provided on the following paragraphs.

Nort East Region. The megalithic observatory “Kokino” represents a unique outstandingly well preserved site from Bronze Age, testimony for the human creative genius in the usage of a specific natural resource for satisfying the vital needs and beliefs. The archaeo-astronomical site is located in the municipality Staro Nagorichane at the peak of the imposing rocky hill called Tatichev kamen. This site is significant as ancient observatory and Holy Mountain.The natural predisposition of these andesite rocks were easily shaped and wisely used by the prehistoric dwellers as areas/positions for observing the movement of the Sun and the Moon and for performing religious rites. The archaeological movable material is comprised of fragments of ceramic vessels, whose shapes where the earliest ones date in Early Bronze Age (19th – 17th century BC), while the ones from Late Bronze Age (14th – 11th century BC) prevail. The observatory has a surface of 0,5 hectares, while the archaeological site spreads on a surface of about 30 hectares with quite small investigated area as archaeological investigations are for only couple of years (since 2001). In 2008, the Management Plan of the Cultural Landscape Kokino is made in accordance with UNESCO’s

standards. In 2010, the site/cultural landscape “Kokino” is proclaimed as protected property of highest category – cultural heritage of especial significance with subcategory – exceptional significance. It is on the tentative list for World Heritage nominations. In 2005, the American space agency NASA ranked Kokino at the fourth position in the list of 15 world observatories of such kind.

Kuklici – The Stone Dolls-Kratovo. This natural wonder was probably created by erosion, the power of the wind, and climate influence. The legend connected to this phenomenon says that the figures are in fact wedding guests who were turned into rocks.

Ponikva located close to Kocani is at altitude of 1560 meters, situated in area with dense beech forests and various vegetation. As one of 34 Macedonian’s winter tourist centres, Ponikva is one of the most visited places in Osogovo Region. The urban area with sports and recreation centre includes two ski lifts, weekend houses, auto-camps, bungalows, objects of daily supply, multipurpose spaces, fields for sports and recreation, catering facilities and ski equipment services.

Pehchevo waterfall. Only two of these waterfalls actually belong to Bregalnica, and the rest are its confluents Crn Doll, Zh’tachka River and Spikovski Andak. While walking towards the waterfalls the feeling that you are within areas untouched by human hand follows you everywhere. Even the governed path to the waterfalls made of wood and stone and the benches can not break this filling.

Berovo Lake is near the town of Berovo. The lake is surrounded by evergreen and deciduous type species of forests. Many locals go swimming, fishing, or sailing in the lake.

Arheological sites

Castle by the Pchinja River Around 3500 BC, the nameless inhabitants of minor village forced to erect palisades. The few collected and discovered pieces of ceramic vessels older than 1000 BC, are the ones that had been used by the Paeonian warriors. The period from 4th century BC to 1th century AD, as well as the Roman period until the 4th century AD, here are still covered with secrets. It had a strategic significance between the 4th and 7th century for control on the antique and medieval road Thessalonica-Scupi. The reconstitution of the Byzantine Empire in the 11th century restored the active life in Castelion, which existed uninterruptedly until the Ottoman conquests towards the end of the 14th century.

Religious buildings

The Church of St. Joachim of Osogovo in located in the village of Osogovo – municipality of Kriva Palanka. Holy relics of Saint Joachim of Osogovo are located to the right of the church entry.

The Monastery of Saint Joachim of Osogovo is a significant religious, cultural and enlightenment center. The present place of worship was erected in the period from 1847 till 1851.

South East Region. Smolare waterfall is the biggest permanent waterfall in the country, with a waterfall of above 38 meters located on the River Lomnica on the northern slopes of one of the oldest mountains in the Balkans. The paths that run through the forests are neatly marked, while the waterfall itself is an excellent challenge for all the enthusiasts of sport-canyon, thanks to the many spectacular opportunities for rope-descending along the waterfall.

Koleshino Waterfall is located on the river Baba, above the Village of Koleshino, in the mountain of Belasica, near the city of Strumica. The inhabitants of the Kolesino village arranged an access path to a natural rarity.

The Monospitovsko Blato is an area of wetland (“blato” means “marsh”), devoted to conservation, nature and eco-tourism, with distinctive long wooden jetty-like plank platforms built out over the marsh for bird-watching and fishing, and an incredibly rich variety of wildlife – insects, flowers, fish, birds, lizards, mammals, amphibians... – some I unique to this place.

Doiran Lake is a lake with an area of 43.1 km² shared between MK (27.3 km²) and GR (15.8 km²).. It is the smallest of the valley lakes in the country, with a maximum depth of 10 meters.

This is the warmest lake where water temperature reaches up to 27 C, and there is transparency from 1 to 3.6 m. Water in the lake comes from underground springs and rivers: Golema River, Toplec etc. Blue-green algae are most prevalent with the phytoplankton in the lake. In August and September of their mass is so high that the entire surface of the lake is covered with water flower. Dojran abounds in fish and largest fresh water production in Europe. Fish fauna in Dojran is represented by 15 types, one of which is endemic.
Alshar mine is situated in the depth of the mountain Kozuf close to village Majden, and on an altitude of 900 meters above sea level. Here, for over five thousand years gold, thallium, crystals of lorandite, antimony and other minerals have been being dug up. Two of the eight open pits of the underground digging outputs are long 6000 meters with cobblestones, which are quite damaged nowadays. The soil is soft, filled with different minerals in all colors where yellow is dominant, due to the large presence of arsenic. The mine has an abundance of thallium mine lorandite, which is used to detect and locate the neutrino, particle directly originating from the Sun, which travels to the Earth for eight seconds. Lorandite is a very rare mineral, which throughout the world, is only found in MK in pure form. Alshar's thallium, and thus neutrino, according to its quantity is global, planetary rarity. The mine in the world science is considered as a source for studying the past and the future of the universe.

Arheological sites. Vardarski Rid Gevgelija Continuous occupancy for more than 1000 years – from the end of Bronze Age (13th century BC) until the arrival of the Romans (2nd century BC). Starting from a small prehistoric settlement it developed through six successive settlements, and in the 3rd and the 2nd century BC it had grown into an Ancient Macedonian town (the ancient Gortynia). After a hiatus of the settlement for more than 1000 years, in the High Middle Ages (11th-13th century AD), the sector necropolis was used again for burial of the population from Vardarski Rid. The finds discovered so far on the area of five sectors represent remains of the same town (3rd – 2nd century BC). In the sector named "Necropolis" founded are burials dating from the oldest (initial) settlement, from the end of Bronze Age (13th century BC) and the earliest medieval settlement.
Carevi Kuli Strumica. The archaeological site with buildings (and their contents) from the Middle Ages, the Early Byzantine period, Classical Antiquity (5th-4th century BC), Late Antiquity, the Roman period, the Hellenistic period, the period of Classical Antiquity and Prehistory (Early Chalcolithic and Middle Bronze Age).
Isar Marvinci Necropolises close to Valandovo, has preserved evidence confirming the continuity of human existence from Prehistory until the end of the Roman period. Several layers of burials were distinguished, starting with the Prehistoric Iron Age necropolis at Lisichin Dol (8th – 5th century BC), burials from the Early Antiquity and Hellenistic Period (late 6th to the 2nd century BC) at the Southwest Necropolis, and Roman necropolis from the Roman period (2nd – 4th century BC) .
Religious buildings
The Church of the Holy Mother of God of Eleusa located close to Strumica represents a genuine pearl of the medieval architecture with authentically preserved architecture, the mosaic floor, the icon-painting and the marble iconostasis. It was constructed by the monk Manuel in the year 1080.
The Orta Mosque is located in Strumica. Under the mosque lies a church from the 11th century which existed until was burn down. Mosque was erected on its spot in the year 1613/14. On the excavation site of the church a pedestal a sculpture was found with an inscription celebrating the patron of the city. It is the only inscription bearing the name of Tiveripolis found in the city of Strumica.
The church complex of The Fifteen Holy Hieromartyrs of Tiberiopolis is located in Strumica. The oldest structure in the complex is an early Christian basilica built in the 5th Century on top of the tombs of the Fifteen Holy Hieromartyrs of Tiberiopolis. A temple was built on top of the basilica, probably in the time of Justinian which in the late 6th and early 7th Century was destroyed. Between the 9th and 10th Century another church was built on top of the old one.

The temple was destroyed during the Ottoman period, but in 1921 was revived when a new small chapel was built. The foundations of the old temples were uncovered while building the new church in 1972. The new church was completed in 1974. In 1997, the Fifteen Holy Hieromartyrs of Tiberiopolis were declared protectors of the city by an executive decision of the Council of the Municipality of Strumica.

The church complex Saint Leontius is located in the village of Vodocha close to Strumica where the oldest building in the complex is the early Christian basilica dating from the 5th and 6th Century. The complex consists of three churches, the oldest church, built in the 6th and 7th Century, the western church built in the period between 1018 and 1037 dedicated to the Presentation of the Holy Mother of God–Eleusa and the biggest church dedicated to Saint Leontius built in the late 11th and early 12th Century. In 1996, monastic life was revived, and the place has since become the home of the monastic sisterhood of the Strumica diocese.

The Saints Cyril and Methodius Church is located in Strumica. Construction on the cathedral church was finished in 1760. The church has had the same appearance since 1905.

Church of The Forty Holy Martyrs of Sebastea is located close to village Bansko, the remains of the church of the Forty Holy Martyrs of Sebastea measure 1.5 meters high. Dedicated to the cult of the Forty Holy Martyrs of Sebastea who suffered in 320 A.D., it is the only church in the country originating from that period. The architectural style and what remains from the fresco painting suggest that the church dates back to 12th or 13th Century, though work had been done on it during the Ottoman period as well. The foundation of the church has the shape of a cross. The iconostasis is made of marble, and most of the interior space is reserved for the proscomedia and the diakonicon. A necropolis was discovered near the church originating from the 13th Century.

St. Ilija Monastery is located on the Elenica Mountain close to Strumica. The monastery was probably built at the end of 16th Century, based on the icons there which originate from that period.

The monastery was destroyed once in 1923, but it was built again and extended in the period between 1975 and 1984.

Evangelical Methodist Church located in Strumica is built in 1906. The old church was torn down, and construction of the new began in the same location completed in 1989. In 2000, in honor of the famous missionary Helen Stone, a social center named “The Miss Stone Center” was completed.

Church of The Ascension of the Holy Mother of God located in Strumica is a Catholic church built in 1925. From 1971 to 1975, the parish church underwent thorough reconstruction, and in 1988 it was benedicted by the Bishop Joakim Herbut. In 1991, building of the new pastoral center began, and was completed two years later. In 2001, this parish church was declared Cathedral Church of the Apostolic Exarchate in MK by the Pope John Paul II. Since May 2002, the church has been undergoing another reconstruction. A new iconostasis was made and frescoes and icons were painted in the apse.

East Region

Arheological sites. Bargala early Christian Episcopal center located close to Shtip. The town of Bargala existed from the 4th century to the first decade of the 7th century. The following areas had been subject to research and protection, fulfilling all necessary conditions for their presentation to the cultural and scientific audience: the Episcopal Basilica, the Episcopal residence, the Northwest city wall with the main gate (Principalis), the City Cistern, part of the residential quarters, the City Basilica and the Early Medieval church of St. George.

Vinica Kale Fortress. The continuous occupancy of this important archeological site in Eastern Macedonia can be traced from Prehistory until the Middle Ages, i.e. from the Neolith (3000-2800 BC), Late Antiquity (4th-6th century), to the 11th-13th century BC.

Isar Fortress – Shtip. The archeological site Isar is medieval settlement and the fortified medieval town, also found the church of St. Blasios, necropolis etc as well as tunnel which most probably originally built in Antiquity, but it had been used in the medieval period. Few artifacts were unearthed: ceramic and other material testifying the long occupancy of this site since Bronze Age to the Early Ottoman period.
Religious buildings
The Church of St. Nicholas in Shtip was built on the place of the old church dedicated to St. Nicholas which dates back to the year 1341 and re-constructed in 1867.
The Monastery of St. Pamteleimon located close to Kochani built in the 19th century. Every year on 9th August, a church gathering is held, which attracts thousands of visitors.
The Church of St. Archangel Michael in Berovo was built in the period from 1815-1818. The foundations of the first women`s monastery were built 20 years after the construction of the church.

Zero-option scenario:

For Bulgaria and the former Yugoslav Republic of Macedonia no scenario have been developed to date and no major changes are anticipated for 2020 (EEA SOER 20120).

6 The environmental characteristics of areas likely to be significantly affected

The CBC Programme is prepared for the whole territory of the cross-border region. Since its not possible to identify the territorial locations of the priorities and activities planned (neither specific projects) within the CBC Programme (the strategic level of the programme is on the scale of the region) the environmental analysis of the characteristics and issues provided in the chapter 4 is applicable and responds to the needs of this particular item of the content, as required by the national law and the EC Directive.

Environmental characteristics of the areas, where the certain projects to be supported under the CBC OP will be carried out shall be assessed by EIA procedure where applicable.

7 The existing environmental problems ascertained at different levels which are relevant to the Programme including, in particular, those relating to any areas of a particular environmental importance

7.1 Environmental challenges, weaknesses and threats

In the environment, climate change adaptation and mitigation & risk prevention and management sector the Programme has identified the following **challenges:**

The area is characterized with a relatively clean environment due to decline of industrial activities and measure to control gas emission. However, air pollution due to transport, and soil and water pollution due to industrial and agriculture activity, remain an environmental challenge to be addressed, along with the problems on solid waste management and recycling, as well as improvements on the sewerage systems. Joint actions to develop integrated policies and concepts of land, improve water and solid waste management are needed.
The unique biodiversity of the region, though comparatively well preserved, still needs structured approaches and coordinated activities for proper management. Additional efforts

and financial resources are necessary for the preparation and approval of management operational plans of protected areas. Awareness raising campaigns and implementing measures on biodiversity preservation are also needed.
Efficient utilisation of regional resources, increase energy efficiency measures and proper exploitation of renewable sources of energy remains a challenge towards using the natural potentials of the area on the benefit of population and economy. There is a need to undertake joint action and programme that will ensure integrated approach on the use of renewable energy sources and improve energy efficiency. Increase awareness of public institution as well as business operators on the benefit of adopting energy efficiency measures in the buildings is an important way to improve health, protect environment and increase efficient use of energy resources is also needed.
Climate change is a significant threat of the region, providing a great impact on agriculture, tourism, forest and hydro-energy system. Both awareness raising and strong measures are needed to be jointly taken in the area of risk prevention, flood-protection and forest protection from fire and other climate change effects in the regions.

Hereafter the Weaknesses and Threats identified for environment, climate change adaptation and mitigation & risk prevention and management in the SWOT analysis of the Programme:
Weaknesses:

1. Underdeveloped waste collection and waste treatment and recycling system (not enough facilities, old equipment);
2. Weak management and processing system
3. Low ecological public awareness
4. Insufficient or absence of environment protection/Insufficient or no compliance with the standards for environmental protection.
5. Important economic sectors for the region (tourism, forestry, agriculture) are much vulnerable to climate changes
6. Relatively high level of contaminated rivers across the area
7. Not adequate use of water sources, fluctuations for the availability of drinking water
8. insufficient water and waste water treatment facilities, coupled with lack of systems in the rural areas
9. outdated water supply systems
10. Illegal waste landfills
11. Uncontrolled use of pesticides and fertilizers
12. Insufficient use of natural resources for electricity generation.
13. Lack of studies, project and technical documentation for using alternative energy sources.(mainly Macedonia)
14. Lack of comprehensive RES development plans to be implemented at the local level
15. Low level of use of RES due to insufficient promotion of renewable energy resources

Threats identified:

1. comparatively high risk of floods, forest fires, land erosion, landslide (earth fall)
2. risk of over utilisation of key touristic localities and the natural regions adjacent to them
3. Political protection for certain companies which pollute the environment.
4. Pollution through the use of obsolete technologies in the mine industry.
5. Increased pollution of the water and soil due to inappropriate treatment.
6. Natural disasters due to the effects of climate changes

7.2 Requirements of Art. 31 of the Biological Diversity Act (BDA)

Given that the Programme is subject to a mandatory EA procedure, it is covered by the provisions of Art. 2, par. 1, point 1 from the *Regulation for the conditions and procedures for*

assessing the compatibility of plans, programs, projects and investment proposals with the object and purpose of conservation of protected areas and (*The Regulation on* AA) and be evaluated for compatibility with the object and purpose of the conservation of protected areas, which takes place in the context of the EA.

Upon verification of eligibility under Art. 36, par. 2 of the *Regulation for AA* is found that *CBC Programme "Bulgaria-Macedonia" 2014-2020* is **admissible** under consideration of the ensuing plans, programmes, projects and investment proposals with:

- regimes of protected areas defined by *the Protected Areas Act*, orders declaring them with approved management plans,
- regimes of protected areas designated by an order according to art. 12, par. 6 from BDA.

Pursuant to Art. 36, par. 3 of the *Regulation for AA* a risk assessment of the likely degree of negative impact is performed, according to which the programme **is unlikely** to have a significant negative impact on natural habitats, populations and habitats of species subject to protection in protected areas under Natura 2000, for the following reasons**:**

- Realization of specific objectives for environmental protection associated with the programme and the way those objectives and any environmental considerations have been taken into account during the preparation of the programme for each of the priorities will accumulate a total positive effect on the state of the components of the environment in the country, incl. on protected areas Natura 2000 network
- The programme envisages activities such as: increasing the tourist attractiveness of the border area through the use of natural and cultural heritage, establishment of a common cross-border tourism brand, promoting employment and supporting labor mobility for and with young people, encouraging sustainable transport, promoting adaptation to climate change and prevention and risk management, promoting sustainable use of natural resources enhancing institutional capacity and an efficient public administration, environmental protection and the promotion of resource efficiency, renewable energies and the transition to a safe and sustainable low-carbon economy. They are primarily focused on improving the quality of the environment and will not lead to significant negative impacts on areas within Natura 2000 network.

The above stated assessment of the possible extent of the negative impact is expressed under the following condition:

"Plans, programmes, projects and investment proposals under CBC Programme Bulgaria-the Former Yugoslav Republic of Macedonia 2014-2020 covered by the Annexes to the EPA or outside, and under the provisions of Art. 31 of the Biodiversity Act, are assessed for their compatibility with the object and purpose of the conservation of protected areas and may be approved only after a positive decision / opinion on EIA / SEA / AA, in compliance with the recommendations of the evaluations carried out and the conditions, requirements and measures laid down in the decision / opinion."

8 Possible effects and impacts on the environment resulting from the implementation of the Programme and recommendations to mitigate significant negative effects

8.1 Expected effects and impacts of the envisaged actions on the environment

For the environmental assessment the most detailed level of Programme information is used.

Thus the **assessment of likely effects on environment resulting from the Programme** - as already mentioned - is **conducted at the level of Priority Axis, their corresponding Specific Objectives and indicative actions foreseen.**

The results of the analysis are given in an **environmental assessment matrix for each Specific Objective included in a Priority Axis**.

The following **matrices** (see tables below) provide an overview of the possible effects of the Programme on the involved environmental issues (the cross-cutting themes have been integrated into the assessment of the respective environmental issues).

It has to be noticed that the **likely significant effects** and impacts on the environment resulting from the implementation of the Programme are both of direct and indirect nature. The direct effects are mainly linked to “Investment measures”, those indirect to “Soft measures”.

Evaluation assessment of SO 1.1 Environmental protection and sustainable use of the common natural resources

<table>
<tr><td colspan="4">Priority Axis 1: “Environment”</td></tr>
<tr><td colspan="4">SO 1.1 Environmental protection and sustainable use of the common natural resources</td></tr>
<tr><td>Indicative actions foreseen</td><td colspan="3">Investment measures
• Joint initiatives and investments in small infrastructure, equipment and technologies for pollution control and rehabilitation of rivers, contaminated lands, brown fields, etc.
• Small scale investments in recycling, waste collection, waste separation, remediation of illegal damping sites and improving public hygiene
• Investments for monitoring and combating of air pollution
• Small scale investments for improving the management of Natura 2000 and nature protected sites
• Small scale investments in RES and energy efficiency
• Measures for restoration of natural areas
Soft measures
• Awareness raising and training initiatives on all levels (individual persons, organizations, businesses, public administration, schools) on issues related to environmental and nature protection
• Joint initiatives, networks and partnerships for promotion of nature protection, energy efficiency and sustainable use of natural resources among local population, including young people, marginalized communities and other vulnerable groups;
• Joint approaches, studies, plans, strategies, researches, common databases focused on protecting landscape and biodiversity;
• Cooperation, exchange of experiences and knowledge between institutions in the field of nature protection and pollution prevention;
• Cooperation between public authorities and NGOs in the field of safe and sustainable low-carbon economy across borders;
• Public awareness campaigns on the needs of reducing and recycling waste.</td></tr>
<tr><td rowspan="6">Environmental issue involved</td><td>Biodiversity, Flora and Fauna</td><td rowspan="6">Assessment</td><td>+</td></tr>
<tr><td>Water</td><td>+</td></tr>
<tr><td>Soil</td><td>+</td></tr>
<tr><td>Air and Climate</td><td>+</td></tr>
<tr><td>Population and human health</td><td>+</td></tr>
<tr><td>Cultural/Natural Heritage and Landscape</td><td>+</td></tr>
</table>

Possible effects on environment	• Improvement of the quality of whole project area, in terms of Biodiversity, Flora and Fauna, with a specific attention to Natura 2000 and protected areas • Preservation of the traditional landscape, *conditio sine qua non* for the attractiveness of the area • Augmented resilience to climate changes and capacity of CO_2 storage • Positive effects on soil and water quality • Investments in waste collection and treatment can contribute to human well being, as well as availability of high quality natural areas for the population • Improved awareness of local authorities and local populations on environment –related matters, with a particular attention to waste recycling
Recommendations	None

Evaluation assessment of SO 1.2 Risk prevention and mitigation the consequences of natural and manmade hazards and disasters

Priority Axis 1: "Environment"	
SO 1.2 *Risk prevention and mitigation the consequences of natural and manmade hazards and disasters*	
Indicative actions foreseen	**Investment measures** • Preparation of technical documentation, feasibility studies and detailed designs for consolidation of river beds, construction of dikes, prevention of landslides, etc. • Development of early warning and disaster management systems • Small scale investments for risk prevention and response to natural and environmental hazards and the consequences of climate change, such as: - supply of specialized fire-fighting equipment, - supply of specialized equipment for control of floods and for search and rescue interventions, - sanitation and reforestation of river banks, building dikes, canals, etc for prevention of floods.) - forestation of vulnerable land and prevention of landslides, cuttings for emergency situations, **Soft measures** • Joint approaches for promoting risk prevention awareness, adaptation and mitigation (e.g. risk mapping of accident risk spots, hazard and risk assessment and evaluation exercises, join databases, joint plans and methodologies) • Joint activities for improving cooperation, strategies and capacity for disaster management • Exchange of experience and good practices (study visits, round-tables, conferences, trainings) for public authorities and other concerned target groups on management of environmental emergencies • Awareness-raising campaigns in the field of risk prevention and management for all population groups (including young people and marginalised groups). • Conducting joint theoretical-tactical exercises and field trainings for emergency situations management with special focus on young people • Public awareness campaigns on the negative effects of climate change and possible mitigation measures

Environmental issue involved	Biodiversity, Flora and Fauna	**Assessment**	**+**
	Water		**+**
	Soil		**+**
	Air and Climate		**+**
	Population and human health		**+**
	Cultural/Natural Heritage and Landscape		**+**
Possible effects on environment	• Negative effects of natural disasters (wood fires, floods) on landscape and natural heritage can be avoided or mitigated • Emissions of CO_2 due to fires can be avoided • Capacity of woods to retain CO_2 can be maintained • Avoiding the destruction of habitats by fire or floods, it can be preserved the local biodiversity, flora and fauna • Maintaining the coverage of trees it can be preserved as well the quality of soils, avoiding the erosion due to rainfall and the losses of topsoil, the richest in terms of organic matter • Awareness-raising campaigns in the field of risk prevention could hopefully save human lives as well.		
Recommendations	None		

Evaluation assessment of SO2.1 Enhancing the tourism potential of the region through better preservation and sustainable utilization of natural and cultural heritage

Priority Axis 2: "Tourism"			
SO2.1 Enhancing the tourism potential of the region through better preservation and sustainable utilization of natural and cultural heritage			
Indicative actions foreseen	• Restoration and maintenance of touristic sites of historical and cultural importance • Conservation and protection of tangible and intangible natural, historical and cultural heritage • Rehabilitation of access roads to natural, cultural and historical touristic sites • Building of new and/or reconstructing or upgrading of existing cycling routes and walking paths • Public utilities upgrade (electricity, water-supply, sewerage, etc.) related to touristic sites • Development of cross-border transport schemes to touristic sites		
Environmental issue involved	Biodiversity, Flora and Fauna	**Assessment**	**+/-**
	Water		**+/-**
	Soil		**+/-**
	Air and Climate		**+/-**
	Cultural/Natural Heritage and Landscape		**+/-**

Possible effects on environment	Augmentation of tourist presence induced by Programme's initiatives - if not properly managed - could originate different risks, that should be avoided if all Programme's components will be implemented: • negative effects on air pollution caused by increased traffic will be counterbalanced by the improvement of sustainable transportation system • in some natural habitat (especially protected areas) threats of negative effect on biodiversity, flora and fauna can be avoided adopting existing regulation; • improvement of water supply and sewerage systems will absorb the increased consumption of water and negative effects on water quality Restoration/maintenance of sites of historical and cultural importance and conservation/protection of natural and cultural heritage will allow to preserve and improve traditional landscape.
Recommendations	• The higher accommodation capacity that could be induced by the Programme's initiatives must be accompanied by appropriate improvements of the water supply and sewerage systems • Appropriate restrictions for utilisation of natural areas needing of specific protection should be strictly applied (application of existing norms, or creation of new ones); • It should be implemented as well a specific legislation and technical prescriptions on permits for new facilities/tourist accommodation/buildings, that must be coherent with the traditional landscape, utilising possibly local materials and construction techniques.

Evaluation assessment of SO 2.2. Raising the competitiveness of the CBC region's tourist offer

Priority Axis 2: "Tourism"			
SO 2.2. Raising the competitiveness of the CBC region's tourist offer			
Indicative actions foreseen	None of the actions foreseen is expected to produce effects on environment		
Environmental issue involved	-----	**Assessment**	**----**
Possible effects on environment	None		
Recommendations	None		

Evaluation assessment of SO 2.3 Promoting cooperation among regional actors in the area of sustainable tourism

Priority Axis 2: "Tourism"			
SO 2.3 Promoting cooperation among regional actors in the area of sustainable tourism			
Indicative actions foreseen	• Awareness raising campaigns on all levels (individual persons, organizations, businesses, public administration, schools) on issues related to sustainable utilization and promotion of the region´s intangible cultural and natural heritage • Creating/developing/strengthening of joint networks for exchange of good practices in sustainable tourism management • Developing/implementing joint policies, strategies, training and capacity building events for the valorisation of the cultural and natural heritage through its restoration and promotion for sustainable economic uses • Organization of various joint cultural events for the promotion of the region´s cultural identity		
Environmental issue involved	Biodiversity, Flora and Fauna	**Assessment**	+
	Water		+
	Soil		+
	Air and Climate		+
	Cultural/Natural Heritage and Landscape		+
Possible effects on environment	Although the expected effects are indirect, all foreseen activities could have a positive effect on the environmental sustainability of tourist sector to be developed		
Recommendations	None		

Evaluation assessment of SO 3.1 Improving the competitiveness of regional businesses

Priority Axis 3: "Competitiveness"
SO 3.1. Improving the competitiveness of regional businesses

Indicative actions foreseen	• Support for the development of cross-border business clusters • Joint approaches for promoting innovations in businesses • Promoting and implementing of joint business development training and capacity building schemes • Introduction of programmes for cooperation and exchange of experience in modern managerial practices • Joint initiatives for export promotion: organization and participation of cross-border fairs, exhibitions, trade missions, joint participation in fairs in third countries • Joint initiatives and exchange of experience for stimulating the growth of innovative/higher added-value industries (e.g. bio-farming, environmental technologies, ICTs, energy saving, pharmaceutical, electronic, etc.) • Joint initiatives for investment promotion • Exchange of experience and good practices for boosting the economic development of the region • Cooperation between business and the educational institutions in the field of technology transfer and the promotion of knowledge-based economy • Creating networks for enhancing the employment potential of young people, women and vulnerable/marginalized groups.		
Environmental issue involved	Biodiversity, Flora and Fauna	**Assessment**	+
	Water		+
	Soil		+
	Air and Climate		+
	Population and human health		+
	Cultural/Natural Heritage and Landscape		+
Possible effects on environment	The expected effects of the foreseen actions can be considered as indirect. Nonetheless, it must be underlined the importance of the dissemination of knowledge and spreading of new ideas, skills and technology among local entrepreneurs and public authorities (benefitting SMEs and other businesses in the region, local and regional workforce, education and training institutions, regional and local authorities) related to environmental protection, resource efficiency, climate change, as well as natural hazards, disaster and risk resilience, prevention and management.		
Recommendations	None		

The following table provides an overview of the global possible effects on the environment of the implementation of the activities foreseen by the Programme.

Overview of the environmental effects of the Programme

	Environmental issue					
	Air and Climate	**Biodiversity, Flora and Fauna**	**Water**	**Soil**	**Population and Human Health**	**Cultural/Natural Heritage and Landscape**

	Environmental issue					
	Air and Climate	**Biodiversity, Flora and Fauna**	**Water**	**Soil**	**Population and Human Health**	**Cultural/Natural Heritage and Landscape**
Priority Axis 1: "Environment"						
So 1.1 Environmental protection and sustainable use of the common natural resources	+	+	+	+	+	+
SO 1.2 Risk prevention and mitigation the consequences of natural and manmade hazards and disasters	+	+	+	+	+	+
Priority Axis 2: "Tourism"						
SO2.1 Enhancing the tourism potential of the region through better preservation and sustainable utilization of natural and cultural heritage	+/-	+/-	+/-	+/-	0	+/-
SO 2.2. Raising the competitiveness of the CBC region's tourist offer	0	0	0	0	0	0
SO 2.3 Promoting cooperation among regional actors in the area of sustainable tourism	+	+	+	+	0	+
Priority Axis 3: "Competitiveness"						
SO 3.1. Improving the competitiveness of regional businesses	+	+	+	+	+	+
Accumulation of impacts	+	+	+	+	+	+

8.1.1 Cumulative effects

No significant negative cumulative impact is expected from activities financed by the Programme.

Instead, positive cumulative effects are expected on all environmental issues considered, since the whole Programme assumes protection of environment and sustainable development of productive activities as the strategic approach on which all activities are based, according also to European and national policies.

Most important positive results are expected to be achieved on protection of natural resources of the project area, thanks to improved capacity to manage critical situations (wood fires and other natural disasters) but also to information/training activities and spreading of new ideas, skills and technology, targeted on local authorities and local communities on the importance of the management/protection of natural, cultural and historical heritage of the Region.

The implementation of the interventions financed by the Programme should not have any negative impact, as also stated by specific analysis already carried out by Ministry of Environment and Water, with respect to the requirements of Art. 31 of the Biological Diversity Act (BDA). According to this study, "*the program **is not likely** to have a significant negative impact on natural habitats, populations and habitats of species subject to conservation in protected areas from the Natura 2000 network" (see chapter 7).*

Preservation and amelioration of water resources are expected as well. The development of tourist sector can be considered as "sustainable" only if it is accompanied by the parallel improvement of the existing water supply and sewerage systems, but also local population can benefit of such structures.

Potential risks for the environment can be linked mainly to the same subject, namely the development of uncontrolled initiatives related to tourist sector: structures for accommodation without appropriate infrastructures for water supply and treatment, deficiencies of public transports, proliferation of structures with negative impacts on landscape.

Some additional negative impacts can be expected during the construction phase of the foreseen facilities, but they can be considered as temporary effects.

9 Reasons for selecting the alternatives

The SEA legislation requests also to identify **reasonable alternatives to the Programme**. In fact, there is no alternative for a fundamental change of the overall structure of the Programme, as thematic priorities and priority axes have to refer to IPA II regulation and the Framework regulation on the implementation of ETC initiatives.
As already mentioned in previous paragraphs, there are no major negative effects expected that could suggest the opportunity to consider an alternative to this Programme. Some suggestions to increase the sustainability of the intervention are indicated in previous paragraph.

10 Description of the measures envisaged concerning monitoring

According to the SEA Directive Article 10, possible significant environmental effects of the implementation of the Programme shall be monitored in order to identify at an early stage

unforeseen adverse effects, and to enable the Programme Managing Authority to undertake appropriate remedial actions. In this context this chapter present, at both programme and project levels, different types of measures which can contribute to identification and monitoring of possible significant environmental effects resulting from the implementation of the IPA CBC Bulgaria-the Former Yugoslav Republic of Macedonia Programme 2014-2020.

In detail, at Programme level, in order to avoid duplication of monitoring, as required by SEA legislation, appropriate **environmental indicators** (**"SEA indicators"**) **already defined in the monitoring and evaluation framework of the Programme** will be used[57]. At project level, a preliminary impact assessment on environmental issues will be done through applicants' **Environmental Self-assessments**.

10.1 SEA indicators

At Programme level, the proposed monitoring system is developed on the basis of the possible significant environmental effects of the implementation of the Programme, detected in the environmental assessment presented in chapter 8. The following common and specific output and result indicators, made available in the Draft Programme (Version 2.0 – 8 July 2014) will be used:

Tab. 1. Common and programme specific output indicators

ID	Indicator (name of indicator)	Measurement unit	Target value (2023)	Source of data	Frequency of reporting
OI 1.1.1	Number of supported investments for improving the environmental conditions in the programme region	Number	*15*	AIRs	Annually
OI 1.1.2	Number of nature protected areas addressed by supported interventions	Number	*5*	AIRs	Annually
OI 1.2.1	Number of supported joint mechanisms for environmental protection, promotion of biodiversity and sustainable use of natural resources	Number	*5*	AIRs	Annually
OI 1.2.2	Number of institutions/organizations involved in environmental related activities	Number	*20*	AIRs	Annually
OI 1.2.3.	Number of participants in environmental related trainings and campaigns	Number	*300*	AIRs	Annually
OI 1.3.1	Supported investments for improving disaster management and risk prevention	Number	*5*	AIRs	Annually
OI 1.3.2	Supported investments for adaptation and mitigation of climate change consequences	Number	*5*	AIRs	Annually
OI 1.4.1	Supported joint mechanisms for disaster management and risk prevention and for promotion of climate change awareness	Number	*3*	AIRs	Annually
OI 2.1.1	Number of cultural and historical touristic sites reconstructed / restored / covered by conservation and protection actions	number	25	AIRs	Annually

[57] Output and result indicators.

OI 2.1.2	Length of new or reconstructed or upgraded access roads to natural, cultural and historic tourism sites, cycling routes and walking paths	km	*5*	AIRs	Annually
OI 2.1.3	Number of newly built or reconstructed or upgraded tourist related facilities and attractions	number	*10*	AIRs	Annually
OI 2.1.4	Number of created/reconstructed facilities for disabled people for access to or in the supported touristic sites	number	*5*	AIRs	Annually
OI 3.1.1	Supported investments for improving the competitiveness of businesses in the programme region	number	*5*	AIRs	Annually
OI 3.1.3	Number of participants (split into men and women) in supported training and qualification initiatives	number	*150*	AIRs	Annually
OI 3.2.1	Supported initiatives for economic development and investment promotion	number	*10*	AIRs	Annually

Tab. 2. Programme specific result indicators

ID	Indicator	Measurement unit	Target value (2023)	Source of data	Frequency of reporting
RI 1.1.1.	Increased supported nature protected sites	Percentage	Increase	Survey / Progress and Annual Implementation Reports	2018 2023
RI 1.1.2.	Increased capacity in using common natural resource	Scale for measurement of capacity (1-10)	Increase	Survey	2018 2023
RI 1.2.1.	Increased interventions in the field of risk prevention and management	Percentage	Increase	Survey / Progress and Annual Implementation Reports	2018 2023
RI 1.2.2.	Increased joint initiatives related to risk prevention and management	Percentage	Increase	Survey / Progress and Annual Implementation Reports	2018 2023
RI 2.1.1	Increase of tourists to the cross-border region	Percentage	Increase	Statistics Survey	2018 2023
RI 2.2.1	Increased created/supported joint tourism products and services	Percentage	Increase	Survey and Progress and Annual Implementation Reports	2018 2023

10.2 Environmental Self-assessment

At project level, the proposed monitoring system is building on a preliminary impact assessment on environmental issues: the applicants will make an **Environmental Self-assessment** about the environmental aspects of the proposed projects following the list of defined Evaluation Questions as a scoring sheet.

Hereafter an example of possible questionnaire for the environmental Self-assessment based on an indicative possible action foreseen under Priority Axis 2: "Tourism" – SO2.1. Enhancing the tourism potential of the region through better preservation and sustainable utilisation of natural and cultural heritage: *Development of cross-border transport schemes to touristic sites.* This action can have both possible positive and negative environmental effects on Biodiversity, Flora and Fauna, Water, Soil, Air and Climate, Cultural/Natural Heritage and Landscape (see chapter 8 for the environmental assessment).

Tab. 3. Example of Self-Assessment questionnaire

Environmental Issue	Evaluation questions	Measurement unit
Air and Climate	8. *Will the project have an effect on the reduction of air pollution?* 9. *Will the project have an effect on the reduction of the GHG emissions?* 10. *Will the project have an effect on the improvement of energy efficiency and increase of use of renewable energy resources?* 11. *Will the project have an effect on the support of environmentally friendly transports?* 12. *Will the project have an effect on the promotion of responsible behaviour of the public by involving the citizens into fighting climate change?*	Ordinal scale (e.g. 1-10)
Biodiversity, Flora and Fauna	7. *Will the project have an effect on the preservation of biodiversity, habitats and ecosystems and their services?* 8. *Will the project have an effect on the protection of endangered species (plants and animals)?* 9. *Will the project have an effect on the promotion of responsible behaviour of the public by involving the citizens in protecting biodiversity and natural areas?* 10. *Will the project have an effect on the promotion of tourism that would ensure high degree of nature conservation?*	Ordinal scale (e.g. 1-10)
Water	8. *Will the project have an effect on the reduction of water pollution from point and diffuse sources?* 9. *Will the project have an effect on the promotion of sustainable use of water resources?* 10. *Will the project have an effect on the promotion of sustainable use of sustainable tourism towards water resources preservation?*	Ordinal scale (e.g. 1-10)

Environmental Issue	Evaluation questions	Measurement unit
	11. *Will the project have an effect on the promotion of responsible behaviour of the public by involving the citizens into sustainable water use?*	
soil	8. *Will the project have an effect on the preservation of the soil functionality* 9. *Will the project have an effect on the reduction of soil degradation and pollution* 10. *Will the project have an effect on the promotion of sustainable tourism towards land preservation?* 11. *Will the project have an effect on the promotion of sustainable land management preventing risk and hazards?* 12. *Will the project have an effect on the promotion of responsible behaviour of the public by increasing education and awareness on soil protection?*	Ordinal scale (e.g. 1-10)
Cultural/Natural Heritage and Landscape	5. *Will the project have an effect on the protection and rehabilitation of cultural and natural heritage?* 6. *Will the project have an effect on the promotion of sustainable management and planning of cultural and natural landscape?* 7. *Will the project have an effect on the promotion of sustainable use of natural resources towards sustainable tourism?* 8. *Will the project have an effect on the promotion of responsible behaviour of the public by increasing education and awareness on heritage and landscape preservation and protection?*	Ordinal scale (e.g. 1-10)

11 Conclusions and recommendations

The following conclusion and recommendations mainly concern interventions of Priority Axis 2 “Sustainable tourism”:

- Programme’s initiatives are expected to induce the development of private initiatives related to tourist sector, but this growth must go hand in hand with the upgrade of related infrastructures (water and sewerage systems, transport facilities, etc.), otherwise the sustainability of the whole system could be weakened;
- Similarly, also an uncontrolled development of tourist structures could lead to a depletion of the natural, historical and traditional heritage of the area and of the related local landscape. Therefore, it could be appropriate to prepare specific legislation on permits for new facilities/tourist accommodation/buildings, that must be coherent with the traditional landscape, utilising possibly local materials and construction techniques;
- Identification/application of restrictions for utilisation of natural areas needing of specific protection should be foreseen, where appropriate.

Annex 1 Cross cutting issues

Energy Overview on the cross-border area

Energy efficiency

Energy efficiency and renewable energy are topics where cross-border cooperation and exchange of good practices can further boost developments in the related fields.

The need to improve **Energy Efficiency** in **Bulgaria** is one of the main priorities of the Bulgarian government. The country has significant potential for implementation of Energy Efficiency measures. One of the measures that Bulgarian government has taken to improve Energy Efficiency is the **Energy Efficiency Act**. The Act implements the requirements of Directive 2006/32/EC. Based on Directive 2006/32/EC and the Energy Efficiency Act are developed National Action Plans on Energy Efficiency. In this Plans Bulgaria adopted a national indicative targets for energy savings by 2016 in an amount not less than 9% of final energy consumption for 9 years (average 1% per year)[58].

In **Former Yugoslav Republic of Macedonia**, specific strategies and plans contain directions for efficient use of resources. An example is the **Strategy for increasing energy efficiency in the Republic of Macedonia until 2020** that develops a framework for enhanced adoption of practices for energy efficiency in a sustainable way, and through implementation of programs and initiatives which are related to decreasing the dependence on imports, energy intensity and unproductive consumption of energy, with maximum participation from the private sector[59]. For the Bulgarian part of the cross-border region certain investments in this direction have been made due to the EU and national financial resources during the previous programming period. In the former Yugoslav Republic of Macedonia currently few projects and credit lines are supporting energy efficiency measures. However, the needs largely exceed the funding available.

Energy consumption and production

In both countries it is necessary o restrict energy demand and reduce environmental impact in order to improve the economy's energy efficiency and minimise the losses incurred as a result of obsolete technology and infrastructure. Particularly, the key problem to be faced by Bulgaria is the high consumption of energy. In this country, the Total final consumption of energy in 2012 was 9045 ktoe, the distribution by sector is transport - 31.7%, industry - 28.5%, households - 26.5%, services - 11.1% and agriculture - 2 2%[60]. Since 2000 total energy consumption increased by 5.6% as a result of increased consumption sectors "Transport", "Households, community organizations and other" and reduction in the "industry."

Concerning the **production**, in 2013, the production of petroleum amounted at 3.38 thousand Barrels per Day and a consumption of 114.99 (estimated) thousand barrels per day. Regarding to Coal's production, the amount is 35.846 Million short tons with a

[58] Cfr. Preparation IPA cross border Bulgaria--the Former Yugoslav Republic of Macedonia 2014 - 2020, Situation analysis
[59] Cfr. Ministry of economy, Strategy for energy development in the Republic of Macedonia until 2020. url:http://www.encharter.org/fileadmin/user_upload/Energy_policies_and_legislation/The_FYROM_2010_Energy_Strategy_to_2030_ENG.pdf
[60] Cfr. EEA - http://eea.government.bg/bg/soer/2012/energetics/index

consumption of 38.279 million short tons. The **Total production of primary energy** is **0.476 Quadrillion btu**.

Moreover, Bulgaria has another obstacle to face is the considerable import dependency of energy resources – around 70% (given 40% EU average)[61].

The following tables provides an overview on the energy production/consumption by sector and by type of energy sources in Bulgaria and Former Yugoslav Republic of Macedonia.

Final Energy Consumption by sector 2011 (Mtoe)

	Industry	Transport	Households, services etc
BG	2.7	2.9	3.6
MK	0.6	0.5	0.8

Source: European Commission[62]

Energy consumption and production in BG and MK (2013)

COUNTRY	TYPOLOGY	PRETROLEUM (THOUSAND BARRELS PER DAY)	NATURAL GAS (BILLION CUBIC FEET)	COAL (MILLION SHORT TONS)	ELECTRICITY (BILLION KILOWATTHOURS)
BG	**Production**	3.38	3.53	35.846	46.65
	Consumption	114.99	108.42	38.279	31.60
MK	**Production**	0.04	0	8.234	6.53
	Consumption	17.08	3.53	8.428	7.82

Source: EIA (2013)[63]

Regarding the **Former Yugoslav Republic of Macedonia**, the **production of Total primary energy** amounts at **0.072 Quadrillion btu**; the consumption amounts at 0.130 Quadrillion btu[64]. Particularly, the energy infrastructure comprises the electricity sector, the coal, oil and petroleum products sectors, the sector for natural gas and the sector for heat production. Moreover, Macedonia is connected only with one main gas pipeline. It could be noted the non-existent amount for the natural gas production: the entire quantity of natural gas is imported from Russia through the gas pipeline that enters Macedonia at Deve Bair on the border with Bulgaria and stretches through Kriva Palanka, Kratovo and Kumanovo to Skopje. At this stage of development of the gasification in Republic of Macedonia, there practically is no distribution network. Some direct consumers are in fact connected directly to the transmission network.

[61]Cfr. EIA- U.S Energy Information Administration, Indipendent Statistics & Analysis, Section: Overview data for Bulgaria. url: http://www.eia.gov/countries/country-data.cfm?fips=rb
[62] Cfr. European Commission, "EU transport in figures/Statistical pocketbook 2013, p. 116
[63] Ibidem
[64]Cfr. EIA- U.S Energy Information Administration, Indipendent Statistics & Analysis, Section: Overview data for Macedonia. url: http://www.eia.gov/countries/country-data.cfm?fips=rb

Renewable energy sources

Concerning the **Renewable energy sources (RES)** represent another local source that can help reduce reliance on import, improve the security of energy supply, meet the commitments to protect the environment and contribute to employment generation.

According to the Bulgarian National Strategic reference framework 2007 – 2013, "the RES electricity is generated mainly from hydro power stations and relatively lower share of wind generators.

In Bulgaria, the share of energy from renewable sources is 16,3% of the total. Particularly, the share relating to the transport sector is 0,3% to the electricity is 17%, to heating and cooling amounts at 27,5%[65]. The share of hydro electricity in the total electricity generation forecast for the period 2005-2015 (without substantial additional effort) is around 5.5% on average. Approximately 116 GWh (10 ktoe) electricity is produced by biomass and more precisely by black lye in the cellulose and paper factories"[66].

The potential of RES in Bulgaria is in use of **geothermal energy**, wind and solar energy. Moreover, the Bulgarian Law of Energy and Law on Energy Efficiency provide essential benefits for the utilization of renewable energy resources.

Regarding to the cross-border region, it has favourable conditions and strong potential for power generation from renewable sources to contribute to the obligation of the EU countries in this particular field. The sources for renewable energy generation in the region include: hydropower, solar, biomass, geothermal waters and wind. In Kyustendil the water energy is traditionally used since the year 1927 when the first hydropower station "Osogovo" has been built. Several more hydropower stations have been subsequently built. In the recent years the EU funding available for Bulgaria has stimulated the construction of solar and windmills. Thus Blagoevgrad district has become second in **Bulgaria** in terms of the number of renewable energy sites generating electrical energy. The **total power generation capacity** of the constructed **renewable energy sources** in the two Bulgarian regions is almost **200 MWt19**. The studies show that the potential of the region is much above the currently available facilities.

On side of the **Former Yugoslav Republic of Macedonia**, it is registered a low level of use of RES due to insufficient promotion of renewable energy resources. Macedonia uses primarily hydro power (for production of electricity), bio-mass (mostly wood mass for production of heat in the residential sector), geothermal energy and solar energy.

Only an **hydropower plant Kalimanci** is functioning by covering 3% (13,8 MW) from the total (552 MW) country hydropower installed capacities. RES capacities in this part of the CBC region are represent with 27 plants (from which 10 SHPPs) covering 29% (7,3 MW where 77% is from SHPPs) from the total installed (25 MW) RES capacities in the country. First Wind Park in the country (Bogdanci) will start functioning in 2014 with installed capacity of 37 MW20[67].

[65] Source: EUROSTAT (2014) rl:http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=nrg_ind_335a&lang=en
[66] Cfr. Republic of Bulgaria, The National Strategic reference framework 2007 – 2013, p.
[67] Cfr. IPA Cross-border Cooperation Programme Bulgaria – the former Yugoslav Republic of Macedonia 2014-2020, p.17

Transport mode

The mobility system which connects Bulgaria to the Republic of Macedonia is served mainly by the road transport: three major international routes are passing through it: Sofia-Kulata-Thessaloniki (part of European Corridor No. 4), Sofia-Kyustendil-Gyueshevo-Skopje (part of European corridor No.8) and Kumanovo-Veles-Gevgelija (part of European corridor No.10).

There are currently 3 operating border crossing points at Gyueshevo - Deve Bair, Stanke Lisichkovo – Delchevo and Zlatarevo - Novo Selo, but these are not adequate for a more intense cross-border integration of both sides. Furthermore, the roads network is unevenly distributed throughout the region thus hampering the access to mountainous and semi-mountainous areas.

Despite the investments already made, the density of the **road network** is much below the EU average. In fact, the Road density in Blagoevgrad is as low as 103 km/1000 km2; for comparison the average road density for Bulgaria is 175km/1000 km2 and for EU in 2008 it has been 418.5km /1000 km2. For the whole CBC area North-East region has the highest road density – 444km/1000 km2[68]

In 2012 the **total length of the road network** in the former Yugoslav Republic of Macedonia was 14 038 km, out of which 911 km national roads, 3 712 km regional and 9 355 km local roads. While in Bulgaria the total length of road network amounts to 19 456 km (end of 2010)[69]. From the total kilometres local roads in the country 3 163km (33%) pass through the cross-border region (MK part). Two of the national roads are in concordance with Trans National Axes (Corridors VIII and X[70]).

Despite these roads are in generally in good condition, are not sufficiently developed in order to serve the increasing traffic volume. Furthermore, it is registered a low quality of public transport and inter-city connection systems.

Furthermore, the major problem is that is no railway link between Bulgaria and Macedonia. The cross border region is served from **rail transport** with the main links covered by the line Sofia-Dupnitsa-Kulata-Thessaloniki, Sofia-Kyustendil-Gyueshevo railroad (part of the TEN-T network). As for both countries the completion of the railroad connection is very important, the former Yugoslav Republic of Macedonia allocated significant investments in this fields for the next period, where beside reconstruction works on the first part of the railroad connection the preparation of technical designs for the other two parts Beljakovci-Kriva palanka (36km) and Kriva Palnaka-Deve bair/border with BG (23km) is underway.

In addition, the inter-regional public transport is not to the quality required and in most cases there is a lack of connection services (bus-bus or bus-train).

The cross-border region has relatively good accessibility to **air transport** through the two airports Sofia and Skopie, located outside the programme area, but in close vicinity. But again, access to them from the more distant, mountain and rural areas is difficult[71].

Thus, road transport appears as the most important mode of transport as there is no railroad connecting the two countries.

[68] Source: National Statistical Office, 2012; EUROSTAT and secondary calculations
[69] Source: European Commission, “EU transport in figures/Statistical pocketbook 2013”
[70] Source: Description of the CBC Programme Region (version: March 31st, 2014)
[71] Ibidem, p.21

Transport demand

The lack of well integrated cross-border transport supply and of efficient links has led to the increased use of private transport.

In **Bulgaria** is growing the number of **passenger cars**, in 2011 was 48,1 billion pkm; while the use of buses is declining (10,8 billion p pkm); **tram and underground** register 0,9 billion pkm and the railways 2.1 billion pkm[72]. Despite the strong growth, car ownership is, at 264/1000 inhabitants, substantially below the EU25 average.

Generally, 58% of the cars (1,543,229) are more than 16 year old, whereas the prevailing part of them is more than 20 year old.

The combined data related to the number of cars and to the national road network density shows that the ownership is relatively high in relation to the road network.

Bus transport is relatively well developed and spread in the country, including the destinations not covered by railway transport. The basic bus transport problems are as follows: travel safety, lack of fixed arrival time, passenger services at the bus stations, lack of complex services (bus-bus or bus-train).

At the same time in the **Former Yugoslav Republic of Macedonia** the insufficient public transport systems and disperse settlement structures are the main reasons for the growing tendency to substitute public transport with individual cars, which imposes considerable environmental effects. In fact, from 1995 up to 2011, the number of passenger cars is increased from 3.7 (billion pkm) to 5.5 (billion pkm). An interesting reflection is about the use of buses& coaches non existent in Macedonia: only 1.6 (billion pkm) respect to 10.8 (billion pkm) registered in Bulgaria[73].

Moreover, the use of railways is highly declining in both countries. The following data confirm the tendency to the large use of car both in Bulgaria and Macedonia with the consequent declining of use of railways mode.

Modal split of passenger transport on land (2011) / pkm as %

	Passenger cars	Bus&Coaches	Railways	Tram&Metro
Bulgaria	77.7	17.5	3.3	1.4
Republic of Macedonia	75.5	22.5	2.0	-
EU-27	82.7	8.8	7.0	1.6

Source: EU Transport in figures – Statistical pocketbook 2013[74]

Main impacts on the environment

The EU policy is towards improving the public service at the same time shifting to low-carbon transport systems and more sustainable transport means. In this framework is important to

[72] Source: EU Transport in figures – Statistical pocketbook 2013, url: http://ec.europa.eu/transport/facts-fundings/statistics/doc/2013/pocketbook2013.pd
[73] Source:

[74] Source: EU Transport in figures – Statistical pocketbook 2013, p. 47-48

implement actions focused to issues like cross-border multimodal nodes and low-carbon transport systems.

Transport has major environmental impacts in terms of greenhouse gas emissions (GHG), local air emissions and noise; thus, lowering the GHG intensity of future transport growth represents a key challenge.

In 2010, the **total greenhouse gas emission** in **Bulgaria** amounted to 61,4 million tonnes CO_2 equivalent of which 8.8 million tonnes CO_2 GHG emissions are derived by the transportation that corresponds to 14,2% of the total.

During 2002, transport in general, was the major source of nitrogen dioxide and one of the greatest sources of carbon oxide in Bulgaria. The road transport is the major source of accumulator and tire waste.

GHG emission from transport by mode in Bulgaria - 2010

	TOTAL CIVILAVIATION	ROAD TRANSPORTATION	RAILWAYS	TOTAL NAVIGATION	OTHER TRANSPORT
Share %	6,3	85	0,8	4,3	3,7
Million tonnes Co2 equivalent	0,6	7,5	0,1	0,4	0,3

At the same time, there has been a large increase in **transport emissions** in Macedonia, driven by growth in road transport demand.

Particularly, in Macedonia, the **emissions from the Transport sector** during the last years have ranged between 30% and 40%, Production processes range from 30% to 5%, and polluting substances from other sectors contribute with less than 5% given the fact that there is insufficient data on these emissions. There is a variable trend – in the period 2002-2011, there was a downward trend in the emissions of SO2, followed by an increase in 2006 and 2007, a decrease in 2008, and a slight increase in 2009. With regard to the last years, a downward trend was noted in the quantities of this pollutant in 2010, and then an increase in emissions again in 2011, which was due to the total quantity of consumed lignite. The variable trend of the **total sulphur dioxide emission** is a result of the discontinuous operation of certain production, industrial, energy and metallurgical facilities. The combustion processes contribute the highest percentage in the **emissions of SO2**, which is a result of the combustion of low-quality and low-calorie lignite, as well as sulphur-containing liquid fuels that are used for heat production and in transport. There was a general trend of approximately equal quantities of **emissions of nitrogen oxides** in the period from 2002 to 2005, followed by an upward trend in the period 2006-2007, whereas the quantity of emissions slightly decreased in the period 2008 to 2010. In 2011, an increase in nitrogen oxide emissions was recorded again, resulting from increased quantity of fuels applied in combustion processes.

Concerning the **consumption of fuel**, in Bulgaria the total final consumption of petrol and diesel for transport amounts to 2.089 ktoe (2011) and of biofouels 17 ktoe; while in Macedonia 431 ktoe with high level of consumption for Gas diesel oil. In Macedonia does not exist data in relation to the use of biofuels.

The status of waste system in the cross border area

The CBC waste management policy is tributary to the objectives of the EU waste prevention policy and aims to reduce resource use and to apply the waste hierarchy in practice.
Nevertheless, the financial sources from state budgets are insufficient for financing environmental infrastructure and the related inefficient prevention and management of climate related risks in the border region.
Much investment is still required in relation to solid waste collection and treatment.
A long-lasting problem that interest the CBC region is the separate collection, separation and recycling of solid waste are activities which presently have limited scope and low coverage within the region.
Thus, the key objective in the environmental infrastructure sector is to optimize the waste system management by establishing financially sustainable integrated water and waste management systems in order to improve the quality of life of the population, try rational use and protection of the environment.

At the same time it is essential to strengthen the administrative capacity of the institutions responsible for the management of CSF and improve the interaction between institutions; at the same time changing the attitudes of all citizens in the adoption of sustainable behaviors.

The following country's profiles illustrate the current state of waste system both in Bulgaria and in the **Former Yugoslav Republic of Macedonia** in order to deepen on the key problem to be solved in terms of waste management (i.e with the objective to develop a sectorial strategy to reduce the greenhouse gas emissions; prevent waste generation; reduce the amount of landfilled organic waste).

Bulgaria
According to the review-report on waste management performance in the EU Member States published by the European Union in 2012, Bulgaria was ranked in the group of countries with the largest gaps in the implementation of waste management. Since Bulgaria reported 0 % recycling for 2010, in order to achieve the 50 % recycling target for MSW by 2020 it will require that the recycling rate increases on an average annually with five percentage points from 2010 to 2020. Such a yearly increase rate has not been achieved by any European country in the period from 2000 to 2010. Even if packaging waste was included in the reporting to Eurostat on the recycling of municipal solid waste, it will require an exceptional effort in Bulgaria to fulfill the recycling target of 50 % by 2020. It is likely that some recent initiatives taken after 2010 by the Bulgarian government will contribute to improve the recycling rate in the country.

In the meanwhile, the public awareness regarding environmental concerns of waste is not sufficiently developed. One of the priorities of the National Waste Management Programme (2009- 2013) concerns measures to raise awareness of citizens in all fields of waste management through different campaigns[75].

The following section shows the current state of waste system in the country. At first it will be shown the available data related to the packaging waste at national level and then the description will focus on the municipal waste system that featured the Bulgarian waste recycling.

[75]Cfr. European Commission, Country Factsheet Bulgaria (BG) 070307/2011/606502/SER/C2

Data Overview on Packaging waste system

Incinerated in combustion installation packaging waste

Material	2009	2010	2011	2012
Plastic	278	558	M	3250
Paper/cardboard (incl. composites)	581	24	M	46
Metal	M	M	M	M
Wood	120	148	2482	0
Glass	M	M	M	M
Other	50	28	M	14
Total	1028	758	2482	3310

Source: NSI 2012

Generated packaging waste

Material	2010	2011	2012
Plastic	81978	94963	96123
Paper/cardboard (incl. composites)	138716	110270	122270
Metal	15744	13414	14587
Wood	18741	21444	20121
Glass	63962	69374	70521
Other	2055	5174	5174
Total	321197	314639	328797

Source: NSI 2012[76]

Municipal solid waste (MSW)

Municipalities (264 in total) play an important role in the implementation of the policy in the environmental sector. Municipalities are organised in Regional Municipal Associations, which are responsible to implement the national waste management policy on the regional level[77].
According to the Eurostat data no material and organic recycling of municipal waste was reported by Bulgaria from 2001 to 2010.
In Bulgaria packaging waste is not included in the reporting to Eurostat on the recycling of municipal solid waste.
Specifically, there has been a significant increase in the packaging waste recycling from 2004 to 2010. The largest proportion of recycled packaging waste is linked to paper and cardboard.

[76] Cfr. EEA, NSI url: http://www.nsi.bg/en/content/5177/generated-packaging-waste

[77] Ibidem

Composition of recycled packaging waste in Bulgaria in 2004, 2006, 2008 and 2010. Stated in tonnes

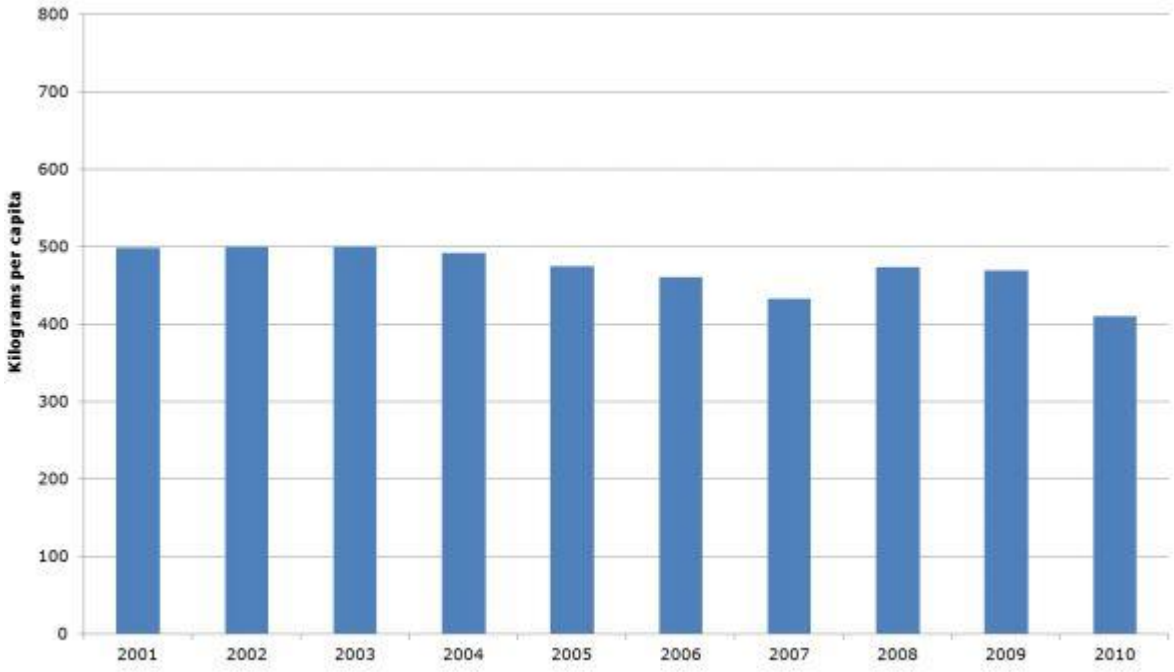
	2004	2006	2008	2010
Total packaging waste recycling	100 610	129 129	152 057	197 958
Plastics	7 622	17 996	12 084	33 553
Paper/cardboard (including composits)	74 898	65 770	73 945	113 543
Metals	5 875	1 498	11 806	8 052
Wood	-	-	2 827	10 074
Glass	12 215	43 767	51 395	32 735
Other	-	98	-	-

Source: Bulgarian National Statistical Institute, 2012[78]

A very large proportion of the municipal waste in Bulgaria is landfilled. The amount of municipal waste deposited into landfills was 3 million tonnes in 2010, representing 98 % of the generated amount (3.1 million tonnes)[79]

The following Figure shows the development of MSW generation per capita in Bulgaria from 2001 to 2010. There has been a decrease in MSW generation per capita during the period.

MSW generations per capita in Bulgaria



Source: Eurostat, 2012

[78] Cfr. EEA, Municipal waste management in Bulgaria 2013, p.6

[79] Cfr. ibidem

The former Yugoslav Republic of Macedonia

In the former Yugoslav Republic of Macedonia, numerous problems and deficiencies identified through different projects, studies and planning documents are evident for environmental media and areas, such as lack of regional integrated systems for municipal solid waste management, as well as system for special waste types management, including hazardous waste.

One of the bigger problem of the former Yugoslav Republic of Macedonia, is the high level of emission with toxic chemicals emitted through uncontrolled burning of household waste (i.e. backyard burning) which is common in the country. Industries can also have locally significant contribution to the PM10 concentrations.

Taking into account that tasks and responsibilities in the waste management field are in practice split among several institutions in the State with the dominant role of the Ministry of Environment and Physical Planning and municipalities, it will be taken in exam data related to municipal waste system.

Municipal solid waste (MSW)

The municipalities are responsible for organising the collection, transportation and disposal of municipal wastes; deciding on the location of waste management facilities; issuing local regulations on waste management; financing and supervising dump/landfill closures and termination of waste management facilities

The amount of municipal solid waste generated during the period 2003-2011 has grown steadily, with a growth rate of more than 3 % annually in the earlier years, while in recent years the growth was less than 3 % per year. The generation of municipal solid waste follows closely the economic growth observed in the country during this period of time. The amount of municipal waste generated per capita was 357 kg/capita in 2011.

The dominant method in **managing municipal and other non-hazardous waste** is disposal to legal landfills, which corresponds to **99,74% of the total amount** of MSW generated in 2012. The remaining 0,26% of MSW is processed for recycling. MSW collection coverage is 77% of the national population[80]. The **generation of MSW** has been continuously increasing, from about 399 000 tonnes in 2003 to **734 000 tonnes** in 2011, a remarkable increase of almost 85 %. However, it has to be mentioned that the data from 2003 to 2007 are mostly estimations rather than actual data based on real analyses on the field, and therefore the data before year 2008 are not directly comparable with data from 2008 and onwards[81].

MSW generation in FYR Macedonia			
	2009	**2010**	**2011**
Thousand tonnes	726	721	735
Kilograms per capita	354	351	357

Source: Cvetkovska (2011) and Eurostat (2013a)

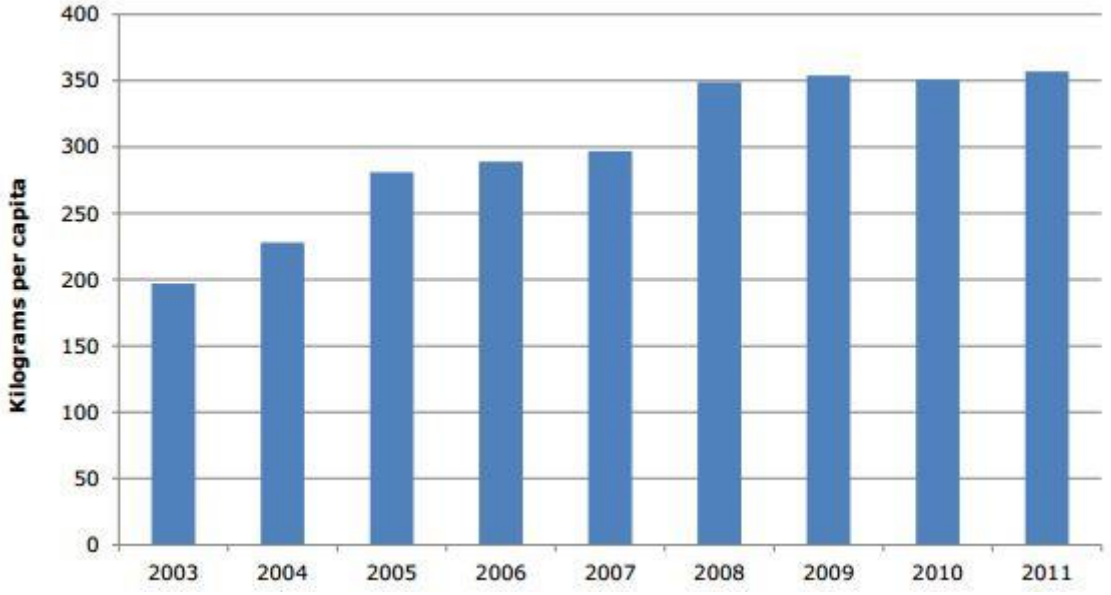
According to Eurostat data, the collection coverage of MSW in the municipalities of FYR Macedonia was about 72 % in 2008. The following years, the collection rate increased only

[80] Cfr. EEA, Municipal waste management in the former Yugoslav Republic of Macedonia, P.5

[81] Cfr, ibidem

marginally and in 2011 it had risen to 77 % according to the data and information submitted to the Ministry of Environment and Physical Planning.

MSW generation per capita in FYR Macedonia



Source: Cvetkovska (2011) and Eurostat (2013a)

Regarding the biodegradable material, the **biodegradable fraction of MSW** consists mainly of food waste and green waste, and additionally wood, paper and cardboard, and textiles waste. The biodegradable (organic) fraction which includes food and green waste is equal to 26 % of the generated MSW. **Paper** and **cardboard equals** to 11.9 %. The **wood** and **textiles** fractions amount to 2.7 % and 2.9 % respectively. Moreover, the fine mixed particles fraction (<10 mm), which is equal to 30.9%, contains approximately 60 % biodegradable organic materials (NWMP, 2008). Therefore, out of this 30.9 % a percentage of about 18.5 % can be added to the biodegradable MSW content. Conclusively, the final content of biodegradable waste in the MSW composition of FYR Macedonia is about 62 %. Taking uncertainty into account, this percentage could be placed safely somewhere between 60-65 %.

Landfilling of MSW is the most typical option with a share of 99.74 % in 2012, while the processing which includes recycling and composting accounts for 0.26 %, according to data provided by the mayors of municipalities to the Ministry of Environment and Physical Planning.

Concerning the recycling, the data provided by the Ministry of Environment and Physical Planning for 2012 show that the **recycling and composting of MSW** covers a minor 0.26 %[82]. The amount of recycling in 2011 was 2 625.89 tonnes in FYR Macedonia, an amount which relates to recycled plastic material, whereas the exported amount for recycling and other types of processing waste was 3 054.45 tonnes. Specifically, the amounts exported for recycling, by type, were 2 927.32 tonnes of paper and cardboard, 29 tonnes of glass, 66.96 tonnes of metal and 31.17 tonnes of plastic.

[82] Cfr. Ministry of Environment and Physical Planning, 2012

Furthermore, the **total amount of packaging** placed on the market in the country is 48 340.83 tonnes according to the annual report (submitted to the Ministry of Environment and Physical Planning) for 2011.

Packaging placed on the market (tonnes) and packaging waste recycled(tonnes) in 2011, by material

Type of material	Placed on the market	Recycled (or exported for recycling)	Recycling rate
Glass	9 241.36	29.00	0.31 %
Plastic	13 963.12	2 657.06	19.03 %
Paper and cardboard	16 660.45	2 927.32	17.57 %
Metal	1 691.37	66.96	3.96 %
Wood	2 973.93		
Composite materials	2 808.09		
Other/ packaging not selected by type	1 002.51		
TOTAL	**48 340.83**	**5 680.34**	**11.75 %**

Source: Ministry of Environment and Physical Planning (2012)

During the period 2007-2011 there was an intensive effort from the government to harmonise its waste legislation with the EU guidelines and directives, in which the majority of new regulations emerged. These regulations – the National Waste Management Plan for the period 2009-2015 (Official Gazette no. 77/09) - covered issues for landfilling, incineration, biodegradable municipal waste, packaging waste.