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Environment Division

## Evidence-Based Environmental Governance and Sustainable Environmental Policies in Support of the 2030 Agenda in South-East Europe

### Bosnia and Herzegovina



GENEVA, 2019

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## Abbreviations

AAP	ambient air pollution
AQM	Air Quality Management
AQP	air quality plan
BD	Brčko District
CAMP	Coastal Area Management Programme
CBD	Convention on Biological Diversity
CDM	Clean Development Mechanism
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CLRTAP	Convention on Long-range Transboundary Air Pollution
EBRD	European Bank for Reconstruction and Development
EIA	environmental impact assessment
EMEP	European Monitoring and Evaluation Programme
EE	Energy efficiency
EU	European Union

FSC	Forest Stewardship Council
FBiH	Federation of Bosnia and Herzegovina
GCAP	Green City Action Plan
GEF	Global Environment Facility
GHG	greenhouse gas
GIS	geographic information system
GRB	gender responsive budgeting
HPP	hydropower plant
ICZM	integrated coastal zone management
INDC	Intended Nationally Determined Contribution
LEAP	local environmental action plan
MDG	Millennium Development Goal
NBSAP	National Biodiversity Strategy and Action Plan
NEAP	National Environmental Action Plan
NGO	non-governmental organization
NIP	National Implementation Plan
NO <sub>x</sub>	Nitrogen Oxides
NWFP	non-wood forest product
OG	Official Gazette
POP	persistent organic pollutant
PM	particulate matters
PRTR	pollution release and transfer register
RES	renewable energy source
RS	Republika Srpska
SDG	Sustainable Development Goal
SEA	strategic environmental assessment
SECAP	Sustainable Energy and Climate Action Plan
UNDAF	United Nations Development Assistance Framework
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
WEEE	Waste Electrical and Electronic Equipment
WFD	Water Framework Directive
WWTP	wastewater treatment plant

## 1. INTRODUCTION

### Background

Strengthening environmental governance and development of sustainable environmental policies plays an important role in the achievement of many of the Sustainable Development Goals (SDGs). The aim of the UNDA project “Evidence-based environmental governance and sustainable environmental policies in support of the 2030 Agenda in South-East Europe” is to support Albania, Bosnia and Herzegovina, Montenegro, North Macedonia and Serbia in formulating actions on the basis of their Environmental Performance Reviews (EPR) in order to achieve relevant SDGs.

The project should assist national stakeholders, in particular the ministries responsible for environmental issues, to building their national capacities to assess priority needs in environmental governance and facilitating the national action to integrate evidence-based environmental policies into sector-specific and cross-sectoral strategies aimed at the achievement of SDGs. This assessment report aims to contribute to the first step of the UNDA project and facilitates recognition of the right outcome for Bosnia and Herzegovina (BiH) by developing a set of policy packages to enable implementation of the EPR recommendations related to relevant SDGs mentioned in the boxes in the third EPR of BiH.

This assessment report presents results SDGs needs assessment and gaps and proposes a set of policy packages for their implementation. The proposed policy packages would serve as a concrete roadmap for implementation of SDG-related EPR recommendations, therefore increasing the likelihood of their effective implementation.

## Third EPR of Bosnia and Herzegovina

Environmental Performance Review (EPR) is an assessment of the progress of countries of the Economic Commission for Europe (ECE) region in reconciling their environmental and economic targets and in meeting their international environmental commitments. They do not cover the whole range of issues addressed by the 2030 Agenda for Sustainable Development but support the achievement and monitoring of those Goals and/or targets from the 2030 Agenda that are relevant for the particular review content requested by the country under review. However, in the majority of cases, the relevant Goals and/or targets would be environment related. The related recommendations provided in the EPR reports should aim to support the achievement of relevant Goals and/or targets by a country under review. Such recommendations can provide advice, for example, on the need to improve legislation and its enforcement or on additional and/or alternative measures to support the achievement of the relevant SDGs and/or targets.

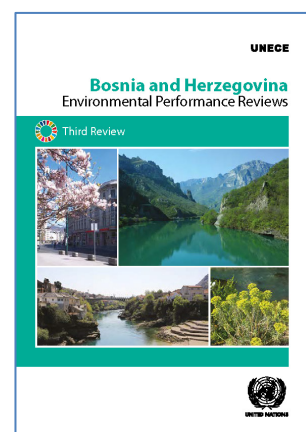
The third EPR of BiH includes a set of recommendations to the country on legal and policy frameworks, regulatory and compliance assurance mechanisms, economic instruments, environmental monitoring and information, education for sustainable development, international cooperation, climate change mitigation and adaptation, water management and waste management.

Since 2017, all EPRs include a review of the relevant Goals and targets of the 2030 Agenda and provide recommendations to the countries on reaching SDGs. As the third EPR of BiH was carried out in 2017, the Review includes recommendations supporting the country a gradual achievement of SDGs.

In point 47 of the chapter “Follow-up and review of activities” of the UN Resolution of 25 September 2015, it is stated that national governments have the primary responsibility for carrying out follow-up and reviews at national, regional and global levels in relation to progress in achieving the goals and objectives adopted in this Resolution. With the entry into force of the 2030 Agenda, it was important to undergo an environmental review and assess the progress made in BiH since 2011, when the second EPR was implemented. An additional goal of the third review was the need to define new tasks resulting from the implementation of the 2030 Agenda and its SDGs, as well as to identify new needs in the implemented and planned environmental policy.

An important feature characterizing the set of recommendations contained in the third EPR is their linkage with the SDGs contained in the 2030 Agenda. However, it should be emphasized that these reviews do not include the degree of implementation and preparation of a given country to achieve all the goals set out in the 2030 Agenda, but focus on these which in the assessment of a given country are priorities. The vast majority of them are related to the environment—it is recognized that all human activities have an impact on the environment by changing the conditions of the functioning of societies. These changing conditions will determine the possibility of achieving the SDGs in the planned time. Therefore, so much attention was paid in the third EPR to specifying the recommendations that, in the opinion of experts, it should be effectively used by BiH, supporting comprehensive national actions aimed at achieving these goals. It was recognized that all elements subject to the Review are considered important in the process of faster development of the country, meeting international obligations and meeting the conditions of accession to the EU. Generally speaking, it can be stated that the EPR was to be used to assess the progress of BiH in achieving the planned goals (SDGs) and in implementing international obligations in the environment sector.

The Review includes three parts. In Part I “Environmental Governance and Financing”, the following issues are discussed: Legal, policy and institutional framework, Regulatory and compliance assurance instruments, Greening the economy and Environmental monitoring, information, public participation and education. Part II “Domestic–International Interface” is devoted to the Implementation of international agreements and commitments and Climate change mitigation and adaptation. The following topics—Air protection, Water management, Adriatic Sea protection, Waste management, Biodiversity and protected areas and Forestry an Environment are covered in Part III “Media and pollution management”.



## Aim

The aim of this report is to assess the degree of implementation of the recommendations contained in the boxes related to the SDGs in the third EPR of BiH and to identify the existing gaps, identified during the review, between the current conditions and the expected effects of the implementation of specific SDGs. This report should contribute to the modification of existing strategies and policies resulting in greater effectiveness in achieving sustainable development.

The third EPR was carried out practically in 2017 (publication of results in 2018). This report focuses on the most important recommendations proposed in the third EPR and discusses the degree of their implementation by the time preparation of this report. Altogether the report includes 14 boxes covering 13 SDGs.

## Accession to the EU

Since 2003, when the European Commission at the Thessaloniki summit recognized BiH as a potential candidate for membership in the EU, work began in this country on the identification of the needs in terms of adapting the legal and economic system to the requirements of EU members and various international organizations whose membership BiH wanted to get. This identification of needs resulted in several political and economic changes. Their scope and effectiveness allowed the submission of an application for the accession of BiH to the European Union (EU) in 2016. At the same time, work was underway on a new initiative of the United Nations, which was to replace the Millennium Development Goals (MDG) set out in the UN Millennium Project of 2000 and implemented until 2015. A new document was adopted by the UN General Assembly Resolution of 23.09.2015–Agenda for Sustainable Development 2030, which includes the SDGs—in this document has been defined 17 SDGs and 169 targets related to them. It was also assumed that activities aimed at achieving the above-mentioned goals require activity and progress on three levels, i.e. economic, social and environmental. The country by adopting this Resolution committed to its implementation.

As part of the activities to support the work aimed at integrating and incorporation the 2030 Agenda into the development strategies of individual countries, an adequate mechanism was created to assess the progress of this development and the degree of achievement of the goals set for the “Environment” sector, which is a very important element in the life of societies and the functioning of the state. This mechanism is the EPR. Its use consists in activities aiming at supporting sustainable development of the country, improving the environmental management process, combining various development strategies with the set environmental goals, raising social awareness on the environment or undertaking international cooperation to the extent necessary to improve the condition of the environment.

## CHAPTER 1: SDG TARGETS AND INDICATORS NEEDS ASSESSMENT

### Box 1.1: Target 17.14 of the 2030 Agenda for Sustainable Development

17 PARTNERSHIPS FOR THE GOALS



**Goal 17: Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development**

**Target 17.14: Enhance policy coherence for sustainable development**

This target covers one of the systemic issues for achievement of the SDGs. It addresses how the country works across policy sectors and the levels of governance and coordinates them to achieve joint objectives of sustainable development. As of early 2017, the indicator proposed for Target 17.14 at the global level (currently, a Tier III indicator) refers to the existence in countries of mechanisms to enhance policy coherence for sustainable development.

Bosnia and Herzegovina does not have strong and effective mechanisms to enhance policy coherence for sustainable development, either in terms of intersectoral cooperation for sustainable development or in terms of cooperation between the levels of governance. The National Steering Committee for Environment and Sustainable Development was discontinued in 2005. The country does not have a national sustainable development strategy or other comprehensive development strategy. The SEA does not yet properly operate in the country. Coherence of policies adopted at various levels of governance is a major challenge for Bosnia and Herzegovina with its four-level governance system. Coordination and harmonization of policies at the level of the entities is not functioning smoothly, as demonstrated by numerous examples of diverging environmental policies and legislation.

Future efforts to enhance policy coherence for sustainable development could focus on establishing the mechanisms to enhance policy coherence for sustainable development, such as the national body entrusted with promoting sustainable development and



strengthening the existing coordination mechanisms such as the Inter-Entity Coordination Body for the Environment. The development of a national sustainable development strategy as a framework policy document for the country is also crucial for enhancing policy coherence.

The Ministry of Foreign Trade and Economic Relations of BiH, in cooperation with the Swedish Embassy in BiH, has launched a project to develop an environmental strategy for the country. The Integrated Environmental Protection Strategy in BiH is currently being drafted. The Strategy is expected to unite the entity and BD strategies, so that each entity and BD will have a separate environmental strategy that will be part of the state strategy for environmental protection in BiH.

Governments in BiH are preparing state and sub-state strategies regarding the implementation of the SDGs. It is planned to establish a roadmap, action plan and resource mobilization plans for the SDGs in order to identify relevant national strategies and policies. In the absence of an SDG comprehensive state strategy, regional support has been identified as key to the successful implementation of the objectives. The UN Offices in BiH are currently reviewing the practices outlined in the Guide to Accelerating, Guiding and Supporting Policies for the Implementation of the 2030 Agenda (MAPS). Plans are being developed to strengthen statistical capacities.

In the United Nations Development Assistance Framework (UNDAF) in BiH, 16 UN offices are currently supporting all levels of government to define modalities for national reports, including the timing and contributions of all actors. United Nations Development Programme (UNDP) is working to prioritize SDGs through a series of interactive workshops called Ideas 2030. Workshops are held in cities throughout the country. They are attended by representatives of state, entity and local institutions, as well as members of civil society and the academic community. UN Office also analysed the relationship between the Reform Agenda and the SDGs<sup>1</sup>. The report concludes that links are weak for 8 of the 17 SDGs (1, 3, 4, 8, 9, 10, 16 and 17) and in 19 of the 169 set results.

Until October 2016, BiH has focused on revising and drafting amendments to existing laws, and on adopting new laws to create a legislative framework for implementing reforms. The Third Consolidated Progress Report on the Implementation of the Reform Agenda Action Plan, from September 2016, states that the Council of Ministers implemented about 53% of the Reform, the Federation of BiH (FBiH) 31%, and Republika Srpska (RS) about 54% of the total measures from the Reform Agenda.

Rapid economic development can lead to rapid environmental degradation, and it is questionable to what extent domestic legislation is harmonized with EU legislation, and whether the state and institutions will be ready to cope with economic growth at the same time, while taking care of the environment. The Agenda contributes to the SDG's framework policy, in particular with regard to SDG 1, 2, 8, 16 and 17. The Reform Agenda is partly in line with SDG 9. Strong infrastructure needs to be built and innovation encouraged, but the promotion of inclusive and sustainable industrialization is not fully in line with the Agenda, given the lack of an environmental dimension and the current inadequate legal framework and potential environmental risks to economic development.

Imagine 2030 is an umbrella initiative for informing, promoting and involving citizens with the SDGs started in October 2016. Over 70 workshops were held with over 1,200 participants throughout BiH. A special SDG tool for consulting and involving citizens was designed: website<sup>2</sup> and Facebook page # zamili2030. A competition "Postcards from the future" was organized with over 300 submitted visions of the future—awards for the best works awarded in March 2016. A high-level SDG conference was organized in April 2017. With an initial review of citizens' views on SDG priorities presented at the conference. The first two-year project of technical support to institutions with two results was implemented:

A Roadmap for SDGs in BiH was developed and its implementation started. Capacity building, technical and other support to competent institutions in BiH for the beginning of SDG implementation, including: Vision 2030, roadmap, action plans, prioritization, identification of bottlenecks and accelerators, establishment of

<sup>1</sup> [https://unsdg.un.org/sites/default/files/cf-documents/30b0a43d-dbb3-4817-a014-8a29a2001380\\_2015-2020\\_UNDAF\\_BiH\\_Final\\_Evaluation\\_Final\\_Draft\\_ENG.pdf](https://unsdg.un.org/sites/default/files/cf-documents/30b0a43d-dbb3-4817-a014-8a29a2001380_2015-2020_UNDAF_BiH_Final_Evaluation_Final_Draft_ENG.pdf)

<sup>2</sup> [www.zamisl2030.ba](http://www.zamisl2030.ba)

initial state, establishment of targets, budgeting, monitoring and reporting. Result 1.2. Private sector actors sensitized and involved in the prioritization, planning and implementation of SDGs.

The Conference “Business Community and SDGs in BiH” was organized and held in Sarajevo on 12 June 2018, with the aim of raising awareness of the role of companies in achieving SDGs. The conference brought together more than 400 representatives of all levels of government, business and academia. It was organized within the project “Support of preparation for the implementation of the goals of sustainable development and engagement of the private sector”, which is financed by the Embassy of Sweden in BiH and implemented by the United Nations team in BiH. The conference participants had the opportunity to address global issues in the context of BiH, including, inter alia, responsible resource management and environmental protection, ethical business, job creation and their impact on the image and competitiveness of enterprises. The business sector was an important and constructive participant during the negotiations on the 2030 Agenda, and the Governments of BiH recognized its role in implementing SDGs. Representatives of 20 companies from BiH shared at the conference examples of good practice on sustainable development that they implement in their companies. The conference was an opportunity for companies that want sustainable development to be an integral part of their core activities and business models to express their common commitment and contribute to the realization of the 2030 Agenda in BiH.

### Box 2.1: Target 12.6 of the 2030 Agenda for Sustainable Development



**Goal 12: Ensure sustainable consumption and production patterns**

**Target 12.6: Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle**

**Indicator 12.6.1: Number of companies publishing sustainability reports**

There are no guidelines, standards or regulations for sustainability reports in Bosnia and Herzegovina.

In order to be able to report on this indicator, Bosnia and Herzegovina should:

- (a) Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle;
- (b) Introduce guidelines, standards or regulations on the collection of statistics in consultation with the business sector, including through business associations.




BiH should include ensuring sustainable consumption and production patterns in the country, entities and BD priorities. While reforms of the health and social protection and pensions system aim to ensure the good health and well-being of all BiH citizens in accordance with Goal 3, additional sustainable environmental policies in accordance with Goal 12 are needed to continue such practices. Inequality, environmental degradation can occur as a consequence of development policies in BiH. Starting from the fact that environmental protection and sustainability are priorities for the EU, BiH should pay special attention to achieving the set results set in the SDG. Government funding is mainly aimed at investing in new fundamental knowledge or satisfying social needs, such as health and defence. Business sector R&D funding is targeted to new processes or new products and successful productivity growth is expected.

BiH has already embarked on this type of economic activity. In the current linear economy of BiH, the producer produces the product, the product is used, then the product ends up in waste, most often in illegal landfills, and only a small part goes for recycling or incineration. In BiH, a lot is being done to incinerate waste, which includes imports from Italy, Croatia or Slovenia. Since our region is late in such things, we are unfortunately still talking about waste incineration, and foreigners talk about the circular economy because by burning we permanently lose a certain resource. What is important is that the cycle never ends but that it always has its purpose and that the raw material remains in the system “

In FBiH, since the establishment of the ZEOS eco-system in 2013, the authorized operator for electronic waste management, by the end of 2018, more than 7 million kilograms of electrical and electronic waste have been collected and disposed of. In BiH, between 10 and 11 kilograms of electrical waste per capita are generated. It means that BiH annually puts on the market about 40,000 tons of new equipment. The ZEOS eco-system has also established exports of hazardous waste, namely refrigerators and freezers that contain freon, and for

the first time from BiH, exports of TV screens and monitors that contain lead has been organized and is therefore classified as hazardous waste. The waste was exported for recycling to Austria and Germany. Prior to the establishment of this e-waste system operator, this type of ended up in legal and illegal landfills, but the system directed hazardous waste from electrical and electronic waste to separate collection and recycling according to the highest European standards and EU directives.

### Box 3.2: Selected targets of the 2030 Agenda for Sustainable Development

 <p><b>1</b> NO POVERTY</p>	<p><b>Goal 1: End poverty in all its forms everywhere</b>  <u>Target 1.4: By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance</u>  <u>Target 1.5: By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters</u></p>
 <p><b>5</b> GENDER EQUALITY</p>	<p><b>Goal 5: Achieve gender equality and empower all women and girls</b>  <u>Target 5.a: Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws</u></p>
 <p><b>10</b> REDUCED INEQUALITIES</p>	<p><b>Goal 10: Reduce inequality within and among countries</b>  <u>Target 10.1: By 2030, progressively achieve and sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average</u>  <u>Target 10.b: Encourage official development assistance and financial flows, including foreign direct investment, to States where the need is greatest, in particular least developed countries, African countries, small island developing States and landlocked developing countries, in accordance with their national plans and programmes</u></p>
<p>To reduce poverty is a key goal for ensuring sustainable development and requires attention being given to economic, social and environmental dimensions. Poverty reduction can be seriously harmed by inequalities, and reducing inequalities is both a goal of sustainable development and a means to realize it. Indeed, inequalities threaten long-term social and economic development and can breed social and environmental degradation, and sustainable development cannot be achieved if people are excluded from opportunities and services.</p>	
<p>Bosnia and Herzegovina is one of the poorest countries in Europe. Acute poverty and high unemployment are widespread phenomena in the country but hit rural areas and women in particular. To consider gender equality and rural development in policymaking is fundamental—the basic key to social and economic development. The state level of Bosnia and Herzegovina in cooperation with governments of Republika Srpska and Federation of Bosnia and Herzegovina, and Brčko District Government should create an enabling environment to support inclusive growth and well-being and generate productive employment and job opportunities for poor and disadvantaged people, in particular in rural areas and for women, while not harming the environment.</p>	
<p>A large range of targeted measures can be used to spur the development of green economic activities and reduce poverty and inequalities, safeguarding the country’s valuable heritage of natural resources. In particular, the relevant institution from the State level of the Bosnia and Herzegovina, in cooperation with the Governments of Republika Srpska and Brčko District, should develop microfinance and introduce incentives for green economy start-ups, green jobs development and landowners’ associations, to spur sustainable economic growth based on the sustainable exploitation of natural resources and activities for greening the high-polluting traditional sectors.</p>	

One of the strategic goals identified by the Strategic Framework for BiH is to reduce poverty and social exclusion. Meeting this goal in the next three years would result in an improvement in the position of vulnerable groups consisting of: people with disabilities, Roma, returnees and internally displaced persons, families with two or more children, the elderly, the unemployed, low-skilled workers, women, youth and children. Poverty in BiH is most often measured by consumption-related indicators, while the multidimensionality of poverty is observed through health, education, employment opportunities and access to social protection institutions. According to the latest available data from the Agency for Statistics, 16.9% of the population lived in relative poverty. The richest fifth spent 4.9 times more than the poorest fifth.

Although relative poverty has decreased, this does not mean that absolute poverty has fallen. Relatively poor means that the entire population spends less. This may mean that the poorest have improved their position relative to the rich, and it may also mean that the rich have worsened their position relative to the poor without



the actual situation of the poor changing. The average household size was reduced from 3.1 to 2.9 members, which further indicates the reasons for the reduced consumption.

According to a survey conducted by the Regional Cooperation Council, Balkan Barometer<sup>3</sup> for 2016, 41% of households in BiH believe that they have difficulties with the financial situation, and 16% of persons are considered socially excluded. The same survey states that only 12% of households received remittances from abroad. Data from the Survey on household consumption in BiH show a significant increase in the number of households saving, in 2011 it was recorded that 14.2% of households save while in 2015 18.2% of households save. Central Bank data also show an increase in household savings in KM. Thus, in December 2011, savings amounted to 1,917.2 million KM, and in 2015. 2,841.6 million KM, which is an increase of almost a billion. Although there was an increase in retail loans with commercial banks, in 2015. In relation to 2011 of 1.1% due to the increase in the consumer price index, the real amount of loans to households decreased.

The legal framework has been improved in all sectoral areas that have direct implications for the quality of life of women and girls, such as: development planning, finance, education, work and employment, access to health services, social protection, protection from domestic violence. The adoption of the Law on Prohibition of Discrimination of BiH complements the provisions of the Gender Equality Law of BiH in a way that the mechanisms for protection against discrimination are improved in accordance with EU directives. For cases of direct and indirect discrimination, and incitement to discrimination according to the provisions of the Law on Public Procurement, it is possible to initiate civil proceedings. Harassment or sexual harassment and acts of gender-based violence are the subject of a lawsuit to the Prosecutor's Office according to the standards of criminal legislation in BiH according to which the procedure is conducted.



**Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all**

**Target 8.3: Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services**

Increasing labour productivity, reducing unemployment, creating quality job opportunities and decent working conditions for all and improving access to financial services and benefits are essential components of sustained and inclusive economic growth.

To fill investment gaps in key sectors (including infrastructure, small and medium-sized enterprises (SMEs) and green economic activities), widening opportunities for private capital is essential to moving towards a more dynamic, sustainable and innovative economic system and allowing targets to be reached.

The relevant institutions from the State level of Bosnia and Herzegovina, in cooperation with the Governments of Republika Srpska, Federation of Bosnia and Herzegovina and Brčko District, should attract private resources, both foreign and domestic, and improve investment conditions to direct them towards green economy initiatives. The Governments should develop proper institutional measures, implement economic instruments (i.e. fiscal reforms aiming to move the fiscal burden from good inputs, such as labour, to environmentally harmful inputs, such as natural resources consumption or pollution), improve the efficiency and profitability of public enterprises and develop infrastructure.

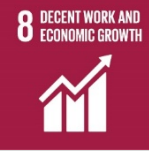


The current standard of living of citizens in the countries of the region is below the EU28 average and ranges from 60% in Croatia to 30% in BiH and Albania. The living standard of citizens in BiH during the 10-year period increased slightly by 5 percentage points compared to the European average. In order to improve the living standard of citizens and join the EU countries, BiH should achieve sustainable economic growth at rates of about 5% in the coming period.

One of the main reasons for low competitiveness both in the countries of the region and in BiH is the weak production base, i.e. the low share of the processing industry and exports of goods within GDP. According to the Central Bank of BiH, published in the Annual Report for 2019, industrial production, as one of the most important indicators of economic activity, recorded a decline of 4.6% in the first half of last year in BiH. The rate of industrial production in the euro area is also negative, and according to business cycle indicators, a negative GDP growth rate can be expected in the euro area, which will spill over into BiH, which is dependent on its economic partners,

<sup>3</sup> <https://www.rcc.int/balkanbarometer/home>

Since 2013, UNDP is implementing a five-year Green Economic Development Project<sup>4</sup> financed by Sweden, the Environmental Fund of the FBiH and the Environmental Protection and Energy Efficiency Fund of RS. The Project aims to institutionalize the energy management activities within the public sector buildings in BiH. Those activities are in line with the EU and the Energy Community Treaty. Project components include strengthening institutional capacities, institutionalization of energy management, establishment of financial mechanisms and legislative framework, implementation of infrastructure measures, raising public awareness, installing renewable energy sources for off-grid households. So far, the following achievements in BiH have been achieved through the Project:

- Energy management institutionalization has been introduced in 8 cantons; and the Decision on obligatory EMIS data input is adopted in 6 cantons
- Two Energy Efficiency Action Plans developed
- Over 2,200 users have been trained to use the EMIS system
- Over 270 detailed energy audits on public sector buildings conducted to identify the most effective measures to improve energy efficiency
- Study Green jobs “Analyzing the Employment Impact of Energy Efficiency Measures in BiH “ developed
- First “Typology of Public Buildings in BiH “ developed
- Energy efficiency retrofits conducted on 196 public buildings across the country
- Modernization of public lightning system implemented in nine municipalities
- Over 67,700 citizens participated in educational events and workshops.

	<p><b><u>Target 8.4: Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead</u></b></p>	
<p><b><u>Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable</u></b>  <b><u>Target 11.4: Strengthen efforts to protect and safeguard the world’s cultural and natural heritage</u></b></p>		
	<p><b><u>Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss</u></b>  <b><u>Target 15.a: Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems</u></b>  <b><u>Target 15.b: Mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation</u></b></p>	
<p>Improve natural resources efficiency and develop sustainable economic activities as means to reduce or improve the trade-off between socioeconomic and environmental dimensions, spurring economic growth and safeguarding the environment.</p>		
<p>The country has an extremely valuable natural heritage and many national economic activities are based on the exploitation of natural resources, such as those related to forests (wood and wood products industries) and to water (energy sector).</p>		
<p>Economic growth could be hampered both by degradation of natural capital and by limiting expansion of economic activities to protect natural resources. Bosnia and Herzegovina should modify current highly polluting consumption and production behaviours and spur green economic activities, including sustainable tourism, together with increasing expenditures for the preservation, protection and conservation of all of its natural heritage, and strengthening efforts to mobilize national and international financial resources.</p>		

Forests are among the most important natural resources of BiH.<sup>5</sup> Due to their diverse structure, and the potential for natural regeneration, forests are very important for the economic development of the country. Data from the second state forest inventory, taken from the FAO report “Analysis of the forestry sector in BiH 2015”<sup>6</sup>, indicate that forests and forest lands cover an area of 3.2 million hectares, of which 1.6 million hectares are high forests, 1.2 million hectares are coppice. forest, and the remaining part is characterized as other forest land (shrubs, bare lands and other forest land). These data indicate that about 63% of the territory is covered

<sup>4</sup> [www.ba.undp.org/content/bosnia\\_and\\_herzegovina/en/home/climate-and-disaster-resilience/GED.html](http://www.ba.undp.org/content/bosnia_and_herzegovina/en/home/climate-and-disaster-resilience/GED.html)

<sup>5</sup> [http://d2ouvy59p0dg6k.cloudfront.net/downloads/wwfhcvf\\_vodic\\_bih\\_verzija\\_za\\_web\\_1.pdf](http://d2ouvy59p0dg6k.cloudfront.net/downloads/wwfhcvf_vodic_bih_verzija_za_web_1.pdf)

<sup>6</sup> <http://www.fao.org/3/au015e/au015e.pdf>

by forests and forest land, which ranks BiH among the most forested countries in Europe. In terms of ownership structure, 72% of high forests are state-owned, while 62% of coppice forests are privately owned. State forests are characterized by higher profitability and systematic management.

The geographical heterogeneity of the country conditions the emergence of spatially clearly differentiated forest ecosystems, so that coniferous forests, mixed forests at medium altitude, and deciduous forests in lowlands and lowland areas spread in the mountains. BiH is characterized by a great diversity of forest types. Data from the second state forest inventory show that the annual volume of felling is 5.7 million m<sup>3</sup> (10-year average), and that the annual increment is higher than 11 million m<sup>3</sup>. In addition, secondary forest products are produced, especially medicinal and aromatic plants, with an estimated 85% of production being exported and unplaced secondary forest products being used for personal consumption. Given the diversity of species and ecosystems, forests in BiH play an important role in terms of biodiversity protection.

Pursuant to Decision 3 / COP 8, UNCCD member countries adopted in 2007 a “10-year Strategy to Improve the Implementation of the Convention (2008–2018)”. The key instruments for the implementation of the UNCCD Convention are national action plans. BiH, as a signatory to the Convention, prepared the National Action Plan (NAP BiH), and thus joined the fight to combat desertification / land degradation.

Soil Degradation Neutrality (LDN) is a new initiative that aims to stop the active loss of healthy soil due to its degradation. Unlike earlier approaches, LDN aims to manage land degradation by promoting a two-way approach to measures to avoid or reduce land degradation, along with reversal measures (reversing the effects) of earlier degradation. The goal is to balance the losses over time, in order to achieve a state in which there is no net loss of fertile land by 2030. BiH has joined the LDN initiative, thus showing interest in avoiding or reducing land degradation.

BiH is also Party to multilateral environment agreements (MEAs), including those related to biodiversity. Activities on the implementation of these multilateral agreements related to biodiversity are carried out through the preparation and preparation of reports submitted to their secretariats, preparation, development and implementation of projects, through participation in domestic and international conferences related to capacity building, exchange of knowledge and experience and technical support, by the participation of focal points in the Conferences of the Parties to these agreements.

The 2017 National Biodiversity Strategy and Action Plan (NBSAP) for the period 2015–2020 is a continuation of global strategic planning and reporting under the United Nations Convention on Biological Diversity (CBD). NBSAP is a basic document of nature protection in BiH that provides a detailed overview of the state of biological diversity until 2014 and is the basis for assessing the state in the coming period. The national goals for biodiversity conservation in the NBSAP are set based on the priorities and specifics and are harmonized as much as possible with the Strategic Plan 2011–2020, taking into account overall economic, social and cultural development countries. The document also contains a proposal of indicators for each of the national goals, an action plan with measures to be implemented in the next 5 years, as well as implementation plans that serve as a tool for successful and facilitated implementation of the NBSAP. In accordance with the NBSAP, five priority national targets have been identified. One priority to which it is necessary to pay attention as soon as possible was chosen from each strategic direction (A, B, C, D and E). The five priority national biodiversity targets of BiH are:

1. By 2020, increase the level of public awareness on biodiversity protection
2. By 2020, establish a system of industrial and municipal wastewater treatment, and monitoring the consumption of pesticides and fertilizers
3. By 2020, map the specific biological diversity of BiH (canyon, mountain, high mountain and wetland ecosystems, karst fields and alluvial plains) and urgently protect it in accordance with valid spatial documents
4. By 2020, map and evaluate the benefits of forest, agricultural and aquatic ecosystems, and strengthen the environmental permitting mechanism and surveillance inspection within protected areas, areas of special interest and areas of the Natura 2000 ecological network plan
5. By 2017, prepare and adopt a strategy for the mobilization of financial resources for the conservation of biological diversity.

It is important to point out that the priorities are determined and based on sectoral and multidisciplinary analysis and transparency, and on democratic principles and with the participation of all stakeholders.

The first step in BiH to establish a European Ecological Network for the Conservation of Wild Flora and Fauna (EMERALD) was the World Wildlife Fund (WWF) project of the Mediterranean Programme Office (MedPO) “Living Heart of Europe” to support the implementation of the European ecological network NATURA 2000 in BiH, which was completed in 2011. Currently the percentage of protected area in BiH is 2.7% of the territory or 1367 km<sup>2</sup>, and the increase in the area of protected areas is planned through project activities.

In 2015, BiH completed the implementation of the project entitled “Assistance in the Implementation of the Directive on Wild Birds and Habitats in BiH–Establishment of NATURA 2000”. The selection and delimitation of the draft protected areas within the project is based on the scientific criteria, which are determined by these two directives. A total of 122 areas have been defined, covering an area of 9,567.7 km<sup>2</sup>, which represents 18.63% of the territory of BiH. The following projects related to nature protection are currently being implemented:

1. “Achieving the conservation of biological diversity through the establishment and effective management of protected areas and capacity building for nature protection in BiH”. The project will contribute to the goals of the NBSAP. It aims to overcome the basic problems identified in strategic documents and policies for nature protection in BiH, such as an underdeveloped network of protected areas (the lowest percentage of protected areas in Europe), lack of biodiversity monitoring and weak financial framework for nature protection.
2. “Support to BiH for the preparation of the 6th National Report of BiH for the Convention on Biological Diversity”. The project is expected to improve national decision-making processes; make reports on progress towards achieving the Aichi Biodiversity Goals; and information on the global biodiversity strategy for the period 2021–2030.

Sustainable use of natural resources is predominantly found in legal acts on nature protection adopted at Entity and BD levels (Law on Nature Protection of FBiH (OG FBiH No. 66/13), Law on Nature Protection of RS (OG RS No. 20/14) Law on Nature Protection of BD (OG BD No. 24/04, 1/05, 19/07 and 9/09)). These are the basic legal acts governing nature protection, as well as the sustainable management of protected areas and the procedure for their protection.

One of the ways to ensure sustainable forest management is through Forest Stewardship Council (FSC) certification. Certification of forests in FBiH and RS is carried out in accordance with the FSC certification scheme. Only around 75% of forests in BiH have been certified.



**Goal 12: Ensure sustainable consumption and production patterns**

**Target 12.5: By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse**

**Target 12.6: Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle**

**Target 12.7: Promote public procurement practices that are sustainable, in accordance with national policies and priorities**

**Target 12.c: Rationalize inefficient fossil-fuel subsidies that encourage wasteful consumption by removing market distortions, in accordance with national circumstances, including by restructuring taxation and phasing out those harmful subsidies, where they exist, to reflect their environmental impacts. taking fully into account the specific needs and conditions of developing countries and minimizing the possible adverse impacts on their development in a manner that protects the poor and the affected communities.**

The country should ensure socio economically and environmentally sustainable consumption and production patterns as means to increase the quality of life while reducing the use, degradation and pollution of resources.

Waste, polluted air and water are serious problems in the country. Relevant institutions of Bosnia and Herzegovina, in cooperation with the governments of Republika Srpska, Republika Srpska and the Brčko District, should address business and the population of BiH using a wide range of available instruments, such as awareness raising campaigns and implementing all measures that are effective in changing behavior and encouraging households and businesses to adopt sustainable practices.

Waste prevention, as one of the measures to reduce waste generation, is certainly the most desirable method for solving the problem of waste management. If waste is avoided, the need for waste collection and disposal, and thus the pressure on the environment, will be eliminated. The generation of waste cannot be prevented, but certain activities (measures) can be taken to reduce its generation. Waste prevention can be achieved by applying the following measures:

The Agency for Statistics of BiH monitors resource efficiency through reporting on resource productivity as the ratio of GDP and domestic material consumption—an indicator which indicates the efficiency of resource where it is desirable production more economic value with the possible lower consumption of material resources.

In BiH, the resource productivity decreases in the period 2010–2014. It is caused by a significant increase of domestic material consumption, compared to a mild growth of GDP. In the reporting period the gross domestic consumption and domestic material consumption did not grow in parallel, and there is a clear separation between economic and environmental variables. As the value of resource productivity in the reporting period are significantly lower than the value of GDP, it cannot be considered that there is a separation of the links between resource use and economic growth.

A range of policy instruments could be applied to ensure sustainable production and consumption: regulations, upstream measures alongside waste treatment regulations, market based instruments, green public procurement, voluntary actions from industry including participation in information exchange, or increasing re-use or the recycled content in products.

The Public Procurement Strategy for BiH for the period 2016–2020 states the need to promote green public procurement but its Action Plan does not foresee any activity related to promotion in the planning period. Detailed analysis of implementation status of existing instruments showed that they do not contribute to the overall sustainability. For example, the recycling targets for plastic packaging are frozen for the next five years (in FBiH to 16%; with no information on increase in recycling rates in RS which is currently set at 20% in 2018). Another example are eco-labels that have been awarded until now only to three companies, although this instrument can serve as an incentivizing mechanism for the food and beverage sector. There is an operating recycling plant for PET (Omorika in Dobo) that, due to lack of consultation between sectors including system operators, is forced to import 30% of PET from the region. All these existing issues indicate there is a room for improvement in implementation of policy instruments that are already in place. On the other hand, BiH lacks instruments such as incentives, landfilling taxes and bans that would prevent packaging waste going to landfill (92% of registered landfills are characterized as non-compliant).

In public sector there is an opportunity for pilot projects regarding green public procurement or eco-label awards that can also contribute to better cooperation between producers and relevant ministries that award them. In industry sector there is lack of education and training programmes as well as the implementation of resource efficiency measures and lack of R&D is observed.

Since the introduction of the system on Extended Producer Responsibility for packaging in 2012 and Waste Electrical and Electronic Equipment (WEEE) in 2013, a move towards promotion of separate collection, reuse and recycling is achieved. In FBiH, the highest ratio of collected packaging waste (in relation to one placed on market) was 42% in 2016. It should be noted that announced recycling rates need to be taken with caution, considering BiH's problem of non-reporting on full packaging placed on market, which makes recycling targets seem easily reachable. According to a 2017 World Bank report, expert assessment of the total amount of non-registered packaging exceeds 50%. As the regulations on WEEE management exist only in FBiH, Environmental Fund of FBiH is collecting data on the amount of placed equipment across BiH, while the fees under the Rulebook are paid only in FBiH. According to the Environmental Fund of FBiH data, 15,587 t of EE products were placed on the FBiH market in 2017 that is 14% less in 2013.


Progress has been observed in collected quantities of WEEE by system operators (Zeos Eko Sistem and Kim Tec Eko), as well as in treated quantities. WEEE collected in BiH is treated in BiH or exported. Small and large household appliances are treated in BiH, including first level of treatment of TVs and monitors, while fridge, freezer, bulb and cathode tubes from the TV screen and monitors are treated abroad. WEEE is being exported because there is no treatment technology in BiH.



With the introduction of packaging waste system operator Euro Beta there has been improvement in separate collection of packaging waste (mostly targeting industrial sector rather than municipal that numbers most of packaging quantities). In RS the highest ratio of collected packaging waste (in relation to one placed on market) was 35% in 2017. The only adopted document that links public procurement and waste management is Amendment to Waste Management Law in RS from 2018 (OG RS No. 111/13, 106/15 and 16/18) that envisages promotion of waste prevention through public procurement. No implementation so far.

No Extended Producer Responsibility system, or other policy instruments that would boost sustainability in production or consumption patterns have been introduced in BD.

### Box 4.1: Target 12.8 of the 2030 Agenda for Sustainable Development



**12**  
RESPONSIBLE  
CONSUMPTION  
AND PRODUCTION

**Goal 12: Ensure sustainable consumption and production patterns**

**Target 12.8: By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature.**

Goal 12 will require a strong national framework for sustainable consumption and production in Bosnia and Herzegovina, a framework that is integrated into national and sectoral plans and business practices in order to have an impact on citizen behaviour. This would have to be coupled with the implementation of international norms as regards the management of hazardous chemicals, waste and air pollution, etc.

There is a lack of various indicators and environmental information and data to create an overall image of the state of the environment in Bosnia and Herzegovina. Nor is there a joint (or central) programme for environmental monitoring and information management at the state level that could provide a consolidated overview of all citizens and legal residents in Bosnia and Herzegovina. Consequently, environmental information is not only fragmented and incomplete but also difficult for citizens to access and understand as it is spread across institutions and platforms.

In order to achieve Target 12.8, Bosnia and Herzegovina should:

- (a) Improve accessibility to environmental information and data with regard to sustainable development and raise awareness of how citizens might improve their lifestyles in harmony with nature;
- (b) Raise awareness based on environmental information;
- (c) Ensure dissemination of environmental information to the public.

BiH is Party to the Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention). Although BiH signed the PRTR Protocol to the Aarhus Convention, due to insufficient resources the ratification of the Protocol was stopped. In addition, BiH has not ratified yet the Amendments to the Aarhus Convention (Almaty, Kazakhstan).

The Agency for Statistics of BiH collects data obtained through statistical surveys, such as the annual report on collected waste and the annual report on disposed waste. Completed survey forms are submitted by PUCs and other companies that have a permit for waste collection and disposal, as well as operators that operate landfills and waste treatment facilities. Every natural and legal person has the right of access to information under the control of a public authority, and every public authority has an appropriate obligation to communicate that information to the applicant for access to information.

There are currently three Aarhus Centres in BiH: the first was opened in Sarajevo in 2012. A year later, Aarhus centres were opened in Tuzla and Banja Luka. Aarhus Centres support the state in reporting on the implementation of the Aarhus Convention in BiH as well as on strengthening the interaction between citizens, the state and the private sector.

As a Party to the Convention, BiH has so far prepared 3 national reports on the implementation of the Aarhus Convention (2011, 2014 and 2017). In 2017, NGO organizations in BiH prepared the report Environmental Democracy: Progress Unreported–Aarhus Convention Shadow Implementation Report BiH 2017, according to which the publication of environmental information by BiH authorities is still insufficient.

In BiH, public has access to limited environmental information and data. Some efforts have been made by the relevant environmental authorities, at the state, entity and canton levels, to increase public awareness with

regard to citizens' rights to environmental protection and environmental issues. Examples include the preparation of promotional materials for Earth Day, World Water Day and the World Environment Day. In addition, some public TV services produce TV shows which cover environmental topics (for example BHT1–TV show Ekologika). However, this is still not enough to ensure the widespread of environmental information to the public.

In FBiH, free public access to environmental information is ensured through the Law on Free Access to Information (OG FBiH No. 32/01 and 48/11) which requires public bodies to provide information to stakeholders upon request or on their own initiative and the Law on Environmental Protection (OG FBiH No. 33/03 and 38/09) which introduced a certain right related to free public access to information on environmental issues. EU Directive 2003/4/EC on public access to environmental information is partially transposed into FBiH legislation (approx. 62%). In 2012, the Ministry of Environment and Tourism installs the application for entering data into the electronic database of the BH PRTR (BiH Pollutant Release and Transfer Register) in accordance with the European methodology (E-PRTR). Data from the FBiH PRTR are available on the website of the Ministry.<sup>7</sup>

In RS, free public access to environmental information is ensured through the Law on Freedom of Access to Information of RS (OG RS No. 20/01) which deals with all information, including environmental information. The Law on Environmental Protection (OG RS No. 71/12 and 79/15) also introduced certain rights regarding free access to environmental information. Although the majority of provisions of the EU Directive 2003/4/EC on public access to environmental information have been transposed into RS legislation, the harmonisation is still not complete. Since 2017, the Hydrometeorological Institute, through the official website, has been publishing data on submitted reports to the PRTR register of RS, thus enabling public access to data.<sup>8</sup>

In BD, free public access to environmental information is ensured mainly through the Law on Environmental Protection (OG BD No. 24/04, 1/05 19/07 and 9/09), which introduced certain rights related to free access to environmental information. EU Directive 2003/4/EC on public access to environmental information is only partially transposed into BD legislation.

PRTR register in BD is still not in function.

### Box 5.1: Targets 11.4 and 14.c of the Agenda 2030 for Sustainable Development



**Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable**

**Target 11.4: Strengthen efforts to protect and safeguard the world's cultural and natural heritage**

**Indicator 11.4.1: Total expenditure (public and private) per capita spent on the preservation, protection and conservation of all cultural and natural heritage, by type of heritage (cultural, natural, mixed and World Heritage Centre designation), level of government (national, regional and local/municipal), type of expenditure (operating expenditure/investment) and type of private funding (donations in kind, private non-profit sector and sponsorship)**

Bosnia and Herzegovina has appropriate legal measures in place for the protection of cultural heritage, in particular the 2002 Law on Implementation of Decisions of the Commission to Preserve National Monuments, the 1985 Law on the Protection and Use of Cultural, Historical and Natural Heritage of SR Bosnia and Herzegovina and the 2006 Law on Spatial Planning and Land Use of the Federation of Bosnia and Herzegovina, accompanied by other related laws and regulations. The country also has inventories for cultural heritage in place, at the state and entity levels.

Challenges remain in effectively ensuring that development pressures do not threaten conditions of integrity and the conservation of the properties. To this effect, heritage protection services need to have the necessary measures in place to prevent and mitigate potential negative impacts.

BiH is continuously striving to inscribe new goods and heritage on the UNESCO lists, and The UNESCO list includes a total of 3 protected cultural assets and 11 cultural and natural assets are included in the Tentative list.

<sup>7</sup> <http://www.fmoit.gov.ba/bs/okolisne-dozvole/registri-i-izvjesivanje>

<sup>8</sup> [rhmrzrs.com/zivotna-sredina/registar-postrojenja-i-zagadivaca/](http://rhmrzrs.com/zivotna-sredina/registar-postrojenja-i-zagadivaca/)

The Commission for Preservation of National Monuments is an institution of BiH responsible for the protection of the cultural and historical heritage, including international co-operation in this field. Since 2006, the Commission has been conducting a campaign to raise awareness of the importance of heritage among the general public, with a special focus on young people. The aim is to acquaint young people with the importance and significance of heritage, as well as with the responsibility that each individual has in its protection. The campaign includes a special educational project “My Bosnia and Herzegovina–my heritage” through various stages (lectures, workshops, visits to museums, monuments, independent work) to raise awareness of young people about the importance, responsibility and heritage protection. Every year, the Commission, together with the Faculty of Architecture in Sarajevo, invites final year students to participate in the work of the Commission's projects. This gives students the opportunity to expand their knowledge of the heritage of BiH and the problems that accompany heritage, as well as to be involved in special heritage protection activities. Students participate in projects that review the current state of goods and implement emergency protection measures.

The Commission has also carried out activities of exceptional importance aimed at educating the general public about the heritage of BiH, its importance and potential for sustainable development. Through adequate use of heritage, the following activities were realized:

- The exhibition “Cultural Memory–a Vanishing Treasure” (formed in 2003) presents the diversity and richness of the heritage of BiH and shows the degree of endangerment of valuable cultural monuments.
- Organizing or participating in heritage protection workshops.
- The development of management plans for goods inscribed on the UNESCO Tentative List aims to ensure the sustainable development of archaeological sites, historical sites and architectural units. The Commission engages local authorities, domestic experts and NGOs in the planning process.

The UNESCO World Heritage Committee, within the framework of its 40th session held in Istanbul, decided to inscribe the Stećci Medieval Tombstone Graveyards on the World Heritage List<sup>9</sup>. By the decision of the Committee, 28 necropolises were inscribed on the World Heritage List as a serial nomination, which is the culmination of six years of work by experts from Croatia, BiH, Montenegro and Serbia, which included experts from the Commission to Preserve National Monuments of BiH. All countries have shown commitment to this work through a series of activities–establishing permanent and consistent cooperation since 2009, when the Letter of Intent was signed, establishing a coordination mechanism for drafting the nomination, Management Plan and joint professional work–sustainable governance for the benefit of present and future generations. In the coming period, it is expected to continue activities on the full implementation of the decisions of the Commission and the Management Plan, as well as protection measures that include conservation, restoration and presentation of these goods.



**Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development**  
**Target 14.c: Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in UNCLOS [the United Nations Convention on the Law of the Sea], which provides the legal framework for the conservation and sustainable use of oceans and their resources, as recalled in paragraph 158 of The Future We Want**

**Indicator 14.c.1: Number of countries making progress in ratifying, accepting and implementing through legal, policy and institutional frameworks, ocean-related instruments that implement international law, as reflected in the United Nations Convention on the Law of the Sea, for the conservation and sustainable use of the oceans and their resources**

Bosnia and Herzegovina is a party to UNCLOS by succession. UNCLOS is seen as the “sea constitution”, which is supported by a number of conventions in all sectors (such as those of the International Maritime Organization, the Barcelona Convention and the Convention on Biological Diversity), which means that any ratification contributes to the implementation of UNCLOS. In this regard, the ratification of the 1995 Amendments to the Barcelona Convention and its protocols will help Bosnia and Herzegovina to progress in the achievement of Target 14.c.

In the definition of the domestic indicator and its corresponding target, Bosnia and Herzegovina may wish to take into consideration activities towards the implementation of UNCLOS, such as the elaboration and effective implementation of a management plan for the coastal area.

<sup>9</sup> <https://whc.unesco.org/en/list/1504/>

BiH has not ratified the 1995 Amendments to the Barcelona Convention and its protocols (table 1). However, activities regarding the management plan for the coastal area have been implemented. The National Action Plan for the Mediterranean region in BiH was developed in 2015 with the support of the Mediterranean Action Plan (MAP) and adopted by the Council of Ministers in October 2017. Four geographical areas were considered: Krka & Cetina, Neretva, Trebisnica River Basin and coastal area of Neum. The Plan includes a gap analysis between the existing situation in targeted areas and the desired requirements and targets set by the relevant policies and plans. The overarching outcome of the gap analysis is a list of legal, policy and technical issues which need to be effectively addressed under the relevant ecological objectives (EO5 on eutrophication, EO9 on contaminants and EO10 on marine litter).

The surface water and groundwater of BiH belong to the catchment areas of the Black and the Adriatic Sea. In the water basin area of the Adriatic Sea, one of coastal waters is represented by Neum Bay. Therefore, in addition to land waters, the territorial jurisdiction of BiH is part of the Adriatic Sea along the coast of the Municipality of Neum and part of the Channel of Mali Ston. Coastal water monitoring in FBiH has been carried out since 2012, by conducting biological monitoring of coastal waters in the area of Neum. Monitoring of bathing waters in the coastal sea area is carried out regularly at three measuring stations located in the area of Neum. The Adriatic Sea Watershed Agency in Mostar developed the Water Management Plan for Adriatic Sea Basin in FBiH 2016–2021, which is still in force. A new Plan is under development for the period 2022–2027. The current plan contains measures for water management and for achieving and maintaining good status of the coastal waters in the area of Neum

Not applicable to RS and BD due to the fact they do not have a territory connected to the sea.

## Box 5.2: Target 6.5 of the 2030 Agenda for Sustainable Development



### **Goal 6: Ensure availability and sustainable management of water and sanitation for all**

**Target 6.5: By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate**

**Indicator 6.5.2: Proportion of transboundary basin area with an operational arrangement for water cooperation**

Bosnia and Herzegovina is active in transboundary water cooperation. However, not all transboundary waters shared by Bosnia and Herzegovina are covered by transboundary water agreements. The Drina River Basin is not covered by water arrangements between Bosnia and Herzegovina, Serbia and Montenegro.

In the definition of the domestic indicator and its corresponding target, the Governments may wish to take into consideration the globally agreed Indicator 6.5.2, as this would constitute an important and needed driver to strengthen integrated water resources management at transboundary level.

The Drina River Basin is not covered by water arrangements between BiH, Montenegro and Serbia. However, projects regarding the transboundary water cooperation on the Drina River Basin were performed. UNECE developed an assessment of the water-food-energy-ecosystems nexus, linked with a study of benefits of transboundary cooperation, in the Drina River Basin, mainly shared by BiH, Montenegro and Serbia which was carried out from 2016 to 2017 in the framework of the Programme of Work of the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention). The assessment identifies significant benefits in the development of a common approach to improve water quality between basin-sharing countries. Initiatives to strengthen information by sharing in this critical area could build on successful river basin management planning and data management processes in the region, notably those in the framework of the International Sava River Basin Commission, the Drina River being a tributary of the Sava.

Representatives of three riparian countries of the Drina River Basin also discussed recommendations of the Drina River Basin Nexus follow-up project conducted in 2018–2019 under the Water Convention. The project is a follow-up of Greening economic development in Western Balkans trough applying a nexus approach and identification of benefits of transboundary cooperation project, implemented by UNECE, with the aim to

ensure a sustainable future for the Drina River, the economies of the three countries, as well as people living by the Drina River<sup>1011</sup>.

### Box 5.3: Target 12.1 of the 2030 Agenda for Sustainable Development



**Goal 12: Ensure sustainable consumption and production patterns**

**Target 12.1: Implement the 10-year framework of programmes on sustainable consumption and production, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries**

**Indicator 12.1.1: Number of countries with sustainable consumption and production (SCP) national action plans or SCP mainstreamed as a priority or a target into national policies**

Bosnia and Herzegovina does not have action plans at state or entity level on SCP, neither has SCP been mainstreamed in national policies' strategic documents. The country also does not participate in the 10-Year Framework of Programmes (10YFP) on Sustainable Consumption and Production Patterns. Bosnia and Herzegovina should establish national or entity-level action plan/s on SCP, with specific targets and indicators.

When it comes to recycling rates BiH lags behind and currently only about a tenth of the EU28 average is recycled (data from 2012). Environmental taxes in BiH are higher than in other EU countries in terms of their share in total taxes and social benefits, and incentives for the use of renewable energy sources (RES) and Energy Efficiency (EE) are too small.

Although no indicators would shed light on what is happening with public procurement in terms of resource efficiency, a cursory glance at the most important thousand items of public procurement, shows that these are high-energy products. Namely, among the first five subjects are: construction works, technical design services, electricity, works on the construction of pipelines, communication and energy lines and construction works, works on the construction of foundations and works on the construction of the surface layer of motorways. In a country with a large number of unemployed, this could increase employment.

However, the roadmap for sustainable production and consumption in BiH needs to be developed.

### Box 6.1: Targets 1.5, 11.B, 13.1, 13.2 and 13.3 of the 2030 Agenda for Sustainable Development



**Goal 1: End poverty in all its forms everywhere**

**Target 1.5: By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters**

The 2013 Climate Change Adaptation and Low-Emission Development Strategy recognizes the serious implications of the exposure and sensitivity of agriculture to climate change for the poor and those in vulnerable situations, as it negatively impacts on households and household budgets. The Strategy strives to increase resilience to climate variability and climate change.

Bosnia and Herzegovina should develop and implement specific measures to target the resilience of the poor and those in vulnerable situations in order to reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters.

After the dramatic floods in 2014, the Action Plan for Flood Protection and River Management in BiH 2014-2017 was adopted by the Council of Ministers of BiH in 2015. The Action Plan defines 6 key measures, i.e. 22 sub-measures, which need to be implemented in the water sector in BiH, and whose implementation reduces existing and prevents future flood damage, protects the endangered population and economy. The Plan referred to the time period 2014-2017, but the funds provided for its implementation were not spent until the end of 2017, which is why the Council of Ministers, in March 2018, extended the validity of this document until the

<sup>10</sup> <https://unece.org/environmental-policy/events/launch-workshop-follow-project-water-food-energy-ecosystems-nexus>

<sup>11</sup> <https://unece.org/environmental-policy/events/final-workshop-assessing-water-food-energy-ecosystems-nexus-and>



end of 2021. when it is planned to adopt water management plans / regional river basins in BiH in the second planning cycle and to adopt flood risk management plans throughout BiH.

As part of the EU Flood Recovery Programme, flood and landslide hazard maps have been created. During the development of the maps, data for RS were collected from available spatial planning documents, as well as from flood hazard maps, which were published in the Preliminary Flood Risk Assessment (PFRA). Data for FBiH were collected from preliminary flood risk assessments of the Sava River Basin District Agency and the Adriatic Sea River Basin District Agency. Data for BD were obtained from the Department of Agriculture, Forestry and Water Management–Subdivision for Forestry and Water Management.

Based on the collected data, 131 floodplains were identified as significantly endangered. These areas are located in a total of 71 municipalities with the highest risk of floods. Also, a map of landslide hazards that pose a risk to the housing sector has been developed. The main landslide-prone areas are in the northern part of BiH, while the remaining landslides are in central Bosnia and in the southern parts of BiH.

The most important projects through which additional financial resources will be provided, and which can be realized in the timeframe to which the Action Plan refers, are:

- IDA WB loan for the Drina River Basin Flood Protection Project, in the amount of US\$24 million,
- IPA 2014 support for flood protection and water management, national component, in the amount of €15 million,
- IPA 2014 reconstruction and construction of infrastructure for flood protection, regional cooperation BiH-Serbia in the amount of €10 million,
- WBIF development of flood hazard and risk maps in the amount of €3.38 million,
- GEF-SCCF water management project in the Drina River Basin in the amount of 4 million KM,
- Project “Integrating Climate Change into Flood Risk Reduction in the Vrbas Basin” in the amount of US\$5 million.



**Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable**

**Target 11.B: By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015–2030, holistic disaster risk management at all levels**

The 2013 Climate Change Adaptation and Low-Emission Development Strategy recognizes the need to incorporate climate change into risk assessment and risk reduction planning processes, with particular emphasis on floods and forest fires.

Bosnia and Herzegovina should successfully implement the Strategy in order to ensure that government at all levels is able to understand and effectively integrate climate change vulnerability and risk reduction approaches into policies and programmes.

BiH became a member of the UNFCCC in 2000, and the Kyoto Protocol in 2008. Following the ratification of the Convention, BiH established an appropriate political, institutional and legal framework to meet its obligations under the Convention. According to the Convention, BiH has the status of a developing country, which means, among other things, that it has an obligation to report on GHG emissions and to participate in international cooperation mechanisms to reduce emissions and adapt to climate change. Based on a mutual agreement between the two relevant entity institutions, the focal point to UNFCCC is the RS Ministry of Physical Planning, Construction and Ecology of RS.

In terms of international obligations on climate change mitigation and adaptation, BiH supports the principle of common but differentiated responsibilities. Economy and other specifics should be considered when determining the transition period for the transition to a low-carbon economy. The goal of the low-carbon strategy is to create synergies with the concept of developing new green businesses and the economy, the concept of a circular economy and minimum waste generation.

BiH is considered a party not included in Annex I, i.e. it is classified as a developing or transition country. This allows BiH to participate in the Clean Development Mechanism (CDM) with three registered projects.

The 2013 Strategy for Adaptation to Climate Change and Low Carbon Development for BiH for the period 2013–2025 is currently updated with the support of UNDP. The strategy defines measures related to mitigation of the consequences of climate change. The strategy's strategic goal is to increase BiH's resilience to climate variability and climate change, while preventing environmental degradation and gradually reducing GHG emissions. Integration into all relevant sectors remains slow, mainly due to lack of knowledge and institutional capacity.

The commitment to participate in global efforts aimed at mitigating and adapting to climate change in BiH has been demonstrated by the signing of the Paris Agreement. As a contribution to the fulfilment of the Paris Agreement, the country adopted the Intended Climate Change Mitigation Activities (INDC) for the period until 2030. According to the scenarios developed within the INDC, the highest level of GHG emissions is reached in 2030, when according to the baseline scenario, 20% higher emissions are expected than the 1990 level of emissions. As an unconditional goal of reducing GHG emissions, BiH has set a goal of a 2% reduction in 2030 in relation to emissions according to the baseline scenario. The conditional target (with more international assistance) is to reduce emissions by 3% compared to 1990 emissions.

In RS, the Law on Air Protection stipulates that the Hydrometeorological Institute of RS is responsible for compiling the GHG inventory. However, appropriate bylaws regulating inventory management have not yet been adopted. In FBiH, the Hydrometeorological Institute of FBiH is working to collect data on air emissions, including GHG, but the competence is not clearly defined.

By signing the Agreement on the Establishment of the Energy Community, BiH has, among other things, committed itself to transposing the EU acquis, i.e. to transpose and implement the relevant EU directives and regulations on climate change and energy. The most important aspects, whose transposition process began almost a decade ago, are encouraging the use of RES, increasing energy efficiency and establishing a system for collecting, reporting and verifying GHG emissions. So far, BiH has produced and submitted three reports on climate change and two biennial reports on GHG emissions. Within these documents, inventories of GHG emissions for the period from 1990 to 2014 were prepared and submitted to the UNFCCC Secretariat. The inventory for 2015 and 2016 is being prepared.

In 2018, BiH adopted the Framework Energy Strategy of BiH until 2035. The strategy contains the basic principles of climate policy that are not sufficiently translated into concrete measures. According to the Strategy, the long-term vision of energy in BiH is to create a competitive and long-term sustainable energy system, having in mind the aspect of security of supply. In order to achieve this vision, five key priorities and related focus areas have been defined:

- Efficient use of resources: long-term development of the energy sector implies reduction of pollutant emissions and energy production from fossil fuels, therefore future activities of coal exploitation and production are to be carried out more efficiently, applying adequate technology and methods; a future stronger orientation towards cleaner energy, which today is based predominantly on hydropower potentials, requires good management of natural resources; fulfilling the vision includes digitalization, new technologies and IT systems that enable cost reduction, better work and new business models.
- Safe and affordable energy: BiH cannot independently achieve energy security in all segments, primarily due to the lack of own oil and gas production; BiH's energy mix is relatively price-competitive, but further price pressures can be expected in the coming period, which could negatively affect competitiveness; strong planning of capacity building in today's price conditions and EU policy raises the risk of rising fixed costs and a potential decline in power plant utilization. This would create additional pressure on price competitiveness; keeping average production costs at current levels would be considered a good result in the long run, given all the pressures.
- Energy efficiency: modelled on the long-term vision of EU countries; energy savings in final consumption, the process of transformation, transmission and distribution of electricity, gas and heat, and the creation of conditions for highly efficient cogeneration and the promotion and expansion of efficient district heating

systems; improve the legal and regulatory framework for energy efficiency, define financial measures and the institutional framework for implementation, but also conduct info campaigns, education and training.

- Energy transition and environmental responsibility: cleaner energy and reduction of negative environmental impacts are high on the agenda; BiH aims to reduce emissions of sulfur dioxide by 95%, nitrogen oxides by 62% and particulate matter by 88% by 2028 compared to 2014 for large combustion plants; the goal was adopted RES that the share of RES in the gross final energy consumption by 2020 will be 40%; the next step is to develop a strategic environmental impact analysis (SEA) and an environmental strategy, which will adequately monitor the energy strategy.
- Development and harmonization of the regulatory-institutional framework: it implies extensive and substantial changes and comprehensive reform of the energy sector; the strategic goal is the accelerated harmonization of legislation with the acquis, i.e. the transposition and implementation of the obligations undertaken by the Treaty establishing the Energy Community; alignment of the energy sector with the Third Energy Package and future EU directives.

In order to meet the obligations arising from the Energy Community Treaty, BiH has adopted and EE action plans based on the entity action plans. According to preliminary analyses, BiH has met the target related to the share of RES in final energy consumption for 2020 (of 40% of RES in final energy consumption). The target on the share of RES in transport has not been achieved, the goal of energy efficiency has been partially achieved.

At the meeting of the Ministerial Council of the Energy Community at the end of 2017, BiH committed itself to drafting a national energy and climate plan in which it should define the goals, policies and activities of the energy sector decarbonisation process for the period 2021–2030.

BiH is working on the project “Improving the Climate Change Adaptation Plan (NAP) process for medium-term planning of investments in climate sensitive sectors in BiH”. The project will support BiH in improving the process of drafting the climate change adaptation plan and achieving the goals set out in the Paris Agreement and the 2030 Agenda. The Climate Change Adaptation Plan will build on the 2013 Climate Change Adaptation and Low Carbon Development Strategy. It is expected to improve adaptation to climate change with a focus on sectoral approaches, upgrading the knowledge base on adaptation, prioritizing medium-term adaptation interventions, building institutional capacity to integrate adaptation, and demonstrating innovative ways to finance climate change adaptation at entity, cantonal and locally.

This is an initial step in setting a general policy course for low-emission and climate resilient development, integrating more specific policies, measures and projects into sectoral strategies, and identifying existing possible adaptation and mitigation actions to attract international support. An INDC implementation plan is currently being prepared, which should be a guide to reducing GHG emissions in the coming years.

Green Cities is a programme of the European Bank for Reconstruction and Development (EBRD) offering a comprehensive business model for green urban development, combining strategic planning with investments and associated technical assistance. So far in BiH three cities are part of the EBRD Green City programme (Zenica, Banja Luka and Sarajevo). The GCAP will support the cities to develop green vision through energy efficiency, renewable energy and other sustainable measures. Two of the main strategic objectives in the GCAP are to reduce GHG emissions and as well as to adapt to climate change and natural disasters.

Zenica joined EBRD Green Cities in September 2018. A large steel-manufacturing business is located there. Local industry is a vital part of the economy, but it also creates environmental challenges for the city. Zenica aspires to introduce best practices through the implementation and development of an effective green model that would help combat major air-quality issues. Through the adoption and completion of a GCAP, the city would be able to drive forward sustainable and significant environmental projects to aid in a greener future. Key actions identified as part of the GCAP include the renewal of Zenica’s heat network infrastructure, expansion and replacement of the bus fleet with a transition towards low/zero emission buses, and new solid waste-handling infrastructure.

Banja Luka has also adopted the GCAP. The GCAP requires the implementation of several measures related to the mitigation of GHG emissions and adaptation and resilience to natural disaster risks. Measures to mitigate GHG emissions, which should be implemented in the period 2020–2021, are low transport emission policies

and refreshment of its Sustainable Urban Mobility Plan. Measures for adaptation and resilience to natural disaster risks for the same period are the development of a geographic information system (GIS) of land use and environmental database and creation of specific supporting urban planning guidance and tools.

Sarajevo is the third city in BiH to join the programme in 2018 and begin the development of a GCAP to identify, prioritise and address its most pressing environmental challenges. Through the GCAP, the Canton will have the opportunity to address its key challenge of air pollution, which derives from heavy traffic and solid-fuel-based heating. By systematically identifying green investment priorities, Sarajevo will be able to develop a green and sustainable vision for the Canton while revitalising its environmental and urban landscape.



**Goal 13: Take urgent action to combat climate change and its impacts**

**Target 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries**

One of the two main goals of the 2013 Climate Change Adaptation and Low-Emission Development Strategy is to increase resilience to climate variability and climate change, and in so doing secure development gains.

During the implementation of the Strategy, Bosnia and Herzegovina should take actions to strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in both entities and Brčko District.

In March 2017, BiH ratified the Paris Agreement on Climate Change (OG BiH No. 1/ 2017). With the Paris Agreement, BiH has committed itself to reducing GHG emissions by at least 40% by 2030 in order to mitigate the effects of global warming and stop further growth in air temperature. Work on the implementation of the Paris Agreement is ongoing.

BiH submitted its INDC to the UNFCCC Secretariat. Support is needed in strengthening the administration for its implementation and alignment with the EU climate acquis. The implementation of the INDC will require significant policy and investment changes within the climate change segment of BiH. Any future changes to existing INDCs will need to be considered in accordance with international requirements and in a process of broad consultation with all relevant parties.

Unpreparedness for climate change has a negative impact on economic growth in BiH, because due to floods, fires, earthquakes, economic growth is extremely slow. For example, in May 2014, some areas of BiH was ravaged by floods. These areas have not yet recovered economically. Also, air, water and soil pollution not only reduces the life expectancy of people, shortens and reduces working capacity, but also permanently and negatively affects the economic development of the country, because it directly affects natural resources, e.g. flora and fauna, agricultural production. As BiH is a small country, even small-scale natural disasters have heavy consequences on the economy, such as infrastructure.

According to climate models and scenarios, experts estimate that by 2100 temperatures in BiH will rise from 2.4°C to 4.9°C and there is a general trend of alternating extreme droughts and floods that have a detrimental effect on all human activities.

Annex I provides a detailed overview of the measures planned by individual sectors with indicators, indicative budget, time frame and expected results. Based on the audit of the implementation of measures from the previous strategy, a proposal of measures for the next period was given. When defining measures, sectoral priorities were taken into account, i.e. the current situation in certain sectors and the obligations that BiH has through international agreements.

For each measure, a short description is given with an emphasis on the main activities with a time frame for their implementation. Then, specific goals that are achieved by implementing a specific measure are listed. With specific targets, the emphasis is on the positive effects on the domestic economy and the reduction of GHG emissions. A link is given between individual measures and sectoral directives, i.e. which obligations BiH fulfils by implementing a certain measure. The effects of the measure sought to quantify the impact of measures on employment and reduction of GHG emissions and gave an assessment of other effects such as the impact on air quality, competitiveness and general sustainability of the sector. Finally, the approximate costs of preparation and implementation of each of the measures are given. Costs are estimated based on the current

unit costs of specific measures. Some measures include technologies that record a declining trend in specific investment costs (e.g. solar power plants, biomass power plants, wind farms, heat consumption meters) which is not considered.

The implementation of the Project “Improvement of the process of the Climate Change Adaptation Plan for medium-term planning of investments in sectors sensitive to climate change in BiH” is implemented in the period 2018–2012. The Climate Change Adaptation Plan further complements the 2013 Climate Change Adaptation and Low Emission Development Strategy.

In the third National Report on Climate Change of BiH, climate change mitigation is covered by the description and analysis of measures by individual sectors (electricity generation, district heating, buildings, transport, waste, and agriculture and forestry) in BiH. According to the Agreement on the Energy Community, BiH is obliged, by 2020, to achieve the share of renewable energy sources in the total energy consumption of 40% from the current 34%. This is expected to contribute to the reduction of GHG emissions in the electricity sector as well. Regarding the energy sector, one of the implemented measures is the construction of large hydropower plants (HPPs), and in the period 2014–2016, work began on the construction of several HPPs with a capacity of over 20 MW for each. The second measure is the construction of small HPPs, which was completed by 2016, with several small HPPs of total 60 MW capacity being built. Also, the construction of solar power plants was carried out, which lasted from 2014–2016.

Regarding the building sector, the research project “Typology of residential buildings in BiH “ has created the preconditions for more intensive activities to improve the energy efficiency of residential buildings, and thus the implementation of projects that will reduce GHG emissions caused by irrational energy consumption. Also, according to the Third Report, a measure has been implemented related to awareness-raising campaigns and education on energy saving opportunities without reducing comfort and the use of renewable energy sources for society as well as for individuals.

Regarding the transport sector, the implementation of the directives on emission reduction, more efficient motor vehicles and fuel quality in the period 2016–2020 has been implemented. The implementation of the measure for shortening traffic sections by building and modernizing road infrastructure is underway. BiH has taken measures which include limited import of vehicles which do not comply with the EURO 4 standard; established according to Directive 2003/76/EC B, in order to promote the import of new and electrical vehicles which do not have adverse environmental effects.

When it comes to the forestry sector, the implementation of the measure of increasing the area under forest in the amount of 2500 ha/year is in progress. Also, the implementation of forest protection against fire (as well as against diseases, pests and illegal logging) is underway.



**Target 13.2: Integrate climate change measures into national and entities policies, strategies and planning**

Climate change measures are integrated in the 2013 Climate Change Adaptation and Low-Emission Development Strategy for Bosnia and Herzegovina, the 2017 Environmental Approximation Strategy of Bosnia and Herzegovina (supplemented by Environmental Approximation Programmes of the Federation of Bosnia and Herzegovina, Republika Srpska and Brčko District), the 2017 Action Programme to Combat Land Degradation and Mitigate the Effects of Drought in Bosnia and Herzegovina, the Forestry Development Strategy of Republika Srpska 2012–2020, the Programme for Conservation of Forest Genetic Resources of Republika Srpska 2013–2025 and the Strategy and Action Plan for Protection of Biodiversity in Bosnia and Herzegovina for the period 2015–2020.

The success of the Strategy for Adaptation to Climate Change and Low-Emission Development of BiH for the period 2020–2030 will depend on organizations, local communities and the economy that will prepare for climate change and implement an appropriate response. The authorities in BiH need to raise this issue, provide leadership and support and a supportive environment, but in essence they need to work with partners in the local community, in the country, as well as with international partners. This Strategy will be implemented at all administrative levels of BiH by the institutions shown in Annex II.

International experience has shown that the development and implementation of climate change adaptation strategies are often limited by a number of institutional complexities and horizontal issues. Governance



institutions were established at a time when climate change issues were of little importance. Due to its complex nature, adaptation to climate change does not always fit into different sectors, departments or ministries. In BiH, climate change issues are still peripheral to most institutions.

Institutions in BiH face challenges that reduce adaptation capacities and the ability to implement and further develop adaptation strategies. The key problems are contradictory and overlapping mandates, poor coordination, and lack of effective agreement.

Climate change measures have been implemented through action plans at the municipal, city level. In 2016, the Climate Atlas of BiH was developed as part of the Third National Report of BiH to United Nations Framework Convention on Climate Change. The Climate Atlas of BiH consists of sets of digital climatological maps that refer to two climatological parameters, air temperature and precipitation, shown by months, seasons, vegetation period and year. Climate change adaptation and mitigation measures should be integrated into local government planning frameworks and governance structures and work should be done to improve climate change adaptation capacity at that level. The success of adaptation to climate change and low-emission development throughout BiH will largely depend on the extent to which it is recognized and implemented at the local level.

There will be a growing need for funding for climate change adaptation and mitigation at the local and entity levels. Priority should be given to the adaptation needs of the most vulnerable in society (e.g. women and small farmers). Capacities to attract additional resources and improve accountability must be built at all levels of governance.

Civil society has so far had limited opportunities to engage in BiH due to financial reasons and human resource gaps and political constraints. International NGOs have dominated climate change in BiH. All governments in BiH should increase the involvement of civil society and ownership on adaptation activities at the local level.

Since 2014, the Ministry of Agriculture, Forestry and Water Management of BiH implements the Action Programme to Combat Land Degradation and Mitigate the Effects of Drought, which establishes measures that can support the adaptation of agriculture to climate variability and climate change:

- Improving irrigation systems, including drip irrigation
- Including agriculture in water management programmes
- Developing drought-resistant varieties
- Improving hail protection
- Improving agroclimatic regionalization
- Developing monitoring and early warning systems
- Raising awareness and training of farmers
- Increasing capacity of farmers for livestock management during hot periods.

According to the BiH Voluntary Report on the Implementation of the 2030 Agenda and the SDGs, the preparation of the Fourth Report of BiH to UNFCCC is currently drafted. As part of this process the Strategy for Adaptation to Climate Change and Low Emission Development and the Report on Intended Nationally Determined Contributions would be updated whereas an Action Plan for the Implementation of Determined Contributions for the period 2020–2030 would be drafted.

In 2020, several municipalities and cities in BiH adopted the Sustainable Energy and Climate Action Plan (SECAP). SECAP sets out how local authorities will contribute to the implementation of specific activities aimed at improving adaptation capacity at the local level in relation to climate change, as well as efforts to reduce GHG emissions. With the adoption of SECAP, cities and municipalities have become part of the Covenant of Mayors<sup>12</sup>, and action plans have been developed through a programme funded by UNDP BiH. All cities and municipalities, which have adopted SECAP, are expected to implement the measures related to climate change adaptation, and to reduction, floods, fires and droughts, such as:


<sup>12</sup> <https://www.covenantofmayors.eu/en/>

- Raising public awareness of the importance of water consumption in households and the impact of climate change on water as a component of the environment
- Mapping of buildings for the purpose of determining the application potential of green technologies
- Education and information on climate change, energy efficiency and sustainability
- Regulation and rehabilitation of riverbeds
- Construction of sewerage networks
- Equipping civil protection units and fire brigades.

In FBiH, 16 municipalities and 2 cities adopted the SECAP. They have committed themselves to reducing GHG emissions by 40% by 2030 compared to the reference years. The 2011 Study on Forest and Climate Change developed by the Ministry of Agriculture, Water Management and Forestry of FBiH provides an overview of the potential for reforestation, which is an important measure for mitigation of and adaptation to climate change.

In RS, 11 municipalities and 6 cities have adopted SECAP in 2020. They have also committed themselves to reducing GHG emissions by 40% by 2030 compared to the reference years. The largest city that has adopted the SECAP document is Banja Luka, and the largest municipality is the Municipality of Teslić. As part of the Forest Genetic Resources Conservation Programme for RS for the period 2013–2025, a measure includes making assessments of the impact of climate change on forest genetic resources, as well as a clearer definition of the importance of preserving genetic resources in terms of adapting forest ecosystems according to projected climate changes.

Brčko also adopted the SECAP document in 2020, committing itself to reducing GHG emissions by 40% by 2030 compared to the reference year.



**Target 13.3: Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning**

The 2013 Climate Change Adaptation and Low-Emission Development Strategy envisages a broad, public-focused, awareness-raising campaign, including printed and multimedia materials suitably adapted for different target groups.

Bosnia and Herzegovina should organize a series of media events, television programmes, workshops and other awareness-raising events in order to improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.

In BiH scientific knowledge about the theory of climate change and its impact on natural and social processes is almost imperceptible in the educational curricula of higher education institutions. The importance of climate change and its impact on infrastructure, social processes and human health are increasingly recognized as an important modern aspect of life, and in this regard climate change is gradually being introduced into educational curricula of higher education institutions in technical, social and medical health courses. Accordingly, and given the importance of climate change as well as the scientific results achieved in this area at the level of the previous three reports on climate change in BiH, it can be concluded that there is a strong scientific and economic interest to include educational curricula in higher education institutions. relate to all aspects of climate change studies with particular emphasis on climate change adaptation and mitigation scenarios.

The interactions of science and policy are crucial in the development and implementation of GHG emission reduction measures and programmes. Climate change strategies need to be based on sound scientific evidence. The overwhelming scientific evidence gathered in recent decades has put climate change in a high-ranking position, to better understand the vulnerability of sectors, regions and individuals.

Research on climate change has intensified in the last few years, sporadically only at some faculties (Faculty of Natural Sciences and Mathematics, Faculty of Agriculture and Food, Faculty of Forestry and some technical faculties). The results of these studies have been partially incorporated into climate change reports and published in prestigious international and domestic journals. However, allocations for research and

development in BiH are still at a very low level, and that the opportunities offered by international research programmes (e.g. HORIZON 2020) are insufficiently used.

Stakeholders in BiH, including local leaders, mayors and mayors, are aware of the need to respond to climate change and take important steps. According to the Covenant of Mayors website<sup>13</sup>, a total of 19 SECAPs have been drafted and adopted in BiH. In BiH, SECAP is being developed within the project “Launching environmental financing for low-carbon urban development”, which is implemented by the United Nations Development Programme (UNDP) for 37 municipalities and cities, where in 2019 and 2020 develop action plans in accordance with the Covenant of Mayors for Climate and Energy. SECAP is based on a reference emission inventory and risk and exposure assessments that include an analysis of the current situation. In order for the smooth implementation of activities during the implementation of SECAP, it is necessary to adjust the structures of local authorities and ensure sufficient human resources.

To date, capacity building has been ensured by UNDP, GIZ and the EU at the local level. It is possible to continue and follow the example of these models, as well as with the approaches taken in the EU and individual member states, such as the Covenant of Mayors and various other cities and the local community and business networks. The focus should be first, on documenting, developing and disseminating examples of good practice from the political and practical levels. All major EU-funded projects are required to demonstrate that adaptation and mitigation measures have been taken to reduce risk, and that the project contributes to reducing GHG emissions (so-called climate proofing).

In order to improve the existing capacities for transposition and implementation of the EU acquis, the system for continuous monitoring of the effectiveness of the implementation of regulations at the level of BiH has to be improved. Also, the knowledge of relevant EU regulations and the way of their transposition into BiH legislation, an integrated approach to strengthening the environmental management system, as well as strengthening the technical capacity of relevant executive services and competent institutions should be improved.

The responsibilities of the competent ministries, both at the level of BiH and at the entity level, should be clear and should involve regional and local authorities in the implementation. Therefore, it is necessary to plan investments in training and capacity building based on adaptation, especially for those local units that are most vulnerable from the aspect of climate change.

Decarbonization, energy transition and mitigation or adaptation to climate change will affect all areas of human activity and life. Spatial and urban planning as a multidisciplinary activity unites all sectors only through planning solutions, so that spatial plans are the main instruments for implementing climate policies with the strength and legal nature of bylaws, so that strengthening continuing professional development programmes for spatial and urban planners related to adaptation measures Climate change should be one of the key measures in adapting to and mitigating climate change.

As part of the Energy and Climate Change Programme, the Centre for the Environment of BiH seeks to open a dialogue on public policies between the competent institutions at the state, entity and local levels and civil society, and to pay much more attention to sustainable energy in the public dialogue on the energy future. solutions. The Centre has involved the general public in several implemented public campaigns, including NGOs.

As part of the First National Report of BiH on Climate Change<sup>14</sup> on adaptive measures, designed to protect human health, the measures include the following:

- 1) Work on educating and informing the general population about possible consequences of exposure to climate change conditions (extreme temperatures, changes in atmospheric pressure, humidity impacts) and possible symptoms and about measures self-protection and self-help in the event of climate change conditions with the aim of the best possible human adaptation organisms
- 2) Education and distribution of information done through public media.

<sup>13</sup> <https://www.covenantofmayors.eu/en/>

<sup>14</sup> <https://rhmzrs.com/wp-content/uploads/2019/01/Prvi-nacionalni-izvjestaj-BiH-o-klimatskim-promjenama.pdf>

UNDP also carried two activities with the aim to raise awareness on climate change issues:

- 1) UNDP Human Development Report 2007–2008–“Combating Climate Change: Human Solidarity in divided world “- was published in the local language
- 2) UNDP organized a meeting on “Climate Challenges change in BiH “from 2–3 June 2008.

NGOs in BiH are moderately involved in raising citizens' awareness of climate changes and adaptation to climate changes and natural disasters.

The Regional Centre for Education and Information on Sustainable Development in Southeast Europe–REIC organizes summer schools every year for participants from Southeast Europe on the topic of energy efficiency and renewable energy sources. Summer schools are financially supported by the Central European Initiative and the Ministry of Energy, Mining and Industry of FBiH, as well as some other international organizations. BiH is still in the initial steps of implementation when it comes to climate change, however, in the last few years some progress has been made in terms of implementation.

SECAP also includes a measure on education and information on climate change, energy efficiency and sustainability, envisages the development and dissemination of educational and promotional materials through the official municipal and city websites on climate change, energy efficiency and sustainability, including topics: extreme weather conditions, forecasts of extreme conditions within seven days, advising citizens on issues on adaptation to climate change.

### Box 7.3: Targets 3.9 and 11.6 of the 2030 Agenda for Sustainable Development



#### **Goal 3: Ensure healthy lives and promote well-being for all at all ages**

#### **Target 3.9: By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination**

#### **Indicator 3.9.1: Mortality rate attributed to household and ambient air pollution**

For Bosnia and Herzegovina, the annual mortality rate (per 100,000 people) attributed to household and ambient air pollution is estimated by the World Health Organization at 223.6 in 2012 (World Health Statistics, 2016), which is one of the highest mortality rates by air pollution in the world. Air pollution by particulate matter (PM) is the most dangerous factor, but other components (NO<sub>2</sub>, SO<sub>2</sub>, PAH, O<sub>3</sub>) also contribute. By reducing air pollution levels, Bosnia and Herzegovina can reduce the burden of disease from stroke, heart disease, lung cancer and chronic and acute respiratory diseases such as asthma.

In Bosnia and Herzegovina, the WHO Air Quality Guidelines, as well as the less-stringent EU Air Quality Standards, are often largely exceeded in some urban areas. To reduce the mortality rate to the mean European level, substantial measures to reduce air emissions from industry, traffic, households and services are necessary. For large combustion plants, a (draft) national emission reduction plan was set up with clear targets for the reduction of emissions of SO<sub>2</sub>, NO<sub>x</sub> and dust.

As a preparation for future ratifications of protocols under the CLRTAP, emission reduction plans for other sectors should be made.

In BiH, there is a historical problem with air quality in several urban areas of BiH. Sarajevo is often hit by heavy fog in the winter that turns to smog when mixed with a high degree of pollution. In combination with a weak wind or a stable anticyclone, the pollutants stay in the city air for a long time and this causes a peak of particle matter concentration, which poses a significant health risk to residents. The main sources of pollution in Sarajevo are residential heating, traffic and some of the industrial plants. In the industrial city of Tuzla, PM<sub>10</sub> values are regularly above the limits allowed by the law of the FBiH1 with a maximum above 300 µg/m<sup>3</sup>.

According to WHO databases on annual air pollution assessments, in 2017, Tuzla was the second most polluted city in Europe after Tetovo. The two largest polluters (Kakanj Thermal Power Plant and AcelorMittal Steel Industry) in the area of Zenica annually produce 90,000 tons of SO<sub>2</sub>, which is over 20% of the total amount of SO<sub>2</sub> emissions in BiH. Emission sources in Zenica-Doboj Canton represent 72% of total PM emissions in FBiH. In RS, according to official statistics, the number of daily overruns of PM<sub>10</sub> in 2015 was recorded in Brod (142), Ugljevik (26), Gacko (61) and Banja Luka–Centre (67).

Air quality data in Sarajevo Canton are available in real time from 6 air quality monitoring stations managed by the Cantonal Public Health Institute and are available at <http://kvalitetzraka.ba>. Official data on air quality in Tuzla Canton are also available at <http://monitoringzrakatk.info>. The Federal Air Quality Monitoring Network of FBiH is managed by the Hydrometeorological Institute of FBiH, and real-time data can be found at <http://fhmzbih.gov.ba>.

RS stations are mostly out of order due to funding difficulties. In RS, currently only the station in Prijedor sends real-time data. These data can be found at [www.hidrometeo.ba](http://www.hidrometeo.ba) which shows all stations in BiH run by institutes for hydrometeorology. For cities in BiH, no calculated and verified air quality index exists. Concerns about air quality are declared on the basis of the limit values of various pollutants prescribed by national legislation.

According to WHO statistics from 2017, BiH has the highest mortality rate in Europe attributed to air pollution. However, there are no official national data that confirm or refute this conclusion. Public health institutes in the country currently do not collect data on the impact of air pollution on health and transfer environmental risks to the public only occasionally. Although the legal framework for air quality is largely in place, enforcement and enforcement remain weak. National recognition of the problem through strategic documents, local action plans with implementing solutions and public awareness of the impact of air pollution and mitigation measures are key to addressing this problem, but all are lacking in the country.

BiH is Party to the UNECE Convention on Long-range Transboundary Air Pollution. However, BiH has ratified only the protocols to the Convention and has never notified the Convention's secretariat or used any technical assistance opportunities. No preparation for future ratifications of these protocols is under way in BiH.

The 2017 UN Clean Air for All Conference provided a list of key messages to be used for air quality communication and awareness raising. The messages are listed here, in Annex 4, for reference.

Formal mechanisms of vertical and inter-ministerial coordination are also needed to effectively address air pollution at the country level. Although there is some informal coordination between organizations responsible for air pollution management in FBiH, RS and BD, it is not a substitute for institutional coordination. Vertical coordination between entities and lower levels of government should be strengthened by establishing clear procedures and mechanisms for the exchange of air quality data and gradually for a wider range of topics, such as the harmonization of strategies and plans, as well as their implementation. Activities to harmonize the legal and policy framework at different levels of government should be guided by a common aspiration to fully transpose the acquis. Similarly, inter-ministerial coordination needs to be strengthened, especially between environmental authorities and other sectors whose activities affect air quality, including health, and transport, industry, energy, urban development, and agriculture. Inter-ministerial coordination should also include a focus on defining inter-sectoral air quality programmes and priorities, with inputs from different sectors, setting time targets that can be monitored to guide the design and implementation of interventions, and monitoring and evaluating effectiveness.

The Ministry of Foreign Trade and Economic Relations of BiH and the Inter-Entity Coordinating Body for the Environment could focus on further harmonizing the legal framework, transposing the remaining EU air quality directives, as well as addressing regulatory gaps. Alignment should cover all components of the Air Quality Management (AQM), including the legal and policy framework related to air quality monitoring, emissions inventory, and air pollution analysis, organizational framework, public participation, and enforcement. Vertical alignment of legislation should also be implemented.

When it comes to EU directives, areas where the authorities should work include harmonizing timelines for meeting ambient air quality standards for specific pollutants.

In addition, the authorities could focus on fully transposing EU legislation relating to (a) the sulfur content of liquid fuels; (b) the National Emission Limits Directive; (c) control of volatile organic compounds in the storage and distribution of petroleum products; (d) collecting petrol vapors during the transfer of fuel from tanks at petrol stations; and (e) limiting industrial emissions from new plants. In addition, the adoption of air quality strategies in each jurisdiction should include formal coordination mechanisms between FBiH, RS and



DB, to ensure complementarity and synergy in the strategy implementation process. In addition, legislation on environmental inspection of air pollution sources, which is currently lacking, needs to be enacted.

There is a need to accelerate the adoption of air quality plans (AQP) at the local level. The effects of air pollution are mostly felt at the local level. Central government support to local governments in adopting AQPs is crucial. Although the Sarajevo and Una-Sana cantons have adopted these plans, it is important to speed up their adoption in other cantons and municipalities in the country. AQPs should apply a comprehensive approach, which includes inventorying, reliable air quality monitoring, knowledge of the share of different sources in local air pollution, knowledge of the impact of air pollution on health, and identification of cost-effective interventions to reduce air pollution. In this sense, the capacities of cantons and municipalities could be strengthened so that they can make emission lists; obtain reliable time series of air quality monitoring data; and perform air quality modelling, source allocation studies, laboratory analyses, health impact analyses, and cost-effectiveness analyses of alternative interventions to reduce air pollution, in order to provide support and information for the design and implementation of AQP.

BiH should implement specific measures to upgrade the legal framework in the direction of reducing pollution from stationary and mobile sources. Some of the specific areas to be covered include: (a) carrying out timed activities to align liquid fuel quality standards with EU legislation across the country, including petrol, fuel oil and diesel; (b) the introduction of stricter quality standards for solid fuels used in households (current regulations require that coal used in households have a total sulfur content of less than 2.5% by weight, allowing municipalities to adopt stricter criteria; in Ireland sales for household heating must have a sulfur content of less than 0.7% by weight); (c) the closure of legal ones that allow stationary sources, starting with large installations, to operate without the necessary pollution control equipment, as well as to operate in violation of emission standards; and (d) building on the country's activities to introduce measures to restrict the import of vehicles that do not meet the Euro 4 standard—additional measures may be applied in terms of reviewing and enacting regulations at the country level to establish a mandatory monitoring and inspection programme, to better price annual eco-test and (Euro) vehicle emission characteristics, which would encourage vehicle owners to replace older vehicles with less polluting ones. Recent consultations with the Ministry of Foreign Trade and Economic Relations of BiH on a proposed decision to suspend and reduce customs duties on imports of new vehicles, in the light of the promotion of imports of new vehicles, in particular electric vehicles, should be consolidated and take into account the distribution effects of the proposed activities.

BiH can expand the range of AQM instruments, beyond the “command and control” instruments. In addition to strengthening existing “command and control” regulations, various levels of government may consider adopting economic instruments that are more efficiently and effectively used in other countries to reduce air pollutant emissions, such as taxes, fees, pollution charges, and tradable permits. or pricing policies.

In FBiH, environmental taxes and fees apply. However, they could be updated and indexed for stationary sources to avoid their reduction over time due to the effects of inflation. In that sense, it is necessary for a third party to verify the emissions reported for the calculation of the fee. For mobile sources, there is a need to better link fees with the use and maintenance of vehicles, in addition to the link with the technological parameters currently used to calculate fees. In addition, there should be increased incentives to replace old vehicles with new ones, which are less polluting. Furthermore, as the authorities consider reducing customs duties on imports of new vehicles, it would also be important to establish adequate mechanisms to deter imports of more polluting old vehicles. In RS, the authorities should accelerate activities on the adoption of amendments to the 2017 Law on Environmental Protection, which introduced the first set of economic environmental instruments. Similarly, there may be opportunities in BD to establish economic instruments, which do not currently exist.

BiH could increase the efficiency of environmental funds in providing support to reduce air pollution. Both FBiH and RS have established environmental funds: the Environmental Protection Fund of FBiH and the Environmental Protection and Energy Efficiency Fund of RS. These funds, with a view to enhancing efficiency in addressing air pollution, could improve the criteria used to prioritize and select projects or activities to be awarded and increase the transparency of the allocation of funds raised from fees for specific air pollution reduction projects. For example, criteria could be included that aim at activities that will have the greatest effects in reducing negative health impacts or the cost of environmental degradation due to air pollution.

There is a need to strengthen the agencies responsible for AQM at all levels and to allocate adequate resources. The priority for strengthening the AQM includes capacity building for the development and implementation of the AQM, including the engagement of more professionally trained staff in all agencies responsible for AQM-related tasks. Strengthening the institutional capacity to implement existing air quality standards is a burning priority. In this regard, the allocation of greater resources and the firm commitment of the authorities will be crucial. In some cases, it may be more efficient to outsource some of these functions to external specialized firms or research organizations. The technical capacity of existing institutions could be strengthened through partnerships with research centres to conduct applied research, improve local and regional models, and establish centres of excellence for AQM in the country.

Implementing measures to better enforce AQM regulations, especially at the local level, is crucial to improving the effectiveness of government activities in tackling air pollution. It is necessary to strengthen inspections at the municipal level, increase the number of inspectors, provide training and resources for inspectors to perform field supervision. Also, third party capacity building is needed to verify emissions reported by polluters. Given the prominent role of household heating in air pollution, it is necessary to carry out activities that would legally enable household inspections, further strengthen such inspections and increase public awareness, especially of households, about air pollution and heating methods that reduce emissions. Proven approaches to strengthening compliance and enforcement include public disclosure of whether the polluter complies, judicial moves and fee increases, and expanding the range of sanctions for non-compliance, potentially including judicial or administrative sanctions, as well as prosecuting legal representatives of polluting entities.

Existing air quality monitoring activities could be improved through investments in more robust air quality monitoring systems, data analysis, data quality control and assurance, data management and emission source coverage.

Activities to establish a reliable air quality monitoring network should focus on pollutants that are critical to health and on increasing coverage of geographical and time series, especially for PM<sub>2.5</sub>. In BD, monitoring activities, which currently focus on total particulate matter (TSP), could be redirected to PM<sub>2.5</sub>, a more scientifically valid indicator of the impact of PM on health. Additional ways to strengthen the existing monitoring programme include the establishment of a central storage of air quality data collected from across the country and capacity building, at relevant agencies in FBiH, RS and BD, to perform modelling and implement specific activities. Given the involvement of numerous institutions in the operation and maintenance of the air quality monitoring network in the country, it is important to have harmonized methodologies for sampling, analysis and standard operating procedures for operation and maintenance of measuring stations, in order to improve their work and quality and completeness. Furthermore, quality assurance and quality control (QA/QC) of data collected or obtained at measuring stations is of great importance, as there should be official written procedures for formatting, storing and QA/QC of such data. These procedures should be harmonized among all levels of government to facilitate the assessment of air quality throughout the country. Similarly, QA/QC procedures for the maintenance and calibration of analytical instruments should be documented and harmonized throughout the country and include, inter alia, interlaboratory calibration. It is recommended that the authorities take advantage of the momentum of ongoing activities and establish a reference laboratory in the country.

According to the WHO Evaluation from 2012, annual mortality rate attributed to household and ambient air pollution in BiH was 230.6 per 100,000 population, which represents one of the highest mortality rates attributed to household and ambient air pollution in the world, while according to the latest data from 2016, the mortality rate was reduced to 79.8 per 100,000 inhabitants<sup>15</sup>. This is a significant improvement, but still the value of this indicator is much higher than the European average of 36.3.<sup>16</sup> By reducing air pollution, BiH can reduce the number of strokes, cardiovascular diseases, lung cancer and chronic and acute respiratory diseases such as asthma.

<sup>15</sup> Available at: <https://data.worldbank.org/indicator/SH.STA.AIRP.P5?view=chart>

<sup>16</sup> Available at: <https://apps.who.int/gho/data/node.sdg.3-9-viz-1?lang=en>



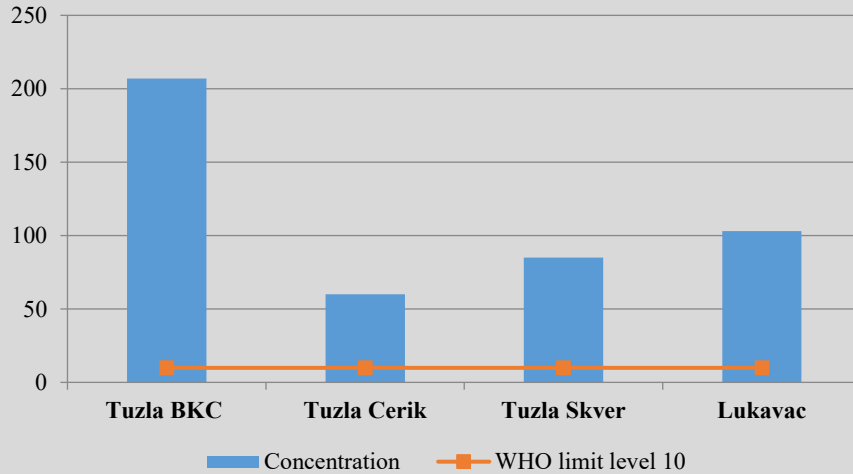
**Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable**

**Target 11.6: By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management**

**Indicator 11.6.2: Annual mean levels of fine particulate matter (e.g. PM<sub>2.5</sub> and PM<sub>10</sub>) in cities (population weighted)**

The WHO Air Quality Guideline for the annual mean concentration of PM<sub>10</sub> is exceeded in many cities in Bosnia and Herzegovina, as is the EU Air Quality Standard. Results from a few stations are shown below

**Figure on exceedances of the WHO Air Quality Guideline for PM<sub>2.5</sub> in Tuzla and Lukavac**



Source: Third EPR of BiH

According to the analysis conducted as part of a draft report on air pollution management in Bosnia and Herzegovina published by World Bank, it is estimated that around 3,300 people die prematurely annually in BiH as a result of exposure to ambient air pollution (AAP) with PM<sub>2.5</sub>. About 16% of this disease burden falls on Sarajevo and Banja Luka. This analysis shows that 9% of the total annual mortality in BiH can be attributed to air pollution. About 81% of 3,300 AAP-related deaths in BiH are caused by cardiovascular disease. Most AAP-related deaths occur in people aged 50 and over. About 68% of ischemic heart disease and 57% of strokes caused by AAP occur in people over the age of 70. Cardiovascular diseases mainly affect people over the age of 65, which indicates that mitigation measures to reduce the impact of air pollution on human health in BiH should be focused on this subgroup of the population.

Estimated economic costs of deaths caused by exposure to air pollution in BiH range between US\$1 billion and 1.8 billion, which is proportional to 5.9-10.5% of GDP (GDP) in 2016. The economic costs of health problems due to AAP in BiH average US\$1.38 billion, equivalent to 8.2% of GDP in 2016. FBiH accounts for 67% of total estimated costs, while the remaining 33% to RS. This cost estimate is conservative and does not include hospital treatment costs, illness costs, and lost workdays, the inclusion of which would increase the estimated costs.

To better understand the impact of AAP on population health, BiH needs to improve health statistics and harmonize reporting in the country with international disease classification systems. In particular, authorities could improve data collection and reporting on mortality by individual disease or cause attributable to AAP. This would facilitate assessments of the impact of AAP on health and deepen knowledge and information for decision-making on reducing air pollution. It would also allow the country to assess progress in reducing premature deaths from AAP. Furthermore, the authorities should strengthen health information systems across the country and harmonize them with the International Statistical Classification of Diseases and Related Health Problems. Data collection and reporting, such as the incidence of bronchitis in children, COPD in adults, hospital admissions for cardiovascular and respiratory diseases, and lost workdays, could be improved to support the analysis of morbidity associated with AAP exposure. Finally, the authorities should develop and strengthen the capacity to conduct environmental health risk assessments in order to analyse the impact of emissions from stationary sources on health, such as industrial plants.

The analysis of resource allocation conducted in this report indicates that at the country level, the housing sector is the largest source of exposure to harmful PM<sub>2.5</sub> due to the use of solid fuels in households. Further analysis would be needed to better understand the role of other sources and hotspots, which could be more significant at the local level. This study provides the first quantitative distribution of PM<sub>2.5</sub> sources at the country level. Additional sources of PM<sub>2.5</sub> exposure include energy, transportation, industry, agriculture, and more. As it represents a country-level study, this report recognizes that the contribution of individual sources may vary by geographical area and that pollution may be more localized in some hotspots, where some sources are more dominant than others. To better understand the structure of sources at the local level, for example, in a city or urban area, specific source allocation studies and a comprehensive and accurate list of emissions will be needed, as well as reliable monitoring of air quality data. The dominant share of PM<sub>2.5</sub> pollution comes from areas within the geographical borders of BiH, which emphasizes the need for the authorities to take coordinated and decisive action to address air pollution. The contribution of transboundary sources (about 20 %) to ambient air pollution in the country is significantly lower than domestic sources (about 65 %). This is an advantage because the country has direct control over the selection, implementation and timing of activities that need to be undertaken in order to have a significant impact on improving ambient air quality. However, both cooperation and a regional approach to tackling pollution coming from neighbouring countries are needed. The analysis points to a clear need to conduct a comprehensive and accurate inventory of emissions in BiH—covering various sectors, with the housing sector being a priority—in order to improve emission estimates and strengthen the effectiveness of AAP reduction interventions. Uncertainties about activities and data on fuel and waste use in the housing sector need to be resolved.

This cost estimate does not include BD.

In the transport sector, ambiguities related to the age of the vehicle fleet and imported used vehicles need to be addressed in order to complete and accurately list emissions. Regardless of the significance of the impact of AAP on health and costs, monitoring activities in the country focus primarily on less harmful PM<sub>10</sub> particles. Furthermore, monitoring data have many shortcomings, especially in terms of incompleteness. The findings of this report show that many measurement stations measure only PM<sub>10</sub>, although it is necessary to measure PM<sub>2.5</sub> at all stations. Available data from PM<sub>2.5</sub> monitoring are often incomplete because many stations do not measure PM<sub>2.5</sub> at all or do not measure them consistently. Given the widespread practice of burning solid fuels in households, as well as the use of coal for electricity production in BiH, monitoring activities should be extended to the measurement of chemicals and particulate matter (PM)—for example, elemental carbon, organic carbon and sulfates—which occur in the process of combustion and have a negative impact on human health. In addition, monitoring activities should include measurements of PM<sub>2.5</sub> precursors, including sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), ammonia (NH<sub>3</sub>) and non-methane volatile organic compounds (NMVOC); soot (BC—an ingredient of PM, which affects global warming); and toxic heavy metals, such as lead. With the application of existing policies, due to the use of solid fuels for heating, no significant reduction in PM<sub>2.5</sub> emissions is expected.

Using the Interaction and Synergy of Greenhouse Pollutes and Air Pollution (GAINS) model to simulate emission scenarios by 2030 and the allocation of pollution sources at the country level, this study shows that existing environmental and air quality policies, if implemented effectively, would lead to strong reduction of SO<sub>2</sub> and NO<sub>x</sub> emissions, but would not have a significant impact on primary PM<sub>2.5</sub> emissions, given that the existing energy projections do not predict a significant change in energy sources in furnaces and boiler rooms in households. Furthermore, as the contribution of thermal power plants will be significantly reduced, the housing sector will continue to be the dominant source of PM<sub>2.5</sub> emissions. In addition, while existing policies in much of the country should reduce concentrations to levels around values from WHO guidelines, concentrations in urban areas will remain high and exceed values from WHO guidelines. In hotspots, ambient concentrations can exceed three times the values from the WHO guidelines, mainly due to the persistent use of firewood for heating.

Although implementing measures in the housing sector would technically reduce ambient PM<sub>2.5</sub> concentrations in most parts of the country, including cities, to levels below or just above the guidelines, full implementation of all measures will be challenging and require a strong commitment from the authorities. Relevant measures would require (a) that all new stoves and boilers in households using firewood meet the strict standards of the Directive on ecodesign; (b) to replace the oldest existing installations; and (c) to ensure firewood of adequate quality, by burning only dry wood and by properly storing firewood. Implementing such changes would require

strong financial and management mechanisms. The experience of various cities around the world shows that, in order to effectively reduce the AAP, in addition to technical interventions, a number of instruments are needed, including market, economic and “command and control” instruments. Examples from Peru, Mongolia and China show the types of interventions that have had a strong impact on reducing air pollution in different time frames and can serve as useful lessons for BiH, which seeks to reduce air pollution. Cities from these countries are successfully implementing various instruments in their pollution reduction activities, including market-based instruments, economic and command and control instruments, investments in technical interventions and policy and institutional reforms.

It is important that strategies and interventions to reduce air pollution do not lead to a disproportionate burden on poor and vulnerable groups. The poor are more likely to drive older vehicles that pollute more. The poor are also more likely to use cheap fuels in their households, which lead to high pollution.

Therefore, policies that prohibit the use of old polluting vehicles and encourage newer cleaner vehicles should include financial or other appropriate incentives for the poor in order to adhere to these policies. Similarly, programmes to promote the replacement of polluting furnaces with clean efficient furnaces should have built-in incentives, which will help low-income households switch to using cleaner fuels. It is important to consider the distributive and social impacts of the ban on coal heating on the affected population from different income groups, if it is decided to apply this measure. Poverty and social impact analyses could be conducted to assess the distributive impacts of air pollution reduction policies and to ensure that the poor and vulnerable are not disadvantaged by implementing activities resulting from these policies.

Several development partners are supporting BiH in implementing activities to reduce air pollution, so stronger coordination within the country could help optimize that support. Technical assistance from development partners (for example, World Bank, WHO, US Embassy in Sarajevo, Government of Sweden, Embassy of Switzerland, UN Environment, United Nations Development Program–UNDP and European Bank for Reconstruction and Development–EBRD) was useful to make progress in the areas of emission inventories, monitoring, health impacts, data release and mitigation measures. Although what has been done means a lot, BiH still has a lot of work to do to establish structures that will enable a successful solution to major air pollution. Lack of coordination and harmonization, as well as the lack of central competencies for AQM, are part of the root of the problems that are slowing down the country in the fight against air pollution. Without good coordination, the competent institutions cannot establish a policy and implementation environment that would effectively control the pollution that is present in BiH.

There is a need to review the outcomes of support from development partners on air pollution and to identify opportunities where investments, policies and institutional activities could have a significant impact on air quality, supported by appropriate funding mechanisms. The work of these development partners and other actors has been helpful in making progress in AQM in BiH. A review of the outcome of ongoing donor support activities and the identification of opportunities and funding mechanisms should be coordinated between donors and carried out in cooperation with the authorities. Furthermore, the problem of air pollution is significant and cannot be solved without the permanent commitment of the authorities, with targeted policy activities; without strong institutions with adequate resources at all levels, especially at the local level where the impacts are most felt; and without good planning and investment based on rigorous analytical work. The commitment of the authorities is needed to ensure that the institutions responsible for reducing air pollution are strong and have adequate staff and budgetary resources, and that they are capable of carrying out good planning and investment based on the necessary analytical work.

According to WHO data, BiH annual mean level of fine particulate matter PM<sub>2.5</sub> in 2017 (last available data) was 29.7 µg/m<sup>3</sup>.<sup>17</sup> Since, according to WHO, recommended limit levels of concentrations of fine particulate matter PM<sub>2.5</sub>, is 10 µg/m<sup>3</sup>, it is evident that BiH still does not contribute towards the achievement of this target. However, the progress was made compared to 2014, when the value of the mentioned indicator was 55.1 µg/m<sup>3</sup>.<sup>18</sup> Monitoring is carried out at the entity level and efforts are being made to reduce air pollution in the Bosnian-Herzegovinian cities.

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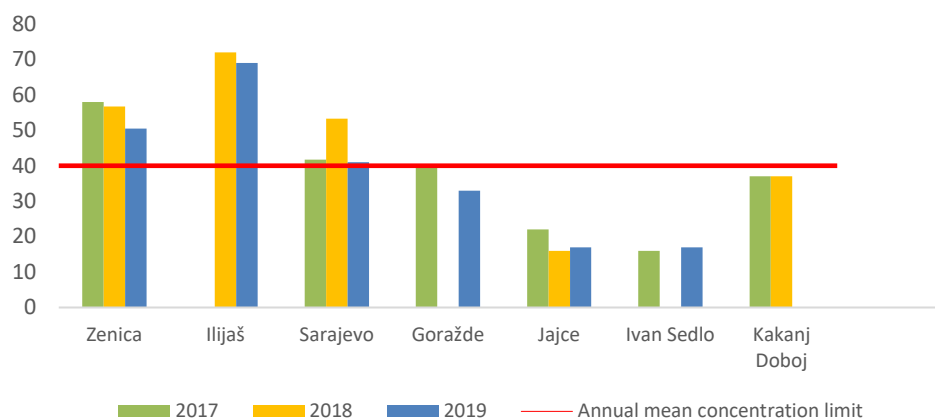
<sup>17</sup> World health statistics 2020: monitoring health for the SDGs, Sustainable Development Goals, 2020

<sup>18</sup> World health statistics 2017: monitoring health for the SDGs, Sustainable Development Goals, 2017



In 2019, the concentration of suspended particles in the air was measured at a total of 18 stations in FBiH, which submitted data to the Hydrometeorological Institute of FBiH. PM<sub>10</sub> particles were measured at 14 and PM<sub>2.5</sub> particles at 7 monitoring stations. Both specified types of particles were measured simultaneously at three stations. Air pollution with suspended particles is the most characteristic type of pollution in the FBiH cities. According to annual reports on air quality<sup>19</sup>, limit values of annual mean concentrations of suspended particles PM<sub>10</sub> and PM<sub>2.5</sub> are 40 µg/m<sup>3</sup> and 25 µg/m<sup>3</sup>, respectively. It should be noted that, according to the Rulebook on the manner of monitoring air quality and defining the types of pollutants, limit values and other air quality standards (OG FBiH No. 1/12), the daily and hourly concentration limit values of PM<sub>2.5</sub> are not defined. At almost all measuring points, concentrations are above the legally prescribed ones. Annual concentration limit of PM<sub>10</sub> were exceeded in Zenica, Sarajevo and Ilijaš, while the excess of annual concentration limit of PM<sub>2.5</sub> occurred in Tuzla, Goražde, Lukavac, Sarajevo, Zenica and probably in Živinice, since in 2019 there were no measurements. However, almost all cities in FBiH are recording a trend of decreasing annual mean concentration of PM<sub>10</sub> particles compared to 2017 and 2018 (figure 1). Although the current values do not meet the limit, there is still an improvement that needs to be emphasized.

**Figure 1: Mean annual concentrations of PM<sub>10</sub> in µg/m<sup>3</sup> at air quality monitoring stations in FBiH which achieved 90% or close to 90% of valid measurements during 2017, 2018 and 2019**

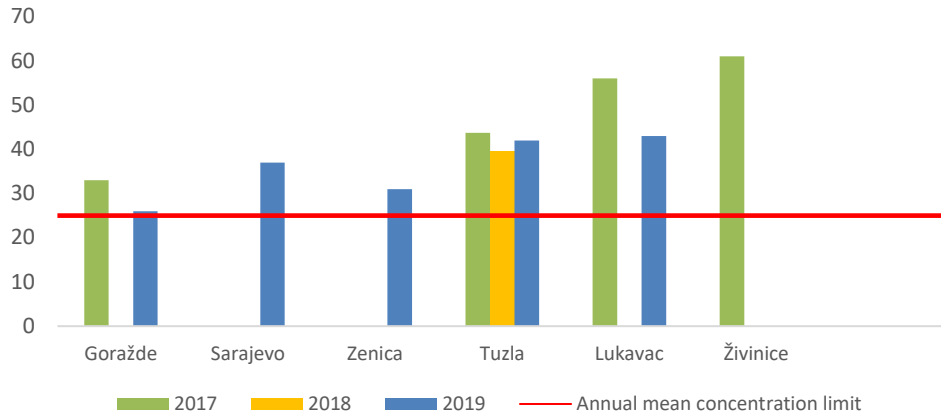


Source: Annual Air Quality Report 2019, Federal Hydrometeorological Institute, 2019

Given that it is necessary to achieve 90% or close to 90% of valid measurements at the measuring station during the year in order for the data to be taken into account, the trend of change in the mean annual concentration of PM<sub>2.5</sub> particles is difficult to follow. However, in the cities for which it is possible to make a comparison (Goražde, Tuzla and Lukavac) there is a decrease in this parameter compared to 2017 (figure 2). Although the trend is declining, in all mentioned cities the limit value is exceeded, so it is necessary to intensify work on measures for air quality improvements.

**Figure 2: Mean annual concentrations of PM<sub>2.5</sub> particles in µg/m<sup>3</sup> at air quality monitoring stations in FBiH which achieved 90% or close to 90% of valid measurements in 2017, 2018 and 2019**

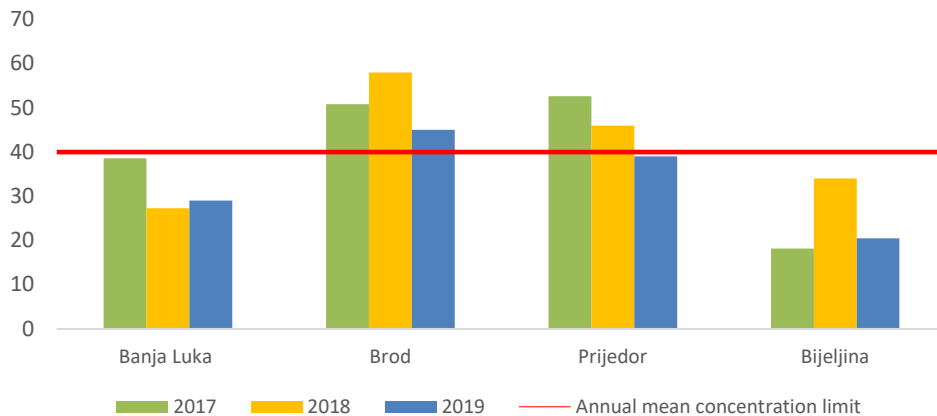
<sup>19</sup> Annual Air Quality Report 2019, Hydrometeorological Institute of FBiH, 2019



Source: Annual Air Quality Report 2019, Federal Hydrometeorological Institute, 2019

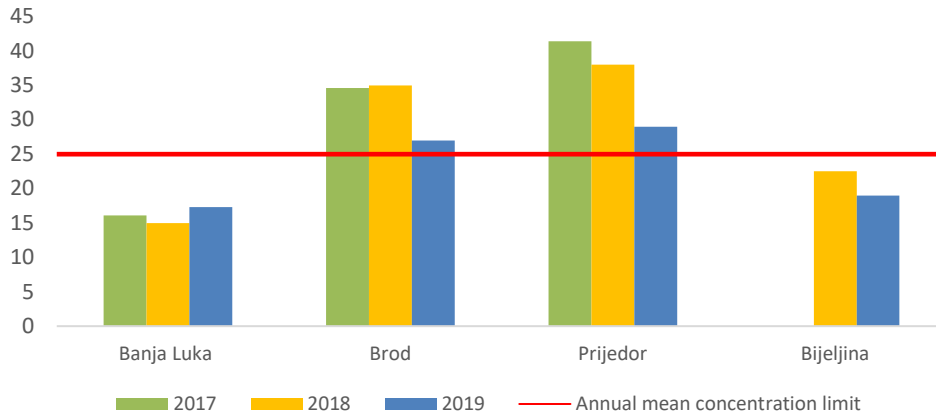
In RS, according to the Decree on Air Quality Values (OG RS No. 124/12), the limit value of annual mean concentration of suspended particles  $PM_{10}$  is  $40 \mu\text{g}/\text{m}^3$ . In 2019, this limit value was exceeded in Brod ( $45 \mu\text{g}/\text{m}^3$ ) at the measuring point of the Oil Refinery Brod a.d., (figure 3), which was also the case during 2017 and 2018, even though decreasing trend is recorded. It is also necessary to emphasize the improvement of air quality in Prijedor, according to the parameter of the annual mean concentration of  $PM_{10}$ , which is for the first time in 3 years below the limit value. On the other hand, that is not the case with the annual mean concentration of the  $PM_{2.5}$  particles, where the limit value of  $25 \mu\text{g}/\text{m}^3$  was exceeded  $29 \mu\text{g}/\text{m}^3$ . The same can be noticed at the measuring point Brod Oil Refinery a.d. ( $27 \mu\text{g}/\text{m}^3$ ) (figure 4). However, the declining trend of the mentioned parameter was recorded in all cities except Banja Luka, which is an encouraging fact.

**Figure 3: Mean annual concentrations of  $PM_{10}$  in  $\mu\text{g}/\text{m}^3$  at air quality monitoring stations in RS measurements during 2017, 2018 and 2019**



Source: Air Quality Report for Republika Srpska for 2019, Hydrometeorological Institute of RS


**Figure 4: Mean annual concentrations of  $PM_{2.5}$  in  $\mu\text{g}/\text{m}^3$  at air quality monitoring stations in RS during 2017, 2018 and 2019**



Source; Air Quality Reports for Republika Srpska for 2017, 2018 and 2019, Hydrometeorological Institute of RS

BD operates three automatic monitoring stations measuring SO<sub>2</sub>, NO<sub>x</sub>, CO, particles (TSP) and black smoke. BD does not publish data on the air quality. No data are available for the purposes of this report. However, according to the third EPR of BiH, the air quality standards in BD show minor differences from EU standards.

### Box 8.1: Targets 6.1, 6.2, 6.3, 6.4, 6.5 and 6.6 of the 2030 Agenda for Sustainable Development



**6** CLEAN WATER AND SANITATION

**Goal 6: Ensure availability and sustainable management of water and sanitation for all**

**Target 6.1: By 2030, achieve universal and equitable access to safe and affordable drinking water for all**

**Target 6.2: By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations**

These two targets are almost reached in Bosnia and Herzegovina. Most parts of the country (about 90 per cent) have access to a water source, including wells, springs and onsite solutions. The same goes for sanitation conditions; people generally have access to private toilets. It is necessary, however, to go beyond meeting those basic needs and to increase service standards. In this regard, the authorities of the Federation of Bosnia and Herzegovina, Republika Srpska and Brčko District are undertaking significant efforts. Based on current planning instruments, by 2035, 90 per cent of the population should have access to safe drinking water served by public systems. For the remaining 10 per cent of the population, who live in rural areas, drinking water supply is delivered through individual water supply.

There are no reliable data about percentage of the population with the access of clean (drinking) water in BiH. Based on the Environmental Approximation strategy, developed in 2017, the percentage of population served by drinking water supply amounts 71.42%, which is below European standard that amounts 93%. Voluntary Review / Implementation of Agenda 2030 and the SDGs in BiH, developed in April 2019 reported 66% of the population using safely managed drinking water services, with the constant increasing trend.

The Agency for Statistics of BIH regularly reports the number of connecting pipes and length of the distribution system. The length of the water mains was an average of 3,277 km in the period 2013–2017, and 15,232 km of the distribution network. Compared to 2012, the length of the water mains increased in the observed period by 12.71%, and the length of the distribution network increased by 2.83%. During the period 2013–2017 the number of connecting pipes increased by 9.66% in comparison to 2012 at the level of BiH, 8.83% in F BiH and 5.47% in RS, revealing the expansion of the population and industry coverage with water supply network. It is obvious that BIH is in constant improvement of drinking water supply, but there is no reliable monitoring system to report that.

Entity water laws adopted in 2006, based on the provisions of the WFD have been drafted and are currently being implemented. Based on these laws, in F BiH and RS, 4 entity water management strategies were developed, adopted in F BiH in 2012, and in RS in 2015, valid until 2022. and 2024, respectively. An integral part of the strategies are the goals and relevant measures related to the institutional, legal and financial aspects of water management, as well as water protection, water protection and water use.

However, due to weak horizontal and vertical institutional cooperation, low domestic financial revenues and poor planning of withdrawals from international funds, the degree of achievement of goals and implementation of measures envisaged by the strategies remain low or even not at a satisfactory level.

BD is currently in the process of adopting a new law on waters, and the water sector in the BD, in general, has a significant legislative shortcoming. The existing Environmental Protection Strategy (2016–2026) does not contain a water management strategy, and the BD Water Management Strategy within the BiH Environmental Protection Strategy 2030+ should become an integral part of the BD Environmental Protection Strategy.

In accordance with the entity water laws, FBiH and RS have developed water management plans for the water areas of the Sava River Basin and the Adriatic Sea (first cycle 2016–2021). According to the WFD, these plans address “significant issues” of water management related to the threat to the ecological and chemical status of surface waters and the chemical status of groundwater, by developing a programme of measures to achieve these objectives.

The surface water quality monitoring programme (assessment of ecological status, chemical status and overall status) is gradually adjusted to WFD requirements even before the development of water management plans in both FBiH and RS. In general, it can be stated that the systematic monitoring of groundwater (quantitative and qualitative status of groundwater bodies) is still not in function in FBiH and RS. Coordination of water monitoring in BD is assigned to the Department of Water Management. The Water Institute monitors flow, measures physicochemical parameters (including heavy metals) and monitors microbiology and saprobiology on the Tinja, Brka and Sava rivers.

Currently, entities are preparing updates to the river basin management plans (second cycle–2022–2027), the development of flood hazard and risk maps for BiH is being completed and the development of flood risk management plans for BH is planned to begin. In BiH, the water services sector, which includes water supply and drainage and wastewater treatment, is characterized by an unsatisfactory level of coverage of the population of these services, as well as questionable sustainability of water services provision.

In general, about 75% of the population in BiH has access to public water supply services, while about 41% are covered by wastewater drainage services. Only 15% of the population is connected to wastewater treatment plants (WWTP) (Review of the water services sector in BiH, 2019).

Water quality is also questionable, especially in plumbing systems with large losses and insufficient capacity. The average value of non-revenue water in BiH is about 55% (Una Consulting 2019). Plumbing systems are depreciated, and worn-out components are replaced irregularly.

The existing laws on communal activities did not sufficiently regulate the relations in the performance of communal activities between the local self-government unit and the communal service provider, and there is a need to reform the legislation in the water services sector.

Water charges for water abstraction and wastewater discharge are regulated, but an effective control system has not been established that allows for the efficient implementation of water charges, which has a negative impact on the financial sustainability of the water sector.

However, in recent years, significant funds have been allocated from international funds for infrastructure, and the level of access to drinking water and wastewater has improved.

In BiH, land and water resources are not adequately used to perform agricultural activities, i.e. to build irrigation and drainage systems. Even before the 1990s, BiH had an extremely low level of hydro-amelioration systems, and with the available land and water resources, agriculture is a very promising branch of the economy for the development of BiH.

There is no official data on irrigated areas in the territory of FBiH. According to unofficial information, the current state of irrigation is: in the Sava River Basin, a total of about 362.5 ha and in the Adriatic Sea Basin a total of about 1,250 ha. In total, only 1,612.5 ha or 0.2% of arable land is irrigated in the FBiH. In recent years,

with the financial support of the World Bank, activities have been initiated on the reconstruction and construction of new systems on about 4,000 ha for 10 irrigation systems (Bosnia S Oil IHGF IPSA Institute 2008).

In RS, it is estimated that 158,000 ha of agricultural land can be covered by irrigation. Of this, 3,439 ha of agricultural land was irrigated in the Sava River Basin before the 1990s, and 3,823 ha in the Trebišnjica River Basin, which makes a total of 7,262 ha or 4.46% of the available area. In the current period, only a part of the systems that are in operation can be used, on an area of 1,700 ha, which is 1.076% of the available land (Institute for Water Management Bijeljina).

In 2014, with the financial support of the World Bank, activities were initiated on the reconstruction and commissioning of existing and development of new systems.

The IPA 2011 project “Capacity Building in the Water Sector in BiH” started on January 27, 2014. The project aimed to provide technical assistance to institutions responsible for water resources management in BiH in order to meet the obligations and requirements of EU and domestic legislation. Specific objectives of the Project are the transposition of EU water directives; and the improvement of the management of water resources in the Sava River Basin and preparation of the Sava River Basin Management Plans, in accordance with the *acquis communautaire* and with the international obligations of BiH. The main beneficiaries of the Project were:

- Ministry of Foreign Trade and Economic Relations of BiH,
- Directorate for European Integration of BiH,
- Ministry of Agriculture, Water Management and Forestry of FBiH
- RS Ministry of Agriculture, Forestry and Water Management,
- Department of Agriculture, Forestry and Water Management of BD,
- Sava River Basin District Agency,
- Agency for the Adriatic Sea Basin,
- Public institution “Vode Srpske”.

In addition to the above, other institutions in BiH were involved in the Project through its implementation, taking into account the implications it has for other sectors.

In accordance with the Terms of Reference, the Project aimed to achieve the following results:

- Develop laws and bylaws with the aim of transposing EU directives related to water,
- Draft Sava River Basin Management Plans for the two entities and the BD, including the Umbrella Report for BiH,
- Develop a policy framework for determining water charges,
- Prepare a Plan for strengthening human resources in the water management sector in BiH,
- Develop an Action Plan for the development of water information systems with special emphasis on the full compatibility of GIS maps and databases for the purposes of developing and reporting on River Basin Management Plans.



**Target 6.3: By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally**

A better sanitation service is signified by more than having a flush toilet; it requires WWTPs in order to protect water resources and aquatic ecosystems. If effective wastewater treatment is a proxy for water resources quality, the current situation in the country is far from acceptable. Most of secondary wastewater treatment facilities are not in full operation because wastewater drainage systems are not set up. By 2035, Bosnia and Herzegovina plans to have 73 per cent of the population served by wastewater treatment, with 95 per cent coverage in urban areas. These objectives will only be achieved through substantial funding, as the current figures are less than 20 per cent. Besides, because sewerage systems are very expensive, decentralized and low-energy treatment systems should also be considered as appropriate solutions in rural areas and small communities. However, the state-level Agency for Statistics of Bosnia and Herzegovina, the Office of Statistics of the Federation of Bosnia and Herzegovina and the Institute of Statistics of Republika Srpska do not provide any data on decentralized forms of wastewater treatment, even those as simple as septic tanks.



The BiH Surface Water Monitoring Programme (assessment of ecological status, chemical status and overall status) began to be gradually adjusted to the requirements of WFD even before the development of Water Management Plans in both FBiH and RS. In general, it can be stated that the systematic monitoring of groundwater (quantitative and qualitative status of groundwater bodies) is still not in function in the entities in BiH. Coordination of water monitoring in BD is assigned to the Department of Water Management. The Water Institute monitors flow, measures physicochemical parameters (including heavy metals) and monitors microbiology and saprobiology on the Tinja, Brka and Sava rivers.

In general, about 75% of the population in BiH has access to public water supply services, while about 41% are covered by wastewater drainage services. Only 15% of the population is connected to wastewater treatment plants (WWTP) (Review of the water services sector in BiH, 2019). WWTPs were built in 15 utility companies in FBiH, and in RS in Bijeljina, Trebinje and Bileća. The collected wastewater is not treated in BD.

Data from the FBiH water strategy show that the degree of coverage of water supply systems in FBiH is about 60% (94% in urban areas and about 20% in rural areas). The coverage of the population with sewerage systems in the FBiH is about 33%. At the time of drafting the Strategy, data on the connection of residents to the WWTP were estimated at 3%, and given that several facilities have been built in the meantime, including the one in Sarajevo, it is estimated that the connection of residents is around 30%.

Significant progress in wastewater management was made in the period 2012–2017 in terms of the quantity of treated wastewater. Thus, based on the data recorded in 2012, only 4% of the total amount of wastewater was treated, while this percentage was significantly increased by 2017 and accounted for 42% of the total quantity of wastewater discharged into water recipients. It is important to stress that the reported percentage of population connected to WWTP is calculated based on the population connected to sewage network and not on real population number. Therefore, the percentage of the population connected to WWTP is much less, but there is no reliable statistical data about that, since there is no reliable data on population connected to sewage. It is assumed that the percentage of treated wastewater will continue to increase as some of the wastewater treatment plants are in the process of construction or in the phase of selection of the most economically advantageous contractor.

Wastewater is mostly discharged into surface watercourses, specifically, an average of about 87% of the total treated water and 96% of the total untreated wastewater. The remaining wastewater is discharged into groundwater, reservoirs and the sea. The population connected to the urban wastewater treatment plant is an indicator whose value is monitored within the reporting to the EEA, but also within the reporting of BiH on the Sustainable Development Indicators.

The indicator entitled Population connected to at least secondary wastewater treatment plants was calculated in the report Sustainable Development Indicators, prepared by the Agency for Statistics of BiH, 2017, for the period 2000–2015. This indicator is defined as percentage of population connected to waste waters treatment systems with at least secondary treatment. Secondary treatment is a process involving physical, chemical and biological treatment, resulting in biochemical oxygen demand (BOD<sub>5</sub>) removal of at least 70% and chemical oxygen demand (COD) removal of at least 75%. In the period 2000–2016, this indicator slightly increased (from 2.0% to 3.6%) while in 2016 this value accounted for 21.7%. The increase in indicators is a consequence of the launch of wastewater treatment plants in Sarajevo and Konjic. No data on the population connected to the wastewater treatment plant for 2017 were available. Nevertheless, it can be assumed that this percentage increased, given the launch of WWTP in Bihac and the expansion of capacities in Gradačac.



**Target 6.4: By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity**

Water efficiency and drought risks are starting to be addressed in Bosnia and Herzegovina. The region is not really water scarce, but signs of water scarcity with droughts during the last decade encourage a mitigation

approach.

Analyzing the available quantities of water in relation to the number of inhabitants, the worst situation is in the Bosna River Basin. The Bosna River Basin covers 20.4% of the territory of BiH, where about 40% of the population lives, while only 14.1% of the total amount of water flows from that area. For more than six months during the year, flows in watercourses are lower than 80% of the average flows, which means that large waters have a relatively short duration. The minimum daily flows of the 10-year return period are 13 to 23% of the average annual flows, and the 100-year return period is 8 to 13 %. Large waters with a return period of 100 years are about 13 times higher than the average annual flows.

Such extremely unfavourable spatial and temporal distribution of water requires the construction of relatively large and complex water management facilities, which requires quality and integrated water management, rational use, protection of water quality and quantity, as well as protection from their harmful effects.

Due to the war in BiH (1992-1995), many water management facilities suffered damage. Thanks to foreign aid, after the end of the war, it is estimated that about 90% of the damage in the water supply sector was repaired. Pre-war data show that by 1992, about 56% of population was covered by public water supply, of which 94% belonged to urban areas and only 6% to rural areas. However, most of them do not meet the needs of users, both in terms of quantity and quality of water, especially in dry periods. Some parts of water supply systems are more or less damaged or dilapidated, which is especially true of distribution networks in urban areas, so water losses are very high.

Although access to water in general is satisfactory through water supply systems in BiH, the poor are in a more difficult position in this regard as well. Most of the 20% of poor households are not included in the public water supply system, which applies even to the poor in urban areas.

The condition of protective water management facilities is very bad, due to war damage, long-term non-maintenance and mining of certain facilities. This is especially true of settlements along the Sava River. The consequences of floods, caused by large waters of less frequent occurrence in this area, if they occur, would be incalculable. The situation in other parts of the country is not much better, as evidenced by the floods in the Tuzla Canton, which occurred in June 2001. At that time, great material damages were caused, estimated at more than 60 million KM, on agricultural crops, housing and infrastructure facilities. This flood wave also caused the erosion of arable land, as well as the occurrence of major landslides. Floods also threaten cities in RS: Banja Luka, Celinac, Prnjavor, Derventa, Modric, Janja, Zvornik and others, in which they create great difficulties, endangering the population and causing great material damage.

The situation is similar in terms of water quality protection. The degree of coverage of the population with sewage systems in urban areas is about 56 %. Most settlements do not have WWTP, with the exception of plants in Gradačac, Srebrenik, Trebinje, Ljubuški, Grude and Neum. More than two thirds of watercourses in BiH are polluted, mainly due to the fact that wastewater from settlements and industry is not subjected to treatment but is discharged directly into open watercourses. Only four municipalities in FBiH and one in the RS have sewage treatment plants in operation.

The quality of services on water supply and wastewater drainage, after the urgent post-war reconstruction, is deteriorating, so that the existing needs cannot be met (which is the cause, for example, of restrictions in water supply in Tuzla).

The main reasons for difficulties in the operation of water companies are high losses in the system (up to 80%), low collection rates (below 50%) and low tariffs, as well as their organizational fragmentation at the municipal level, resulting in poor financial indicators. There is no systematic monitoring of water quality and implementation of standards, except in some larger municipal waterworks.

According to Agency for Statistics of BiH, in 2015 the total volume of abstracted water was 320 million m<sup>3</sup>, while the losses amounted to 177 million m<sup>3</sup>, which is a percentage value of 55.2%. Total length of distribution network was 15.418 km.<sup>20</sup> The latest available data refer to 2017 and there is a declining trend of water losses compared to 2015. The percentage of losses was 52.3%, with the total volume of water losses 173 million m<sup>3</sup>

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<sup>20</sup> Collection and Distribution of Water 2015, Agency for Statistics of BiH, 2016

compared to 331 million m<sup>3</sup> of abstracted water. Development and optimization of water supply network led to its increase to 15,492 km.<sup>21</sup> Although there is improvement, further work is needed on water supply services in order for BiH to meet SDG target 6.4.

In FBiH, in 2015, there were 223 million m<sup>3</sup> of abstracted water. The water losses were large and amounted 136 million m<sup>3</sup>, or 60,5% of total volume of abstracted water.<sup>22</sup> The Institute for Statistics of FBiH provides data from 2019, from which can be seen decreasing of water losses percentage to 56.9%. Total volumes of abstracted water and water losses were 213 million m<sup>3</sup> and 122 million m<sup>3</sup>, respectively.<sup>23</sup> Regarding the length of the distribution network, in 2015 it amounted to 9,484 km and in 2019 it increased by 2.3%. As it was stated for BiH, achieved progress has been commendable but insufficient, and further improvements to the water supply network and services are needed.

In RS, amount of total abstracted water volume was 96 million m<sup>3</sup> in 2015, water losses were 41 million m<sup>3</sup> which makes percentage of 43.2%. Data from 2018 show an increase in the total volume of abstracted water and water losses, 98 million m<sup>3</sup> and 42 million m<sup>3</sup>, while the percentage share of losses remained unchanged at 43.2%. The length of the distribution network increased by 5.9%, from 7,384 km in 2015 to 7,817 km in 2019.<sup>24</sup> Although the percentage of water losses remains stable, continuous progress and improvement are lacking.

Statistics of the BD are available within the Agency for Statistics of BiH, but water supply data are not available, so progress/regress cannot be monitored at the moment.

	<p><b>Target 6.5: By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate</b></p>
<p>International cooperation is already very consistent in the Sava River Basin and is fostered by several programmes, mainly through the International Commission for the Protection of the Danube River—an excellent example of knowledge and data sharing. This contrasts with the fragility of the current internal mechanisms of water co-management in Bosnia and Herzegovina, which hinders effective basin-wide integrated water resources management in the country.</p>	

Given that six of the seven rivers flow through both entities and pass through at least two cantons, Coordination and cooperation on an inter-cantonal and inter-entity basis are needed. Until recently, entities had different environmental objectives and methods for achieving them, including water resources management. Efforts to harmonize laws and institutions are progressing, but the sector is still evolving. Implement the new environmental legislation remains a challenge. The implementation of the Law on Waters may be delayed. The water sector authorities in BiH will be relatively preoccupied with internal restructuring in the near future, which may divert their attention from cross-border initiatives.

The key challenge is that water supply systems cannot meet the consumers' needs during the dry season due to a combination of inadequate water resources availability and inadequate infrastructure capacity. The water sector should go through its modernization, including river basin agencies, harmonization of legislation between the entities, and encouragement of private sector participation in the areas of water supply and sanitation.

The Framework Agreement on the Sava River Basin was signed by the Republic of Slovenia, the Republic of Croatia, BiH and the State Union of Serbia and Montenegro in December 2002, as an expression of will and need to strengthen mutual cooperation in the Sava River Basin. The Flood Protection and River Management Action Plan (2014–2017) was developed and adopted in December 2014. Six key measures and several sub-measures were adopted from the Plan, which, among other things, seek to create conditions for strengthening intersectoral cooperation and coordination in BiH and at the regional level, as well as to continue activities on full application of integrated water management principles. When implementing flood prevention activities, it

<sup>21</sup> Collection and Distribution of Water 2017, Agency for Statistics of BiH, 2018

<sup>22</sup> Collection, Purification and Distribution of Water in 2015, Institute for Statistics of FBiH, 2016

<sup>23</sup> Collection, Purification and Distribution of Water in 2019, Institute for Statistics of FBiH, 2020

<sup>24</sup> Statistical Bulletin Environment 2019, Institute of Statistics of RS, 2019

is necessary to ensure an appropriate level of information exchange and coordination between the competent institutions in BiH with the competent institutions of neighbouring countries, with other international bodies dealing with water management and flood protection (ICPDR, Sava Commission).

The International Sava River Basin Management Plan was prepared by four countries (BiH, Croatia, Serbia and Slovenia), which are parties to the International Sava River Basin Commission (Sava Commission). During the development of the international Sava River Basin Management Plan, a special accompanying document was prepared, dedicated to the selection of important water management issues in the international Sava River Basin. Important issues have been identified specifically for surface and separately for groundwater bodies

Water management issues for the Sava River Basin in FBiH have been identified based on (a) the results of the risk assessment that certain water bodies are “at risk” or “likely at risk” of achieving environmental objectives; (b) Alignment with the “significant issues” identified in the River Basin Management Plan for the Danube and the international Sava River Basin Management Plan and (c) Based on the comments received on the Draft Accompanying Document on “significant issues”. One of the measures from the Water Management Plan for the Sava River Basin in FBiH for the period 2016–2021 is the establishment of better inter-entity and interstate cooperation, all in order to harmonize activities and implement measures in areas where there are common interests and tasks. This cooperation is necessary in order to fulfil all obligations from the signed international conventions, agreements and treaties, among other things, to coordinate activities on the development and implementation of water management plans with competent organizations at the level of BiH.

In RS, according to the 2012 Strategy of Integrated Water Management, the need has been expressed for the provision of unique measurement and information support in order to achieve integrated water management. The realization of a measurement and information system is planned, which should provide complete hydrological, hydraulic and qualitative observation of water management systems. Organizational preconditions for the implementation of integrated water management are consistent application of organizational guidelines from the Law on Waters, constitution of regional river basins (districts) for Sava and Trebisnjica basins in full capacity, organization of “Vode Srpske” in a sectoral form that organizationally and equally “covers” the two mentioned basins in RS, the establishment of the Council of Regional River Basins, as well as the restructuring of public companies on water. The Strategy defines the priority tasks of cooperation—with the Water Management Plan for the Sava River Basin in FBiH, with neighbouring countries and with international institutions, on the basis of international obligations. The key principles of the use and development of human resources and the priority directions of research on water have also been systematized.



**Target 6.6: By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes**

To be able to reach this target, Bosnia and Herzegovina should devote the environmental protection funds fed by water taxes revenues to aquatic ecosystems protection and rehabilitation. Even if some NGOs may play an important and meritorious role in Bosnia and Herzegovina, the river basin councils remain the appropriate governance forums for this target. Bolstering them should be a goal under the current mission of the water agencies of the Federation of Bosnia and Herzegovina and Republika Srpska.

There is no improvement regarding efforts of BIH institutions towards devotion of the environmental protection funds fed by water taxes revenues to aquatic ecosystems protection and rehabilitation. Significant improvement related to implementation of EU Water Directive Framework was made on monitoring of surface water, and adaptation of legislation regulating discharge of wastewater to the environment and proclamation of areas subject to eutrophication and sensitive to nitrates, only in FBiH.



According to the Aichi Objective 11, by 2020 it is necessary to preserve at least 17% of inland waters and 10% of coastal and marine areas, especially areas of special importance for biodiversity and ecosystem services, through efficient and equitable management, ecologically representative and well-connected protected area systems. other effective measures to preserve certain areas, as well as integrate into wider areas and seascapes.

BiH has significant water resources, so water could in the future become one of the foundations of general economic development in many areas (2013 Second National Report of BiH to UNFCCC). BiH water resources are part of the ecosystems of rivers, mountain streams, snowfields, lake ecosystems and wetland habitats, among which peat ecosystems have a special value.

According to the 2008 First National Report of BiH to CBD, a group of specific landscapes stands out in BiH, which includes relict-refugial, high mountain, swamp, and karst field landscapes. The central component of each of these landscapes is water. According to the report, the special ecological and natural value of BiH is represented by the canyon ecosystems in the relict-refusion landscapes of the Una, Vrbas, Drina and Neretva.

However, water in BiH is increasingly viewed in the light of economic resources, which is the cause of one of the major conflicts in sustainable water management. The understanding of the hydro potential for electricity production is especially important because water is considered as a renewable energy source. Small HPPs are renewable energy sources that, according to the First National Report of BiH to UNFCCC, have potential in BiH. In addition to the hydro potential of large streams, BiH also has available hydro potential in small watercourses. According to the entity's spatial plans, a large part of the water habitats is planned for the construction of small HPPs.

### Box 9.1: Targets 6.3, 14.1, 14.2, 14.5, 14.a and 14.c of the 2030 Agenda for Sustainable Development

	<p><b>Goal 6: Ensure availability and sustainable management of water and sanitation for all</b>  <u><b>Target 6.3: By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally</b></u></p>
	<p><b>Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development</b>  <u><b>Target 14.1: By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution</b></u></p>
<p>These targets are particularly relevant to the coastal area of Bosnia and Herzegovina, which is affected by solid waste and nutrient pollution. The main rivers carrying pollutants to the sea are the Neretva (from the nearby towns of Konjic, Mostar and Čapljina), Trebišnjica (from the towns of Bileća, Trebinje and Neum), Krka and Cetina Rivers. About 500,000 people live in the Adriatic Sea Watershed Basin. Urban effluents are discharged to the rivers or to the sea without treatment. Solid waste is deposited on dumps without sanitary control. Industrial effluents are also not effectively treated, thus creating local problems in the receiving water bodies. The main identified hotspots are:</p>	
<ul style="list-style-type: none"> <li>• Mostar, the only agglomeration with more than 100,000 inhabitants, and its treatment of wastewater and regulated collection and disposal of waste according to EU standards;</li> <li>• Neum, the only municipality located in the Mediterranean coastal area of Bosnia and Herzegovina, which lacks proper treatment of water, collection and disposal of waste according to EU standards, and experiences pressure from fisheries;</li> <li>• Čapljina, municipality with wastewater management and transboundary impact, specially related to solid waste management and production of marine litter in the Neretva River Delta;</li> <li>• Trebinje municipality, characterized by wastewater management and transboundary impact, specially related to solid waste management and collection and treatment of leachate.</li> </ul>	
<p>In order to achieve targets 6.3 and 14.1, in particular, for its coastal area, Bosnia and Herzegovina should develop and implement an integrated policy and management framework for its coastal area.</p>	

The concept of integrated coastal zone management (ICZM) is indirectly embedded into a number of BiH policies and strategic documents. The country is committed to sustainable development and demonstrates this by adopting various strategic documents, such as the National Action Plan of the Mediterranean Area of BiH in 2017. BiH has ratified the Barcelona Convention and four of its Protocols, however the ICZM Protocol has not yet been ratified. Despite the commitment to sustainable development in the coastal area, there is a clear need for further capacity building, training and awareness raising on ICZM.

The country's main strategic orientation is EU accession, and the ongoing process of reporting on the status of national legislation is in line with the EU acquis. Integrated management concepts and tools will therefore be



increasingly integrated into the national legal framework. BiH, together with Slovenia, is the co-chair of the EUSAIR environment pillar and plays an active role in its implementation in this EU sub-region.

In parallel, there are efforts to increase the capacity of institutions to implement new laws and sustainable development policies, and a number of ICZM-relevant initiatives are being implemented or planned. The existing institutional framework, although with marked weaknesses in terms of coordination and overall capacity, has the potential to develop ICZM. Interest in the implementation of the Coastal Area Management Programme (CAMP) has been expressed at both national and local levels. Main arguments in favour of CAMP to be implemented in BiH are:

- Growing awareness of the need to commit to the sustainable development of the coastal area;
- There is a clear policy for the implementation of CAMP BiH. The legal framework is increasingly favourable to ICZM;
- Existing institutions can provide the necessary structures for the implementation of CAMP, and there is interest in the Project at the national and local level;
- CAMP can play an important role in creating the conditions for integrated and effective coastal management of BiH.

The goals and activities of CAMP BiH are set in a way that will strengthen the coordination and capacity of relevant actors for integrated management, improve the knowledge base and planning processes, increase public awareness and participation in the development and implementation of sustainable development policies, contribute to conserving valuable biodiversity and natural resources. pollution mitigation efforts. As such, they are fully compatible with the objectives set for CAMP projects, as well as with the objectives and principles of the ICZM protocol. Therefore, CAMP BiH will facilitate the implementation of the ICZM Protocol of the Barcelona Convention (which the country intends to ratify).

In order to meet the objectives of the EU WFD, the Water Management Plan for the Adriatic Sea Basin in FBiH includes the programme of measures related to the six-year period (2016–2021). The Plan includes implementation measures to achieve water management objectives in accordance with the Water Management Strategy for the period 2012–2022. Some of the measures related to the prevention of pollution of the coastal area in order to meet the objectives and adapt to EU requirements and directives, are:

- Adoption of bylaws. Derogation from all water regulations enacted before the 2006 Water Act (legal reform);
- Implementation and enforcement of new regulations, further transposition, training of institutions for enforcement (legal reform);
- Defining monitoring programmes (EU WFD (2000/60/EC));
- Definitive prohibition of sludge disposal by discharge from ships into surface waters and discharge through pipelines or other means (Urban Wastewater Treatment Directive (91/271/EEC));
- Classification and status of bathing water (Bathing Water Quality Directive (2006/7/EC));
- Programme for setting emission limit values (Directive on the protection of waters against pollution caused by certain dangerous substances (2006/11/EC));
- Review of the state of eutrophication of surface waters, estuarine waters and coastal sea waters (Directive on the protection of waters against nitrate pollution (91/67 /EEC));
- Declaration of certain waters as shellfish waters (Directive on the quality of shellfish waters (2006/113/EC))



**Target 14.2: By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans**

This target is dependent on the extent of achievement of Target 14.1. Environmental quality is essential for underpinning coastal and maritime activities in Bosnia and Herzegovina and in the Adriatic-Ionian Region, with two pivotal topics identified in the Action Plan of the Strategy for the Adriatic and Ionian Region: marine environment and transnational terrestrial habitats and biodiversity.

Bosnia and Herzegovina should develop and implement an overall coastal and marine strategy, embedded into the macro-region's economies and societies, which will contribute to bolstering the resilience of the coastal and marine socio-ecosystem in the face of existing and/or potential impacts of climate change and to achieve Target 14.2.

The FBiH Water Management Plan for the Adriatic Sea Basin creates basis for achieving the objectives, which include strengthening the preservation and sustainability of the coastal, marine socio-ecosystem. The objectives of water use are in principle harmonized with the objectives of water protection and protection from waters that have priority, except in cases when water use requirements enter the area of overriding public interest noting that economic reasons also enter the public interest, but only and exclusively when they are related to general social benefits.

The implementation of the 2030 Agenda and the SDGs in BiH would create the conditions for sustainable management of marine and coastal ecosystems to avoid significant negative impacts, among other things, by strengthening their adaptability, and taking action to rebuild them to make the oceans healthy and productive again.<sup>25</sup>



**Target 14.5: By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information**

No marine protected areas have been declared and no potential such area is currently being discussed along the coast of Bosnia and Herzegovina.

Nevertheless, Bosnia and Herzegovina took some steps forward. Already, the 2017 Strategy and Action Plan for Protection of Biological Diversity 2015–2020 includes coastal waters under its Target 15 (By 2020, map and evaluate the benefits from forest, agricultural and water ecosystems, and strengthen the environmental permit mechanism and supervisory inspection within protected areas, areas of special interest and areas from the Natura 2000 ecological network plan).

There are currently no protected coastal and marine habitats in BiH.

FBiH wishes to establish five new protected areas in cooperation with UNEP and GEF through implementation of the project “Achieving Biodiversity Conservation through Creation, Effective Management and Spatial Designation of Protected Areas and Capacity Building (2017–2019)”. One of the planned new protected coastal/marine areas is Botanical Reserve Mediteranetum on Klek Peninsula, Neum with marine aquarium. The draft of the expert study for designation of new protected area has been finalized which is a first step towards its establishment. This project is still in progress; however, the establishment of the first marine protected area is expected to be finalized by project’s end.<sup>26</sup> This will facilitate adopting and implementing the Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast (IMAP), an integral part of Barcelona Convention framework.



**Target 14.a: Increase scientific knowledge, develop research capacity and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular small island developing States and least developed countries**

There was limited progress on research and innovation. The Council for Science of Bosnia and Herzegovina was recently established as an advisory and technical body in the area of science and technology. However, the country's investment in research and innovation remains low.

According to the 2016 report on the European Neighbourhood Policy and Enlargement Negotiations of Bosnia and Herzegovina, preparations on education and research and innovation policy are at an early stage. Bosnia and Herzegovina participated in different cultural programmes as well as research networks and activities. In this regard, the Action Plan of the Strategy for the Adriatic and Ionian Region pillar on “Maritime and marine governance and services” gives a number of possible initiatives, such as “Twin Fish”, focusing on training and networking activities with the aim of boosting capacity-building and of twinning projects between EU and non-EU stakeholders on Common Fisheries Policy; “MSP and ICM training and mutual support”; “Maritime skills circulation”, developing networks of academics and training institutes on maritime profiles/professions; “Adriatic-Ionian data cloud supporting

<sup>25</sup> BiH Voluntary Report on the Implementation of the 2030 Agenda and the Sustainable Development Goals

<sup>26</sup> Sixth National Report of Bosnia and Herzegovina to the Convention on Biological Diversity

maritime governance and services”, establishing knowledge-based innovative communities and IT platforms for sharing data and exchanging knowledge; and “Citizens exploiting the Region's blue potential”, promoting awareness about the macro-region's potential in terms of blue economy, new technologies, aquaculture and fisheries.

The participation of Bosnia and Herzegovina in the pillar “Maritime and marine governance and services” of the Action Plan of the Strategy for the Adriatic and Ionian Region will help to increase scientific knowledge, research capacity and transfer of marine technology.

The 2009 Strategy for Science Development in BiH for the period 2010–2015 was revised and a framework Strategy paper was developed for 2017–2022 and adopted in 2016. The Revised Strategy provides strategic guidelines and an action plan for the development of scientific research and research and development activities and innovations in BiH for 2017–2022, aiming at prosperous development of science and research, economy, education and culture in BiH, in accordance with science development recommendations in Europe and world.

BiH is a part of different research and cooperation funding programmes focused on protection of the marine biodiversity, improvement of the tourism such as Interreg Adria and Interreg Mediterranean but most of the implementing projects are focused on waste management and sanitation.

By implementing the project: “Basic biology of cartilaginous fish: the First Bosnian-Maltese School of Pathology and Molecular Genetics–PATHOGEN 2017” SharkLab worked on informal education of the youth (e.g. students of Natural Science and Mathematics Faculty and Veterinary Medicine) with the purpose of improving their knowledge and practice in marine science in the area of pathology, histopathology and genetics. This project was implemented in 2017 and supported by the FBiH Ministry of Education and Science.

GIZ supported the project “Integrated Waste Management and Marine Litter Prevention in the Western Balkans”<sup>27</sup>, where partner institutions from Albania, BiH, Montenegro working on activities that will improve legislative processes to reduce marine litter, with a particular focus on plastics. At the same time, implementation and monitoring structures are expected to be strengthened. At the local level, the project aims to put into practice measures to reduce the flow of plastics into the Mediterranean Sea. Partner municipalities and organisations in Albania, BiH and Montenegro receive support in the form of the requisite equipment such as containers for the separate collection of recyclables, which helps to improve the collection of recyclable materials and waste.



**Target 14.c: Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in UNCLOS [the United Nations Convention on the Law of the Sea], which provides the legal framework for the conservation and sustainable use of oceans and their resources, as recalled in paragraph 158 of The Future We Want**

**Indicator 14.c.1: Number of countries making progress in ratifying, accepting and implementing through legal, policy and institutional frameworks, ocean-related instruments that implement international law, as reflected in the United Nations Convention on the Law of the Sea, for the conservation and sustainable use of the oceans and their resources**

Bosnia and Herzegovina is party to UNCLOS by succession. UNCLOS is seen as the “sea constitution”, which is supported by a number of conventions in all sectors (such as those of the International Maritime Organization, the Barcelona Convention and the Convention on Biological Diversity), which means that any ratification contributes to the implementation of UNCLOS. In this regard, the ratification of the 1995 Amendments to the Barcelona Convention and its protocols will help Bosnia and Herzegovina to progress in the achievement of target 14.c.

According to the website of the Barcelona Convention, the ratification of some amendment and protocols has not yet been completed.

**Table 1: Status of ratification of the Barcelona Convention, including amendments, and protocols**

	Date	Status	Entry into force
<a href="#">Barcelona Convention</a>	22/10/1994	Su	01/03/1992

<sup>27</sup> <https://www.giz.de/en/worldwide/80948.html>

<a href="#">Barcelona Convention Amendments</a>	19/10/2020	Ra	18/11/2020
<a href="#">Dumping Protocol</a>	22/10/1994	Su	01/03/1992
<a href="#">Dumping Protocol Amendments</a>			-
<a href="#">Emergency Protocol</a>	22/10/1994	Su	01/03/1992
<a href="#">Prevention and Emergency Protocol</a>			-
<a href="#">LBS Protocol</a>	22/10/1994	Su	01/03/1992
<a href="#">LBS Protocol Amendments</a>			-
<a href="#">SPA Protocol</a>	22/10/1994	Su	01/03/1992
<a href="#">SPA and Biodiversity Protocol and Annexes</a>			-
<a href="#">Amendments to the lists of Annexes II and III of the SPA and Biodiversity Protocol (Decision IG.19/12)</a>			-
<a href="#">Amendments to Annexes II and III of the SPA and Biodiversity Protocol (Decision IG.20/5)</a>			
<a href="#">Amendments to Annexes II and III of the SPA and Biodiversity Protocol (Decision IG.21/6)</a>			
<a href="#">Amendments to Annex II of the SPA and Biodiversity Protocol (Decision IG.23/10)</a>			
<a href="#">Offshore Protocol</a>			
<a href="#">Hazardous Wastes Protocol</a>			
<a href="#">ICZM Protocol</a>			

Source: <https://www.unep.org/unepmap/who-we-are/contracting-parties/bosnia-and-herzegovina>

Note: Su = Succession; Ra = Ratification.

## Box 10.2: Relevant targets of the 2030 Agenda for Sustainable Development

In Bosnia and Herzegovina, the coordination of the tasks and activities related to fulfilment of the SDGs has so far been done mostly by United Nations offices, primarily by UNDP and also by some other intergovernmental organizations and NGOs, such as the Friedrich Ebert Foundation. Several workshops, meetings and studies have been undertaken, and a website is dedicated to this purpose. In Bosnia and Herzegovina, none of the waste-related SDGs and indicators has been selected as priority ones.



### **Goal 3: Ensure healthy lives and promote well-being for all at all ages**

**Target 3.9: By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination**

**Indicator 3.9.2: Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe Water, Sanitation and Hygiene for All (WASH) services)**

**Indicator 3.9.3: Mortality rate attributed to unintentional poisoning**

There are no evidence-based data or estimations on the effects on human health in Bosnia and Herzegovina, of either regular landfills or non-sanitary landfills, illegal dumpsites or other illegal activities connected to waste.

There are no data on the impacts of non-sanitary landfills (legal dumpsites) and illegal dumpsites on human health in Bosnia and Herzegovina, though in principle such data could be obtained by the detailed assessment of medical reports on causes of death.

There are no concrete data on the impact of waste and illegal landfills on human health and mortality rates. However, the danger of contamination of soil, groundwater and surface watercourses is constantly present, because the removal of liquid and solid waste is not done in a hygienically acceptable way. Existing waste disposal sites are insufficient compared to the amount of waste generated. As a result, significant amounts of waste are disposed of in illegal places—along roads, in rural landfills, riverbeds or abandoned mines.

In FBiH, the disposal of solid and liquid waste is one of the main problems of public health. According to available data provided by FBiH public utility companies, waste production ranges from 211 kg/inhabitant/year in the West Herzegovina Canton to 386 kg / apartment / year in the Sarajevo Canton. The results of the “Research of methods for the removal of hazardous medical waste in health care institutions”<sup>28</sup> conducted in FBiH 2011–2012, showed that 55% of potentially infectious, 23% of chemical and 20% of pharmaceutical waste from health care facilities ends up in municipal landfills.


Unregulated landfills are mostly unfenced, so that people and animals enter unhindered, which increases the risk of spreading infectious diseases. There are no water, soil or air protection systems in municipal landfills. Leachate and gas control are not available at almost any municipal landfill. Most existing landfills dispose of

<sup>28</sup> [https://www.fmoit.gov.ba/upload/file/okolis/Federalni%20plan%20upravljanja%20otpadom%202012-2017\(1\).pdf](https://www.fmoit.gov.ba/upload/file/okolis/Federalni%20plan%20upravljanja%20otpadom%202012-2017(1).pdf)

all types of hazardous and non-hazardous household waste, including bulky waste, construction waste, waste from medical institutions, waste originating from industrial plants.<sup>29</sup>

Almost all local self-government units on the territory of RS face the problem of waste management. As a rule, waste is deposited in unregulated and uncontrolled landfills that operate without any environmental protection measures. The existing infrastructure for proper waste disposal is not sufficient, the waste management system is not functioning as it should, partly due to the non-existence or non-compliance with legal regulations governing waste management, and ignorance of waste management trends in the EU.

One of the problems is the insufficient education and information of citizens, but also employees in companies that deal with waste.

	<p><b>Goal 12: Ensure sustainable consumption and production patterns</b></p> <p><b>Target 12.4: By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment</b></p> <p><b>Indicator 12.4.1: Number of parties to international multilateral environmental agreements on hazardous waste and other chemicals that meet their commitments and obligations in transmitting information as required by each relevant agreement.</b></p>
<p>Bosnia and Herzegovina is party to the Basel and Stockholm Conventions and is fully implementing them.</p>	
<p><b>Indicator 12.4.2: Hazardous waste generated per capita and proportion of hazardous waste treated, by type of treatment</b></p>	
<p>Medical waste is not measured in Bosnia and Herzegovina and the amount of hazardous waste is only measured in the case of productive activities and construction and demolition waste; neither the total amount of hazardous waste nor the related per capita data for Bosnia and Herzegovina can be defined. Further steps must be taken in order to prepare data for this indicator, by starting data collection for medical waste and merging the data on hazardous waste from different fields.</p>	

There are still no reliable statistics on the generation and treatment of hazardous waste from various sources, such as households, health, and agriculture. Only the Agency for Statistics of BiH collects, processes and reports in detail on hazardous waste from industry and services.

Available statistical data on industrial waste indicate the trend of growth in the amount of hazardous waste with the largest volumes being generated in 2016. Existing hazardous waste management practice in BiH includes a delivery of hazardous waste to companies authorised for waste management by competent institutions. These companies either export hazardous waste for processing or disposal abroad or deliver it to authorised processing companies in BiH to a lesser extent. Hazardous waste (no data about amounts) which is not treated (in BiH or abroad) gets dumped at municipal landfills, mostly non-compliant ones, and dumpsites around industrial companies. The reason lies in underdeveloped infrastructure for hazardous waste treatment and disposal, which is recognized in existing strategic documents. Annual amounts of hazardous waste that are exported from BiH are on the rise, due to non-existence of an adequate structure for treatment and disposal of hazardous waste on the territory of BiH. The total of 9,675 t of hazardous waste was exported in 2016, an increase of 24% compared to 2010.

In FBiH, currently, hazardous waste is disposed of in several ways, partly taken over and transported by utility companies or partly treated within the plant (neutralization). Also, hazardous waste is taken over by companies (approx. 1,000 t/year). According to the Office of Statistics of FBiH, the largest quantities of hazardous waste are waste from the production of thermal processes. Significant amounts of hazardous waste are also generated within inorganic chemical processes. The average annual amount of hazardous industrial waste is 17,919 t.

There are no reliable data on the amount of hazardous waste generated on the territory of RS. Although there is a legal obligation to report and submit waste data, in practice this is insufficiently applied. It is estimated that the generation of hazardous waste stagnates due to reduced economic activity. According to the Waste

<sup>29</sup> Health status of the population and health care in the Federation of BiH in 2012



Management Strategy the estimated amount of hazardous waste is estimated at about 9,066 t (about 2% of the total amount of industrial waste produced).

In BD, it is noticed the lack of co-operation of hazardous waste operators with the Tesla waste batteries recycling plant in Brčko with 90% of accumulated batteries exported to off-border treatment, and only 10% being treated in Tesla. Reason for this is the lower purchase price of lead accumulators compared to those on the European market.

**Target 12.5: By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse**

**Indicator 12.5.1: National recycling rate, tons of material recycled**

There are no official data on the amount or ratio of waste recycling or reusing, on either the state or entity levels.

Such indicator is not monitored for BiH, inter alia, due to lack of data. Currently, the SDG goal, target and indicator can be linked to municipal, packaging and EE waste recycling, for which certain data are available. For example, municipal waste recycling (0.01% in 2008 to 0.30% in 2017) does not contribute to reduction in waste generation through recycling. It recorded the highest value of approximately 1% in 2015 about 12,200 t. These data indicate that activities of separate waste collection and recycling are still at the inception stage, and low recycling level results from the lack of investments in the infrastructure for separate collection and recycling, limited administrative capacities, undeveloped public awareness and insufficient use of economic instruments (e.g. fees for disposal to landfills or “pay-as-you-throw” schemes). On the other hand, there are operating manual sorting lines that can handle municipal waste but work below designed capacity due to the lack of input raw materials.

In FBiH, information systems are under preparation and progress towards quality reporting on types, quantities and treatment of various categories, including special waste streams, is expected. This would facilitate possibility to calculate national recycling rate and monitor progress annually.

In RS, information systems are under preparation and progress towards quality reporting on types, quantities and treatment of various categories, including special waste streams, is expected. This will facilitate possibility to calculate national recycling rate and monitor progress annually.

There is no waste separation system in BD. On-site waste separation is a requirement set out in the Law on Waste Management and incorporated into the Environmental Strategy, to facilitate recycling. The task is to organize a waste sorting system and provide the appropriate infrastructure to enable this process. So far, improvements have not been made.

## Box 11.2: Targets 2.5, 6.6, 11.4, 14.2, 14.5 and targets under Goal 15 of the 2030 Agenda for Sustainable Development



**Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture**

**Target 2.5: By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed**

Progress achieved in terms of conservation of genetic diversity is primarily reflected in introducing the topic in various strategic documents on agriculture development and protection of biological diversity. The Medium Term Agricultural Sector Strategy for the Federation of Bosnia and Herzegovina (2015–2019) and the Strategic Plan for Rural Development of Republika Srpska (2016–2020) propose an increase in incentives and subsidies for organic and integrated production such as on-farm and ex situ collection of autochthonous cultivars for plant propagation, as well as to adopt the List of autochthonous and native breeds and the Catalogue of recognized breeds or hybrids. The Strategy and Action Plan for Protection of Biological Diversity in Bosnia and Herzegovina 2015–2020 (NBSAP) also lists measures related to genetic diversity.

While the entities took some steps to support the implementation of Target 2.5, Bosnia and Herzegovina should implement measures relevant to Target 2.5, as recommended by the NBSAP. These measures include: identifying and evaluating the state of existing indigenous genetic resources, improving existing and drafting new laws and by-laws dealing with genetic resources issues, drafting and implementing programmes for sustainable use of genetic resources, favouring agricultural practice based on breeding of



indigenous domesticated plant varieties and breeds of domestic animals, and creating the in situ and ex situ protection of endangered species.

The Strategic Plan for Rural Development of BiH (2018–2021) focuses on plant and animal genetic resources in a separate chapter (Agro ecological conditions). It integrates biodiversity values that were analysed in the chapter *Biodiversity and Animal and Plant Genetic Resources*. The Strategy recommends integrating agro-environment issues into the process of rural development planning.

Activities on identification of indigenous genetic resources were initiated through projects implemented by international institutions. Some activities have been implemented, resulting in an overview of state of plant and animal genetic resources in BiH, as well as the current activities on their conservation, done within the Project “Rural development through Integrated Forest and Water Resources Management in Southeast Europe (LEIWW)” implemented by GIZ from 2015 to 2018.

In FBiH, legislation related to the genetic resources issues one can single out the 2018 Rulebook for Organic Plant and Livestock Production and the Rulebook on Beekeeping from the same year. In addition, the 2014 Operational Programme for Plant Genetic Resources in Agriculture of FBiH provides specific objectives, activities, planned results and monitoring mechanisms toward conservation of plant genetic resources. The plant gene bank is located at the Faculty of Agriculture and Food Sciences of the University of Sarajevo.

In RS, it is important to underline that a 2015 Law on Livestock Breeding recognizes several indigenous species, breeds and varieties of bred animals (itemized), emphasizing their importance and their protection. In the same year the Strategic Plan for Development of Agriculture and Rural Areas for the period 2016–2020 was adopted. The Law on Genetic Resources in the adoption procedure since 2014 has not been adopted yet. In addition, the Programme for Conservation of Plant Genetic Resources runs since 2008, whereas the Programme for Conservation of Forest Genetic Resources for the period 2013–2025 was adopted in 2013. Although the programmes for conservation of animal genetic resources (specific breeds and varieties) have not been adopted yet, noteworthy is that the 2016 Programme for Cattle Breeding for the period 2016–2022 and the 2018 Programmes for Goat Breeding and for Sheep Breeding for the period 2018–2022 have been adopted. All programmes indicate existence and importance of indigenous breeds as animal genetic resources as well as importance of their conservation. The plant gene bank is located within the Institute for Genetic Resources of the University of Banja Luka, while duplicates of the collection of plant seeds from the RS have been deposited and stored in the Global Seed Vault in Svalbard (Norway).



**Goal 6: Ensure availability and sustainable management of water and sanitation for all**

**Target 6.6: By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes**

Target 16 of the NBSAP is to restore 30 strip-mine lakes into wetland habitats, increase the productivity of all categories of forests, preserve the existing area of flood alder and willow forests and increase the regulated urban green areas by 20 per cent by 2020. Target 9 of the NBSAP proposes that, by 2020, it is necessary to establish a system for treatment of industrial and utility wastewater and monitoring of pesticide and fertilizer consumption.

By implementing Targets 9 and 16 of the NBSAP, Bosnia and Herzegovina would implement Target 16.6.

The conversion of 30 lakes created after mine actions into wetland habitats has not yet been implemented. Sewage treatment plants have been developed at several locations in BiH. The plan for monitoring pesticide residues in and on food in BiH has been implemented since 2014, when samples from the areas affected by the floods were analyzed.

The Food Safety Agency of BiH is continuously working to improve the control of pesticide residues in food, and among other things, the laboratories in BiH through the IPA project 2008 provided and allocated equipment for pesticide residue analysis, whose market value is approximately €300,000.



**Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable**

**Target 11.4: Strengthen efforts to protect and safeguard the world's cultural and natural heritage**

In terms of natural heritage, Target 11 of the NBSAP is to map and urgently protect the specific biological diversity of Bosnia and Herzegovina (canyon, mountain, alpine and wetland ecosystems, karst fields and alluvial plains) in compliance with the applicable spatial planning documents, by 2020. The Spatial Plan of the Federation of Bosnia and Herzegovina for the period 2008–2028 (not yet adopted) incorporates a provision to protect a total of 18.06 per cent of the entity's territory by 2028, while the Spatial Plan of Republika Srpska sets 15.51 per cent of protected areas in this entity as the target for 2025. Significant efforts should be made by both entities to achieve this national biodiversity target and preserve the exceptional natural world of Bosnia and Herzegovina.

Regarding cultural heritage, Bosnia and Herzegovina has been party to the UNESCO World Heritage Convention since 1993; it has three inscribed monuments and eight on the tentative list. The National Commission for UNESCO of Bosnia and Herzegovina should continue efforts to safeguard the rich cultural and historical heritage of the country.

Nominations at UNESCO go through the state level so there are none at lower levels (FBiH, RS and BD). Regarding cultural heritage, BiH has been party to the UNESCO World Heritage Convention since 1993. Three properties inscribed on the World Heritage List and eleven on the Tentative list. Four new properties have been added on the Tentative list since 2017, and three of them are PAs.

The recently added properties are: a) the Strict Nature Reserve–Primeval forest “Perućica” which is located within the National Park “Sutjeska” (added in 2017), b) Jewish Cemetery in Sarajevo (added in 2018), c) the Ancient and Primeval Beech Forests of the Carpathians and Other Regions of Europe–extension (BiH) which include the Strict Nature Reserve–Primeval forest “Janj” (added in 2019), and d) Complex of travertine waterfalls in Martin Brod–Una National Park (added in 2019).



**Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development**

**Target 14.2: By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans**

**Target 14.5: By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information**

As for the marine ichthiofauna, there are no data on qualitative-quantitative composition and distribution, nor studies of marine ichthiofauna in Bosnia and Herzegovina (the coastal area of Neum-Klek Bay) recently carried out. The lack of a law on marine fishing that would regulate exploitation and conservation of this very important natural resource and of coastal and marine strategy stands out as a special problem. The ongoing UNEP/GEF project Achieving Biodiversity Conservation through Creation, Effective Management and Spatial Designation of Protected Areas and Capacity Building (2017–2019) will enable conditions for the establishment of a botanical reserve “Mediterranetum” in the area of Neum-Klek Bay, which would be the first marine protected area in the country.

Bosnia and Herzegovina should:


- (a) Adopt a law on marine fishing and a coastal and marine strategy, embedded into the macro-region's economies and societies, which will contribute to bolster the resilience of the coastal and marine socioecosystem in the face of existing and/or potential impacts of climate change, and to achieve Targets 14.2 and 14.5;
- (b) Implement Target 15 of the NBSAP.

No significant progress has been made with regard to this specific target. Relevant documents in the context of planning and management of certain water ecosystems include monitoring studies detailing physical, chemical and biological quality of water. However, detailed marine surveys have not been conducted by official bodies. Only NGO sector does research in marine area and on the Adriatic coast as a part of their regular or project activities. Although published reports of the benefits from water ecosystems is a proposed indicator for implementing Target 15 of NBSAP, data suggest they are not even in the preparation at the moment.

Currently, no coastal and marine strategy for FBiH has not been drafted. No laws on sustainable use of marine resources, primarily fishing, have not been proposed or adopted on Federal level either. Only Herzegovina-Neretva Canton has a law on marine fishing (OG Herzegovina-Neretva Canton, 7/14). The UNEP/GEF project “Achieving Biodiversity Conservation through Creation, Effective Management and Spatial Designation of

Protected Areas and Capacity Building (2017–2019)” is expected to support meeting Target 15 of NBSAP, with the proposal for the establishment of the Botanical Reserve Mediteranetum on Klek Peninsula being in its final stages of preparation.<sup>30</sup> This proposal elaborates on all the characteristic of the area, proposes the category (V), zonation of the protected areas and lists allowed activities in all zones with different levels of protection. Thanks to the Law on Nature Protection of FBiH (OG FBiH No. 66/13) having sustainable use of resources as one of its goals, the proposal integrates this element, which will subsequently be a significant part of PA management plan.

Not applicable to RS and BD due to the fact they do not have a territory connected to the sea.



**Goal 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss**  
**Target 15.1: By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements**

Although the percentage of the territory under some regime of protection is considerably smaller than those at the European and regional levels, there is some progress towards this target, which, in addition to the existing protected areas, is also reflected in the designation of new ones. For example, the current project Achieving Biodiversity Conservation through Creation, Effective Management and Spatial Designation of Protected Areas and Capacity Building (2017–2019), conducted by UNEP and Bosnia and Herzegovina governmental partners, should expand the country’s protected areas coverage by some 5 per cent of the total national territory, trebling the existing area under protection to about 101,000 ha.

Target 15 of the NBSAP is to map and evaluate the benefits from forest, agricultural and water ecosystems, and strengthen the environmental permit mechanism and supervisory inspection within protected areas, areas of special interest and areas from the Natura 2000 ecological network plan, by 2020.

Bosnia and Herzegovina should implement Target 15 of the NBSAP.

BiH is part of the Mediterranean Wetlands Initiative (Medwet) under the Ramsar Convention on Wetlands of International Importance Especially as Waterfowl Habitat. In this context, some activities took place in BiH with the support of organizations such as WWF Adria, EuroNatur, the Ornithological Society “Our Birds”, the Youth Centre Livno, Dinarica and the Centre for the Environment. Although activities on this issue have been carried out in the past period, according to the Third EPR of BiH, several shortcomings related to Ramsar sites that are of great importance for BiH remain. None of the three Ramsar sites has a management plan and manager, and thus the sustainability of these area (especially biodiversity protection) is questionable.

Natura 2000: According to the BiH Biodiversity Analysis and Addressing the Biodiversity Needs (USAID, 2020), although entity nature protection laws allow the establishment of Natura 2000 sites, such sites are not currently officially established. Protection has been proposed for 122 areas (about 19% of BiH territory), including 200 species and 60 habitats, as well as the establishment of an ecological network in BiH. To date, no bylaws on Natura 2000 have been adopted.

Ramsar and IBA sites: According to the BiH Biodiversity Analysis and Addressing the Biodiversity Needs document (USAID, 2020), there are 3 Ramsar and 4 IBA areas in BiH. The issue of management and financing of these areas is problematic because the entity nature protection laws do not recognize them or integrate them into the national network / system of protected areas. Although some activities have been developed in recent years, especially in promoting wetlands and raising awareness, scientific research and monitoring, none of the Ramsar sites has a management plan and no national list of wetlands is established at the state or entity level. There is also no regulated planning and management issue for IBA areas.

No data are available at the entity level or at district level.

<sup>30</sup> Sixth National Report of Bosnia and Herzegovina to the Convention on Biological Diversity



**Target 15.2: By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally**

The mere fact that forests cover 2,709,769 ha, or about 53 per cent of the total land area of Bosnia and Herzegovina, indicates their importance in providing multiple benefits to the broader community. According to the Action Programme to Combat Land Degradation and Mitigate the Effects of Drought in Bosnia and Herzegovina and the CORINE 2006 database, forest areas have been reduced by 1,352.22 ha (3.88 per cent). The biggest reduction, of 946.42 ha, is related to transition of forest areas into group class Artificial Surfaces, in the process of which 521.97 ha of broad-leaf forest (311) area was lost. Development of the forestry programme is currently underway in the Federation of Bosnia and Herzegovina. The forestry programme has been adopted by the Government of the Federation of Bosnia and Herzegovina and subsequently sent to the Parliament of the Federation of Bosnia and Herzegovina for adoption. In 2012, Republika Srpska adopted the Forestry Development Strategy (2010–2020). The legal framework consists of the Law on Forests in Republika Srpska and Law on Forests in Brčko District; however, in the Federation of Bosnia and Herzegovina, the law failed. In July 2017, the Government of the Federation of Bosnia and Herzegovina adopted the proposed new law on forests, which has been forwarded to the Parliament for a second hearing.

The 2015 Donor Management Report emphasizes the necessity of preparation of sustainable forest management plans and establishment of fire management systems, which, among other topics, includes the means for fire prevention and firefighting. According to the Report of the Agency for Statistics, total damage from fire in the period 2008–2013 was 1,203,393 m<sup>3</sup>.

The Ministry of Agriculture, Water Management and Forestry of the Federation of Bosnia and Herzegovina should speed up the forest management programme and promote its adoption by the Parliament of the Federation of Bosnia and Herzegovina.

The Ministry of Agriculture, Water Management and Forestry of the Federation of Bosnia and Herzegovina, the Ministry of Agriculture, Forestry and Water Management of Republika Srpska and the Department of Spatial Planning and Property Issues of Brčko District should prepare sustainable forest management plans and establish fire management systems.

Although the territory of BiH is not in the category of high risk in the European framework, forest fires are common and cause great damage, as well as the costs of firefighting and rehabilitation and reclamation of the burned area.

In FBiH, no law on forests was adopted before 2009. The Law on Forests was adopted in 2009, however, it was declared invalid by the Constitutional Court (OG FBiH No. 20/02, 20/03, 37/04). The draft forestry programme of FBiH also mentions “Sustainable Management of Forest Ecosystems” as a thematic area, but it has not yet been adopted by the Parliament of the FBiH. The Ministry of Agriculture, Water Management and Forestry of FBiH does not have reliable data on the number of forest fires, the affected area or costs incurred as a result of forest fires, nor on the spatial component of the affected area (i.e. no mapping data).

In RS, the main challenges for the implementation of the Law on Forests (OG RS No. 75/08, 60/13) are illegal activities in the forestry sector, such as illegal logging, fires and forest seizures. Other challenges include the fragmentation of private forests, the incomplete forest biodiversity monitoring system and forest health. According to data from the third EPR of BiH, all forests have management plans in place, in accordance with the regulation on the elements and content of forest management plans, for both state and private forests.

No data available for BD.



**Target 15.3: By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world**

A number of significant aspects of economic development affect the land degradation in Bosnia and Herzegovina, the most important being agriculture, industry, forest management, the energy sector, urbanization and traffic. In the forest management context, FSC certification of all publicly owned forests has been achieved in Republika Srpska on the territory of 23 forest estates. In the Federation of Bosnia and Herzegovina, the certification process for publicly owned forests in accordance with these standards has been completed only in some cantons.

Bosnia and Herzegovina has achieved some progress in the implementation of EU Directive 2008/1/EC (IPPC Directive), especially in terms of issuing environmental permits in the industrial sector. The PRTR has been introduced in the Federation of Bosnia and Herzegovina, but Republika Srpska still lacks a PRTR and does not issue environmental permits to industrial enterprises based on PRTR-collected pollution data.

On urbanization, it is necessary, in the process of passing the Spatial and Regulation Plans, to take into consideration the aspect of land conservation and protection and to harmonize the new and current Regulation Plans with the Spatial Plans.

In FBiH, the Spatial Plan for the period 2008–2028 of FBiH, the Spatial Plan by 2025 of RS and the Spatial Plan 2007–2017 have the general goal of defining areas of special significance for FBiH in protected areas of natural values. The plans represent an overarching strategic document on the basis of which the use of space will be defined and development plans will be made to define objects and areas of natural heritage, and objectives of spatial development, protection, use and purpose of land.



**Target 15.4: By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development**

The Spatial Plan of the Federation of Bosnia and Herzegovina for the period 2008–2028 stipulates the establishment of 14 new protected areas with a total spatial coverage of about 4,488 km<sup>2</sup> (18.5 per cent of the entity's territory), of which 4240.96 km is in mountainous areas. The Spatial Plan of Republika Srpska sets 15.51 per cent of protected areas as the target for 2025 and a significant portion of this is mountainous. Two of the three national parks in Bosnia and Herzegovina, Sutjeska (16052.34 ha) and Kozara (3907.54 ha), are mostly mountain ecosystems. The country should continue with efforts to protect its Key Biodiversity Areas, many of which are mountainous, and pay special attention to the severe impacts of climate change on the mountain ecosystems.

Protected areas (PAs) are established and managed by either entities or cantons, depending on the categorisation. The last known official percentage of territory under protection in BiH is 2.28% (compared to 1.96% in 2016).<sup>31</sup> However, new PAs have been established after the publication of said data, causing the percentage to rise to estimated 2.60%. The UNEP/GEF Project "Achieving Biodiversity Conservation through Creation and Effective Management of Protected Areas and Capacity Building for Protection of Nature in BiH" actively works to officially protect nine new areas, three of which are mountainous: Mt. Zvijezda, Mt. Orjen, Bjelasnica-Rakitnica Canyon-Treskavica-Visocica.

The way in which PA will be managed and level of activities allowed or encouraged is determined by its categorization and specific legal act of designation of protected areas. Each Manager of PA has to develop a Management Plan and incorporate sustainable use of resources and create mechanisms of support for sustainable development. This sustainability element is also highlighted as one of the goals in laws on nature protection on all subnational levels: Law on Nature Protection of FBiH (OG FBiH No. 66/13), the Law on Nature Protection of RS (OG RS No. 20/14) and the Law on Nature Protection of BD (OG BD No. 24/04, 1/05, 19/07, and 9/09). The existing protected areas do not fully implement the system of protection, monitoring and sustainable use. The reason for this is the lack of the budgetary allocations, insufficient capacities (in terms of organizational and human capacities), the lack of management plans, failure to establish the institution responsible for the management of the protected areas, and the like.<sup>31</sup>

FBiH has 12 PAs: one national park, six natural monument and five protected landscapes. Only one new PA has been established since 2016, the Bentbasa Protected Landscape in 2017. They are covering around 3.24% of the territory.<sup>32</sup> Eight PAs in FBiH are predominantly mountainous, with planned Mt. Zvijezda and Bjelasnica-Rakitnica-Treskavica-Visocica looking to increase the percentage of mountainous protected areas (e.g. by the end of 2021).


In RS, currently there are 27 PAs: 3 national parks (Kozara, Sutjeska, and Drina), 14 natural monuments, 2 Strict nature reserves, three PAs with sustainable use of natural resources, three are protected landscapes, and two habitat/species management areas. Since 2016, 11 new PAs have been created: Monument of Park Architecture University City (2016), Slatina Forest Park (2016), Drina National Park (2017), Kuk Cave Natural Monument (2018), Gromizelj Protected Nature Reserve (2018), Cicelj Nature Park (2018), Jelića brdo Forest Park (2018), Liječanski Knez Natural Monument (2018), Una Nature Park (2019), Tišina Protected Nature Reserve (2019) and Orjen-Bijela Gora Nature Park (2020). Significant percentage of most of them is mountainous landscape. Latest information on protected area percentage in RS is 1.30%. However, with Orjen-Bijela Gora Nature Park being established in September 2020, that percentage is expected to be slightly higher.

<sup>31</sup> Sixth National Report of Bosnia and Herzegovina to the Convention on Biological Diversity

<sup>32</sup> Bosnia and Herzegovina Biodiversity Analysis and Addressing Biodiversity Needs, USAID




There are no PAs in BD. Further, in relation to this specific target, it is a very flat area without mountains making it not applicable.

	<p><b><u>Target 15.6: Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed</u></b></p>
	<p>Given the importance of cross-border movement and use of genetic resources of Bosnia and Herzegovina, and the commercial and/or any other type of profit arising from this, Bosnia and Herzegovina did not ratify the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the CBD. The ratification process has been stalled since 2014 due to political disagreements between entity governments.</p>
	<p>Following the objective of Target 17 of the NBSAP, Bosnia and Herzegovina should prepare the legislation and establish the conditions for ratification and implementation of the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the CBD.</p>

The initiative for ratification of the Nagoya Protocol on access to genetic resources and fair distribution of profits generated by their use has been launched several times so far in BiH. In April 2018, the Ministry of Foreign Trade and Economic Relations of BiH submitted an initiative to entity-level ministries of environment on BiH's accession to the Nagoya Protocol.

The ratification can be initiated after obtaining of positive opinions from both entities in BiH, which did not happen in this case. In June 2018, the Ministry of Environment and Tourism of FBiH issued a positive opinion, after it had obtained approvals from cantons, and the Protocol has not been ratified to date. The entity laws on livestock breeding include provisions regarding genetic resources, but not to the extent as foreseen in the Nagoya Protocol. There are indications and information that plant material in particular is being exported, because BiH has not ratified this Protocol and thus provided conditions for regulating exports and profiting from use of natural genetic resources. RS send negative opinions in that time explanation was that is too early for Nagoya ratification, but dated recently on the meeting of Minister assistants from all level of authorities it was mentioned that ratification of Nagoya protocol should be reprocessed now.

	<p><b><u>Target 15.7: Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both demand and supply of illegal wildlife products</u></b></p>
	<p>In 2009, Bosnia and Herzegovina acceded to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Nevertheless, implementation is lagging. There is a lack of relevant regulations and competent authorities are not designated.</p>
	<p>Bosnia and Herzegovina should take further steps to enforce CITES by adopting several regulations, such as lists of threatened and protected wild species, and the manner and procedure of issuance of permits by customs authorities and other competent bodies, and by nominating relevant authorities.</p>

In 2018, the Council of Ministers of BiH adopted the Decision on the Conditions and Method of Implementation of the Convention on International Trade in Endangered Species (OG BiH No. 31/18) which is expected to improve the implementation of the CITES. The decision shall be applied from 15 Nov. 2018.

This Decision defines the manner in which the issuance of marketing authorizations for endangered species of wild animals and plants, dead specimens, and their parts and derivatives, or all species listed in the CITES Appendices, will be carried out. Also, the layout of CITES permit forms for BiH has been prescribed and prepared. The Ministry of Foreign Trade and Economic Relations of BiH, as well as the entity ministries responsible for environmental protection, as well as the competent department of the Government of BD, are in charge of the implementation of this Decision.







**Target 15.8: By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species**

Bosnia and Herzegovina's progress towards this target is partial since the lists of present invasive species have not been published, but there are some relevant decisions and action plans at the entity level on monitoring, control and reduction of the negative effects of some of these species, primarily those that exert harmful effects on human health. Target 10 of the NBSAP is to prepare strategies related to invasive species by 2018.

To implement Target 15.8 and Target 15 of the NBSAP, Bosnia and Herzegovina should prepare strategies related to invasive species, which include the identification of species and populations of invasive animals, plants and fungi, and formation of databases, preparation of strategy for invasive species and formation of the system for monitoring and definition of methods for control of the spread of invasive species.

Like other environmental issues, this issue is handled at the entity level and Brčko District.

In FBiH, in 2019, the Federal Ministry of Environmental Protection and the Faculty of Natural Sciences and Mathematics Sarajevo implemented the project "Inventory and Geographic Interpretation of Invasive Species in FBiH". The activities within the project resulted in a list of invasive species that will support the preparation of by-laws for the protection from alien invasive species in order to preserve native biodiversity of species and habitats and protect habitats and species in FBiH. Monitoring and control of the spread has been reduced to only a few invasive intensive species, primarily those affecting human health, like ragweed. FBiH has adopted the Action Plan for Public Awareness, Elimination and Suppression of Ragweed in FBiH in August 2019<sup>33</sup> as well as the Decision on Measures to Prevent the Spread and for Destruction of Weed Species *Ambrosia artemisiifolia*—common ragweed (OG FBiH No. 89/11). The Ministry of Physical Planning Construction and Environmental Protection of Sarajevo Canton has established a cadastre of ragweed in 2014. Some individual projects could also be mentioned which focus on monitoring of some invasive species. One of such projects is "Monitoring of concentrations of allergenic plants pollen in the territory of Herzegovina" which was co-funded in 2012 by the Environmental Protection Fund of FBiH and implemented by the Faculty of Agronomy and Food Technology of the Mostar University. However, no strategies for monitoring and destruction of invasive species in general have been implemented or drafted.<sup>34</sup>

In RS, reviewed documents suggest there were no official steps towards developing a strategy for combating the issue on all invasive species. However, a Decision on Measures to Suppress and Eradicate the Weed *Ambrosia* (OG RS No. 81/07) is in force since 2007. Important initiative with regard to identification of invasive species is the project "Preserving Sava River Basin Habitats through Transnational Management of Invasive Alien Species (Sava TIES)" implemented between June 2018 and May 2021 as part of the Danube Transnational Programme. During its implementation, the project would seek to find effective solutions for permanent removal and eradication of invasive alien plants that are spreading uncontrolled in the Sava River basin.

Measure 1.1 of Target 1 defined in BD's Strategy for Protection of Nature 2016–2026 recognizes the importance of monitoring invasive species but the progress made in meeting this target is not assessed.



**Target 15.9: By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts**

Bosnia and Herzegovina has adopted the Strategy and Action Plan for Protection of Biological Diversity in Bosnia and Herzegovina 2015–2020 and the Action Programme to Combat Land Degradation and Mitigate the Effects of Drought in Bosnia and Herzegovina. Republika Srpska has adopted the Strategy of Nature Protection, Strategy on Waste Management for the period 2017–2026 and Air Protection Strategy. The Federation of Bosnia and Herzegovina has the Environmental Protection Strategy for the period 2008–2018 that comprises the Strategy on Nature Protection, Waste Management Strategy, Air Protection Strategy and Water Protection Strategy. In addition, Republika Srpska has a draft version of the Forestry Development Strategy 2010–2020. Integration of biodiversity is present in the Spatial Plans of the Federation of Bosnia and Herzegovina and Republika Srpska as well as of local communities.

<sup>33</sup> Conclusion on implementation of Action Plan for Public Awareness, Elimination and Suppression of Ragweed in FBiH (No. 960/2019). Available at: [www.fmoit.gov.ba/upload/file/Zakljucak%202019.pdf](http://www.fmoit.gov.ba/upload/file/Zakljucak%202019.pdf) [in Bosnian only]

<sup>34</sup> Sixth National Report of Bosnia and Herzegovina to the Convention on Biological Diversity

Target 2 of the NBSAP is to integrate biological diversity values into development strategies and strategic plans, with an emphasis on rural development by 2020.

To start fulfilling the implementation of Target 2 of the NBSAP, Bosnia and Herzegovina should prepare the Study on Economics of Ecosystems and Biodiversity and harmonize the existing and new development strategies, including poverty reduction, with national biological diversity targets, and integrate national biological diversity targets into existing and new spatial plans.

When it comes to integration of national biological diversity targets adopted through NBSAP into existing and new spatial plans, it can be noted that this activity has been partially implemented. Although NBSAP referred in Target 2 to the Economics of Ecosystems and Biodiversity (TEEB) study which is closely related to Target 15.9, this study has not been made to date. The NBSAP also noted that there was no professional institution in charge of the issues of evaluation and re-evaluation of natural assets and heritage in BiH, nor of the development of legislative and institutional frameworks for sustainable management, which is still an unsolved issue.

The only significant ecosystem services assessment was conducted in 2018 by GIZ for the Neretva and Trebišnjica River Basins (the area that spans three economies and four political entities: RS and FBiH, Croatia and Montenegro).<sup>35</sup>

In BiH, the greatest opportunities where better biodiversity management could contribute to poverty reduction are in organic production in agriculture, by cultivating indigenous species, through adequate incentive policies by the competent institutions, tourism development, development of rural economies. When it comes to development strategies, it is worth mentioning that at local levels they have incorporated, to a lesser extent, the values of biodiversity. At the level of BiH, FBiH and RS, these strategies have not been adopted.

Strategic documents and plans relating to agricultural development are those that recognise the importance of biodiversity to the greatest extent possible. The 2018–2021 BiH Strategic Rural Development Plan–Framework Document has integrated the values of biodiversity that are analysed in the chapter *Biodiversity and Animal and Plant Genetic Resources*. According to the document, it is necessary to integrate the issues of agro-environment into the process of rural development planning.<sup>36</sup> However, many areas and goals of the 2016–2020 Strategic Plan for the Development of Agriculture and Rural Areas of RS and the 2015–2019 Mid-term Strategy for the Development of the Agricultural Sector of FBiH are based on the conservation of biodiversity, in particular through sustainable agricultural production and preservation of genetic resources.<sup>37</sup>

In FBiH, the Spatial Plan for the period 2008–2028 has not been adopted since the House of Peoples of the FBiH Parliament has still not considered it although it has been adopted by the House of Representatives of the FBiH Parliament. The Plan represents an overarching strategic document on the basis of which the use of space will be defined and development plans will be made to define objects and areas of natural heritage, and objectives of spatial development, protection, use and purpose of land. The Spatial Plan specifies proposals for protection and improvement of the state of the environment in FBiH. A strategic environmental assessment has been conducted in the course of the preparation of this document. The Spatial Plan envisaged the establishment of 14 new protected areas with total area size of approximately 4,488 km<sup>2</sup>, which makes 18.5% of FBiH area.<sup>37</sup>

In RS, the Spatial Plan by 2025 dedicates one sub-section to biological diversity, where spatial planning is guided by the values of biological diversity protection, as well as environmental protection. According to the Spatial Plan, between 15% and 20% of the territory should be protected in RS by 2025. The Industry Development Strategy and Policy for the period 2016–2020 recognises the need to apply environmental standards in industry and more efficient use of resources, and the conservation of biodiversity in forests when it comes to using biomass as a resource.

In BD, the Spatial Plan 2007–2017 emphasizes that parks and nature reserves are sites of special importance in BD for their natural beauty and environment, where strict protection of surface and deep soil layers, water,

<sup>35</sup> Bosnia and Herzegovina Biodiversity Analysis and Addressing Biodiversity Needs, USAID

<sup>36</sup> <https://fmpvs.gov.ba/wp-content/uploads/2017/Ruralni-razvoj/Strateski-plan-BiH.pdf>

<sup>37</sup> Sixth National Report of Bosnia and Herzegovina to the Convention on Biological Diversity

flora and fauna is combined with scientific promotion and excursion tourism activities that need to be carefully regulated. Error! Bookmark not defined.



**Target 15.a: Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems**

In Bosnia and Herzegovina, the entities' environmental funds are regulated by the Law on the Environmental Protection Fund of the Federation of Bosnia and Herzegovina and the Law on the Fund and Financing of Environmental Protection of Republika Srpska and by other by-laws.

In addition to these Funds, funds from international donors have been used in Bosnia and Herzegovina, and a portion of these is directed towards the goal of biological diversity conservation. Currently, there is no formalized donor coordination mechanism. International donors have funded the implementation of projects in the area of environmental protection, agriculture and forestry, which also include in part the area of biological diversity protection, but there are no accurate figures on how much money was invested/earmarked exclusively for this domain.

Donor members active in the environmental/climate action sector are Sweden/SIDA, Japan/JICA, the EU, the USA/USAID, UNEP, UNDP, the World Bank, the UK, Norway, Slovenia, the Czech Republic, Hungary, UNICEF, Croatia, Germany, Italy, the EBRD, the Danish Emergency Management Agency (DEMA), Save the Children, Global Environment Fund (GEF), Western Balkans Investment Framework (WBIF), Special Climate Change Fund (SCCF) and OSCE.

Target 20 of the NBSAP is about the preparation of the strategy for mobilization of financial resources by 2017.

To implement Target 15.a and Target 20 of the NBSAP, Bosnia and Herzegovina should prepare a strategy for mobilization of financial resources, which would allow the establishment and expansion of financial flows to support the conservation of biological diversity in Bosnia and Herzegovina.

The implementation of the NBSAP and the Strategic Plan 2011–2020 requires the preparation of a strategy for mobilization of financial resources as a first step. The authorities would need to analyse the current situation (estimated funding allocations from local and international sources for the domain of biological diversity over the past 5 years, identification of donors and sponsors), to make an assessment of the resources available for the implementation of the national targets/measures for biological diversity by 2020, to identify indicators, to draft an action plan, and to state the method for implementation and supervision of the use of the funding. This has not been implemented.

The lack of continuous and regular biodiversity monitoring remains a challenge in nature conservation management in BiH. BiH does not have standardized systems or methods for collecting, transmitting data and reporting on data and statistics on environment. There are only individual systems for collecting and reporting environmental data. The Agency for Statistics of BiH, Bureau of Statistics of FBiH and Bureau of Statistics of RS collect certain data on the environment as defined by the Statistical Survey Programme.<sup>38</sup> This would also require financial resources.

A number of different projects important for the nature and protection of biological diversity has been funded and implemented by international and national institutions and organizations in the period 2016–2019. An overview of the largest projects is available in Annex J of the BiH Biodiversity Analysis document (USAID, 2020).

According to the third EPR of BiH, budget allocations for nature conservation and biodiversity monitoring, as well as public involvement and interest in these issues remain insufficient. The implementation of the UNDP / GEF project “Achieving Biodiversity Conservation through Creation, Effective Management and Spatial Designation of Protected Areas and Capacity Building” is ongoing, which aims to support the expansion of protected areas in BiH and build capacity for efficient biodiversity management.

Budget of entities, cantons and local communities plan for certain allocations to be used for biodiversity research. In the case of FBiH, most protected areas are designated and funded by cantons while the federation level is responsible for funding the Una National Park, which is an area of federation importance in FBiH. Another funding exception is the Vjetrenica cave, which is funded by the municipality since it is not yet

<sup>38</sup> ESAP 2030+, Preliminary analysis

formally recognized as a protected area in the FBiH. According to UNEP (2016), a total of 2.7 million KM was allocated for PAs of FBiH in 2016.<sup>39</sup> Scientific and research institutions apply with various projects and receive certain funds that are used for studying different segments of biodiversity. According to the BiH Biodiversity Analysis and Addressing the Biodiversity Needs document (USAID, 2020)<sup>40</sup>, a total of 2,727,207 KM was allocated for protected areas of FBiH in 2016, as follows:

- 500,000 KM were allocated for Una National Park and 400,000 KM for co-financing other PAs at the cantonal level
- Sarajevo Canton allocated about 1.4 million KM for protected areas of Sarajevo Canton,
- Canton 10 co-financed the Blidinje Nature Park with 20,000 KM,
- West Herzegovina Canton did not finance Blidinje Nature Park,
- Herzegovina-Neretva Canton co-financed the Blidinje Nature Park with 36,000 KM and allocated 13,000 KM for the Nature Monument Hutovo Blato,
- Tuzla Canton has allocated 200,000 KM from the budget for the needs of the Protected Landscape Konjuh,
- Central Bosnia Canton has allocated 80,000 KM for the needs of the Nature Monument Prokoško Lake,
- Zenica-Doboj Canton has allocated about 140,000 KM for the Tajan Nature Monument.

Same applies for RS, funds for ecological research was allocated from the entity budget. Primarily it is the Ministry of Spatial Planning, Construction and Ecology and Ministry of Education and Culture who have calls for projects financing biodiversity research, but local communities occasionally offer support for these types of project as well. For PAs in RS, the Government allocated almost 2 million KM. 91.93%, was transferred to the Sutjeska and Kozara NPs, while the remaining 8.07%, was used to co-fund the Genetic Resources of the University of Banja Luka.<sup>35</sup>

In BD's Strategy for Protection of Nature 2016–2026 several sources of funding are listed, including a Fund for protection of environment BD which has not been established yet. It also mentions BD's budget, GEF, IPA-I, IPA-II and other international donors as main sources of funding.

## Box 12.2: Targets 15.1, 15.2 and 15.b of the 2030 Agenda for Sustainable Development



**Goal 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss**  
**Target 15.2: By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally**  
**Indicator 15.2.1: Progress towards sustainable forest management**

Forest certification is an important tool for sustainable forest management, as it verifies that forest products the consumers use derive from forests that are well managed and legally harvested. The objectives of forest certification in the Federation of Bosnia and Herzegovina are:

- Stopping possible negative impacts that would lead to a decrease in forest area;
- Improving the quality of forest management;
- Better accessing world markets;
- Improving the environment while providing better economic and social development.

In the Federation of Bosnia and Herzegovina, 22.9 per cent of forest areas is FSC certified, and 42.7 per cent is going through the preparatory process for certification.

In Republika Srpska, the Public Enterprise “Šume RS” is the bearer of a group certificate for the total area of 982,203 ha. The certificate is valid from 10 March 2013 to 9 March 2018 and is subject to annual inspection. The current version was finalized on 15 April 2016. One forest management unit that is not yet included in the certification is the Centre for Karst Region Management–Trebinje. This area has the main goals of fire protection and soil protection. The certification document reports that the key objectives of the Public Enterprise “Šume RS” are:

- Forming such a forest composition and structure that will continuously offer equal yield in quantity and quality;

<sup>39</sup> Sixth National Report of Bosnia and Herzegovina to the Convention on Biological Diversity

<sup>40</sup> <http://measurebih.com/uimages/BiH20Biodiversity20Analysis2C20Final20Report.pdf>

- Achieving maximal forest yield, such that it will be in compliance with the needs of the society in segments of tree species, and assortments of main forest products;
- Conservation and improvement of general-use forest functions and conservation of biodiversity;
- Conducting an adequate management system that will offer better conditions for achievement of higher work productivity;
- Achieving better financial work results through application of modern methods and tools.

According to data from the FSC website (<https://fsc.org/en>), the total area of FSC-certified state forests in BiH is 1,888,802.71 ha, of which 877,584.71 ha in FBiH (46.5%) and 1,011,218 ha in RS (53.5%). No BD forests are under FSC certification. According to data from the third EPR of BiH, no private forests are still certified in BiH, although there are 700,600 ha of private forests. In FBiH, state forests of all cantons are certified except Herzegovina-Neretva, Posavina and West Herzegovina, while in Zenica-Doboj Canton one third of state forests are certified. In RS, all state forests are certified by the FSC certificate.

If the framework requirements of the FSC are not suitable for privately managed forests, an alternative certification system should be sought. Private forests should be included in the certification process due to the growing demand on the EU market for certified products and the increased share of products obtained from private forests.



**Target 15.b: Mobilize resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation**

In the Federation of Bosnia and Herzegovina, the budget for silviculture works, including afforestation, support to natural regeneration and melioration of degraded forests, has been increased. In 2015, in the Federation of Bosnia and Herzegovina 6,521,073 KM was spent for the above works. It is planned to increase this amount to 9,495,392 KM in 2019.

Silvicultural works within state forests are financed from revenues generated by forest users through the sale of forest wood products and other forest products.

In FBiH, according to the forest management plans (Ministry of Agriculture, Water Management and Forestry) in 2019, only on the basis of the two mentioned fees, about 7.26 million of KM were collected, of which only 5.8 million KM were spent on silvicultural works (these are incomplete data submitted only from three cantons (Posavina, Tuzla and Central Bosnia)). Silvicultural works for 2020 are planned to be carried out on an area of 12,854.1 ha, and the planned funds that need to be invested for these works will amount to 10.3 million KM. The realization of the plan of most silvicultural works for 2019 is in the range of 18%–61% (depending on the type of silvicultural works) which is significantly less compared to 2018 (35%–75%), and especially compared to 2017 (60%–95%).

In RS, according to the 2017 Report of the PE Forestry “Forests of RS”, as in the previous period, in some municipalities there were no silvicultural works, although there is a need for this type of work. Silvicultural works in the first half of 2018 were realized in the following scope:

- Afforestation by planting seedlings is 7%, in relation to the planned scope of works,
- No filling of forest crops was carried out,
- Land preparation for natural rejuvenation was achieved with 10.6% in relation to the planned scope of works,
- Forest stand care was achieved with 19.8%.

According to the Annual Forest Management Plan, BD envisages 20,000 KM for afforestation of private forests and 15,000 KM for afforestation of state forests. Funds in the amount of 40,000 KM are also provided in order to use the common property of the District in the best way.





**Indicator 15.b.1: Official development assistance and public expenditure on conservation and sustainable use of biodiversity and ecosystems**

**International projects:**

**In the Federation of Bosnia and Herzegovina, the GEF project for Sustainable Management of Forests and Landscapes is being implemented. The project will continue between 2014 and 2019 with overall funding of US\$5.5 million.** The project aims to ensure sustainable management of forests and landscapes essential for economic development. The project specifically treats sensitive landscapes vulnerable in terms of their current degradation or negative effects of climate change to impacts such as the risk of fire.

Many international projects are implemented in Republika Srpska. The World Bank implemented the Forestry Development and Conservation Project, which has now ended. A USAID–SIDA project helped to develop an action plan for the implementation of EU Directive 2005/15/EC on the wood processing sector.

The EU-funded project Preparation of Instrument for Pre-accession Assistance for Rural Development (IPARD) for Forest and Fisheries Sector Reviews was completed. The forest sector was analysed in terms of forest production, wood processing industry and forestry-related value chains. The next activities under the EU's IPARD 2014–2020 programme will focus on afforestation and agroforestry, fire prevention and restoration after fire, and improving the resilience and environmental value of forest ecosystems.

Total costs for environmental protection in 2016 amounted to 82 million of KM, while in 2017 they amounted to more than 95 million of KM. During 2017, out of the total investments in environmental protection, biodiversity accounted for 0.1%, and the share in the current costs was 1.4%.<sup>41</sup> Funds from international donors have been used very often in BiH, and a portion of these funds is directed towards biological diversity conservation.

Currently there is no formalized donor coordination mechanism. International donors have funded the implementation of projects in the area of environmental protection, agriculture and forestry, which partly also include the area of biological diversity protection, but there are no accurate figures on how much money was invested/earmarked exclusively for this domain. In the area of environmental protection, the Ministry of Foreign Trade and Economic Relations cooperates with the BD and entities' ministries of environment, agriculture, water and forestry, as well as the relevant agencies for water, while all these institutions have their coordination meetings with donors.

As for the forestry sector, there is no formal coordination mechanism. All participants of the environmental protection sector support the establishment of a formal coordination mechanism at the BiH level. However, according to NBSAP, all stakeholders have emphasized that currently the Ministry of Foreign Trade and Economic Relations has insufficient capacity for the implementation of this process. GEF is funding the ongoing project "Achieving Biodiversity Conservation through Creation, Effective Management and Spatial Designation of Protected Areas and Capacity Building (2017–2019)" with UNEP being implementor of the project.

The Donor Coordination Forum in BiH is a platform for information exchange and coordination of donor activities. It maintains an online database that details project activities funded by about 20 leading donors and produces an annual analytical report, which offers an overview of donor activities. The 2019 Report has not been published to date. MAVA Foundation, EU, Swedish International Development Agency (SIDA), Global Environment Facility (GEF), Federal Ministry of Economic Cooperation and Development of the Federal Republic Germany (BMZ), German Development Agency (GIZ), and UNEP have been recognized as the major donors on biodiversity in BiH.

Financing of activities on biodiversity is carried out at entity, BD, cantonal and local levels, but there is no common database with the funds allocated for this purpose and this is also valid for entities and BD. In this regard, it is difficult to determine whether and to what extent the mobilisation of financial resources has been accelerated or is in a significant increase in the implementation of this target. Currently active or planned projects, therefore an extensive data mining would be necessary for evaluating the implementation process.

<sup>41</sup> Sixth National Report of Bosnia and Herzegovina to the Convention on Biological Diversity



FBiH has established a cooperation with the Ministry of Foreign Trade and Economic Relations as well as many international donors who have funded a plathora of biodiversity projects in the past. However, recent project shall be mentioned. In FBiH, the GEF project for Sustainable Management of Forests and Landscapes was implemented with overall funding of US\$5.5 million.

The problem of data inaccessibility is present in RS as well. Many international projects are implemented in RS. For example, the World Bank implemented the Forestry Development and Conservation Project, which has now ended. A USAID–SIDA project helped to develop an action plan for the implementation of EU Directive 2005/15/EC on the wood processing sector. GEF is funding the ongoing project Achieving Biodiversity Conservation through Creation, Effective Management and Spatial Designation of Protected Areas and Capacity Building (2017–2019) with UNEP being implementor of the project.

In the BD’s Strategy for Protection of Nature 2016–2026 several sources of funding are listed, including a fund for protection of environment which has not been established yet. It also mentions BD’s budget, GEF, IPA-I, IPA-II and other international donors as main sources of funding.

## CHAPTER 2: PROPOSED POLICY PACKAGES

### 2.1 Policy packages development

Once different types of needs were identified and assessed, thematic policy packages were developed to enable the country to make focused efforts to address SDGs covered by the third EPR. Keeping in mind that the overall aim of the project was to enhance national capacities of BiH in order to assess the most critical aspects and the priority needs in its environmental governance and policies, the proposed policy packages do not solely seek to resolve issues of the EPR implementation or achievement of the individual SDG targets in isolation. Instead it sets out a detailed approach to development of an enabling framework that facilitates achievement of SDGs as well as EU Chapter 27 obligations in a manner that addresses the SDG targets’ interrelated nature, as well as the complexity of their, at times, conflicting interactions. The proposed approach is, therefore, seeking to achieve a reduction in trade-offs as well as enhancement of synergies by introducing measures for additional policies, research studies, adoption of a coherent inter-sectoral policy, and establishment of effective inter-ministerial coordination. The policy packages give regard to SDGs’ integrated nature by establishing an approach that is holistic, multi-sectoral and multidimensional. The EU benchmarks that need to be met for the provisional closure of chapter 27 on environment and climate change have also been taking into account when developing policy packages.

The results of the proposed policy packages are presented below:

#### Theme 1: Greening the economy



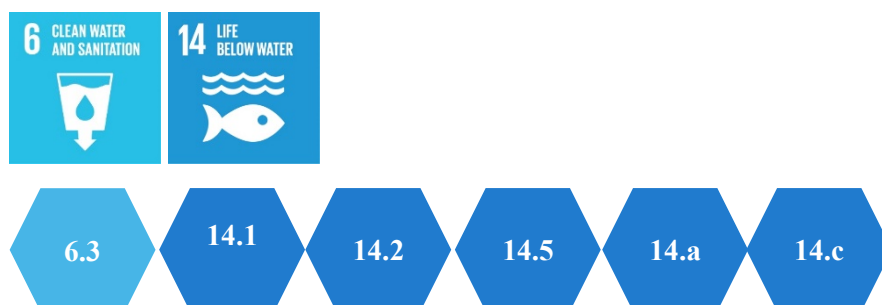
**Box 2: Selected targets of the 2030 Agenda for Sustainable Development**

Targets 1.4, 1.5, 5.a, 8.3, 8.4, 10.1, 10.b, 11.4, 12.5, 12.6, 12.7, 12.c, 15.a and 15.b
Policy package options

This policy package which can be realised in order to achieve progress in implementation of targets 1.4, 1.5, 5.a, 8.3, 8.4, 10.1, 10.b, 11.4, 12.5, 12.6, 12.7, 12.c, 15.a and 15.b can contain any combination of the following:

- Develop an overview of the status of green economy in BiH, with a special focus on the linkages between economy and environmental activities.
- Draft a green economy programme that will contribute effectively to achieving the Sustainable Development Goals.
- Create an enabling environment to support inclusive growth and well-being and generate productive employment and job opportunities, in particular in rural areas and for women, while not harming the environment.
- Develop microfinance and introduce incentives for green economy start-ups, green jobs development and landowners' associations, to spur sustainable economic growth based on the sustainable exploitation of natural resources and activities for greening the high-polluting traditional sectors.
- Attract private resources and improve investment conditions to direct them towards green economy initiatives.
- Develop proper institutional measures, implement economic instruments, improve the efficiency and profitability of public enterprises and develop infrastructure.
- Modify current highly polluting consumption and production behaviours.
- Spur green economic activities (such as sustainable tourism) while increasing expenditures, both national and international, for the preservation, protection and conservation of all of the natural heritage
- Ensure socioeconomically and environmentally sustainable consumption and production as means to increase the quality of life while reducing the use, degradation and pollution of resources.
- Address waste, air and water pollution by using a large range of available instruments, such as awareness campaigns, to modify behaviours and induce households and businesses to adopt sustainable practices.
- Define guidelines for launching activities that would contribute to the creation of green and sustainable jobs, combining environmental policies, strategic planning and investments in order to create new opportunities in sectors where the future is secure and which would stop the growth of unemployment.
- Propose a comprehensive business model for sustainable recovery in terms of building an economy that include circular economy and other global environmental and climate change challenges.

## Theme 2: Coastal management of the Adriatic Sea coast



### Box 9.1: Selected targets of the 2030 Agenda for Sustainable Development

#### Targets 6.3, 14.1, 14.2, 14.5, 14.a and 14.c

##### Policy package options

This policy package which can be realised in order to achieve progress in implementation of targets 6.3, 14.1, 14.2, 14.5, 14.a and 14.c can contain any combination of the following:

- Identify priorities for coastal zone management and activities to reduce marine litter, solid waste and nutrient pollution in BiH.
- Develop and implement an overall coastal and marine strategy, embedded into the macro-region's economies and societies, which will contribute to bolstering the resilience of the coastal and marine socio-ecosystem in the face of existing and/or potential impacts of climate change.
- Propose activities towards drafting and adopting maritime legislation in BiH.
- Define actions to be taken by the country regarding the implementation of SDGs, particularly SDGs 6, 14 and 13 and other SDGs that are relevant for the coastal area of BiH.
- Implement/increase marine protected areas.
- Support the initiation of the ratification of the ICZM protocol and other missing protocols of Barcelona Convention, in BiH.
- Find an interconnection and synergies between the Barcelona Convention and its Protocols in BiH and EU Strategy for Adriatic and Ionian Region EUSAIR.
- Support the implementation of the Coastal Area Management Programme for BiH (CAMP BiH) project based in Neum with the technical assistance of the Priority Actions Programme Regional Activity Centre (PAP/RAC), Mediterranean Action Plan (MAP), Barcelona Convention.
- Increase scientific knowledge, research and innovation through investment and participation in international research networks.

### Theme 3: Adapting to climate change impact agricultural activities



#### Box 6.1: Selected targets of the 2030 Agenda for Sustainable Development

Targets 13.2 and 13.3
<p><b>Policy package options</b></p> <p>This policy package which can be realised in order to achieve progress in implementation of targets 13.2 and 13.3 can contain any combination of the following:</p> <ul style="list-style-type: none"> <li>• Identify priorities for BiH to mitigate climate change impact on agricultural activities</li> <li>• Develop a strategy and guidelines to adapt agriculture to climate change in BiH</li> <li>• Define activities that would contribute to creating sustainable agricultural governance in BiH with special regards to climate change.</li> <li>• Organize a series of events, such as workshops and other awareness-raising events in order to improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction regarding agricultural activities</li> <li>• Or Improve education, raise awareness and human and institutional capacity on climate change mitigation, adaptation regarding the agricultural activities through educational programmes such as workshops or other events</li> </ul>

### Theme 4: Improve medical waste management



#### Box 10.2: Selected targets of the 2030 Agenda for Sustainable Development

Targets 3.9, 12.4 and 12.5
<p><b>Policy package options</b></p> <p>This policy package which can be realised in order to achieve progress in implementation of targets 13.2 and 13.3 can contain any combination of the following:</p> <ul style="list-style-type: none"> <li>• Prepare a review of the global situation that would show the impact of the pandemic on the economy and the environment, with a specific focus on medical waste.</li> <li>• Identify current situation and proposed priority activities in BiH to improve human well-being, catalyzing economic development in relation to environmental protection.</li> <li>• Ensure the collection of data on medical waste and its impact on human health.</li> <li>• Define guidelines for launching activities that would contribute to the creation of green and sustainable jobs, combining environmental policies, strategic planning and investments in order to create new opportunities in sectors where the future is secure and which would stop the growth of unemployment.</li> <li>• Propose a comprehensive business model for sustainable recovery in terms of building an economy that include circular economy and other global environmental and climate change challenges.</li> </ul>

### **CHAPTER 3: CONCLUSIONS**

Strengthening environmental governance and development of sustainable environmental policies plays an important role in the achievement of many of the SDGs in BiH. The overall objective of this study was to assist national stakeholders to improve their national capacities to assess priority needs in environmental governance and to facilitate the national action to integrate evidence-based environmental policies into sector-specific and cross-sectoral strategies aimed at the achievement of SDGs.

To address findings of the needs assessment, a set of policy packages for implementation of the third EPR recommendations and relevant SDGs have been developed. The proposed policy packages aim to represent priorities in environmental governance for BiH in the global context, context of the EU integration and alignment of national agenda with the Agenda 2030. At the same time, they will enable their delivery within the scope of this particular project, considering their cross-cutting nature.

Considering the level of alignment of the national policy framework of BiH with SDGs, the priority should be given to the progress in achievement of the SDGs targets 3.9, 7.2, 7.3 and 11.6. In accordance with the NSSD and the Voluntary National Review, these SDGs have the lowest harmonisation level with the national policy framework, and at the same time are considered to be very important for the country.

## ANNEX 1: Review of climate change mitigation measures—low emission development in Bosnia and Herzegovina

Electric power					
Name of the measure	Description (type of activity, time frame)	Specific goal	EU Sectoral Directive	Effects of the measure	Costs KM, until 2030)
<b>Improving the efficiency of coal-fired power plants</b>	<ul style="list-style-type: none"> <li>Replacement of existing thermal power plants with an average net efficiency of 30% with new ones that will have an efficiency of over 40%.</li> <li>Substitute coal-fired thermal capacities with a total capacity of 1050 MW, a replacement for the existing ones that will cease to operate by 2030.</li> </ul>	<ul style="list-style-type: none"> <li>Reduction of production costs el. Energy,</li> <li>Increasing resource efficiency,</li> <li>Reduction of air pollutant emissions,</li> <li>Reducing carbon dioxide emissions</li> <li>Security of supply</li> </ul>	<ul style="list-style-type: none"> <li>Fulfilment of requirements from LCP BAT</li> <li>Compliance with the emission limit values for air pollutants from the Industrial Emissions Directive, Chapter III.</li> </ul>	<ul style="list-style-type: none"> <li>500 jobs in thermal power plants,</li> <li>Mitigating the decline in numbers jobs in mining and thermal energy,</li> <li>Improvement air quality</li> <li>Reduction of cross-border trans. Acid gases</li> <li>Spec. consumption of coal and special emissions CO<sub>2</sub> will decrease by about 40%</li> <li>Emission reduction: 4,800 Gg / year</li> </ul>	<ul style="list-style-type: none"> <li>Preparation 100 million</li> <li>Implementation 4.5 billion</li> </ul>
<b>Construction of wind farms</b>	<ul style="list-style-type: none"> <li>Installing 550 MW of wind farms in the period</li> </ul>	<ul style="list-style-type: none"> <li>Increase in the share of RES in the total mix,</li> <li>Reduction of special emissions of CO<sub>2</sub></li> </ul>	<ul style="list-style-type: none"> <li>Directive 2009/28 / EC on the promotion of the use of energy from renewable sources</li> </ul>	<ul style="list-style-type: none"> <li>CO emission reduction assessment<sup>2</sup>: 800 Gg / year</li> <li>Development of rural parts (infrastructure), technology transfer</li> </ul>	<ul style="list-style-type: none"> <li>Preparing 40 million</li> <li>Implementation 1 billion</li> </ul>
<b>Construction of solar power plants</b>	<ul style="list-style-type: none"> <li>Installing 100 MW</li> </ul>	<ul style="list-style-type: none"> <li>Increase in the share of RES in the total mix,</li> <li>Reduction of special emissions of CO<sub>2</sub></li> <li>Income of local communities from the sale of electricity. Energy</li> </ul>	<ul style="list-style-type: none"> <li>Directive 2009/28 / EC on the promotion of the use of energy from renewable sources</li> </ul>	<ul style="list-style-type: none"> <li>CO emission reduction assessment<sup>2</sup>: 180 Gg / year,</li> <li>Technology transfer</li> </ul>	<ul style="list-style-type: none"> <li>Preparation 5 million</li> <li>Implementation 100 million</li> </ul>
<b>Construction of biomass cogeneration plants</b>	<ul style="list-style-type: none"> <li>Construction of cogeneration plants on wood chips from forest wood residues and wood waste from the wood processing industry and biogas from agriculture, individual power of several mwe, and a total power of 60 mwe</li> </ul>	<ul style="list-style-type: none"> <li>Income of local communities from the sale of electricity.</li> <li>Increase in the share of RES in the total mix,</li> <li>Reduction of special emissions of CO<sub>2</sub></li> </ul>	<ul style="list-style-type: none"> <li>Directive 2009/28 / EC on the promotion of the use of energy from renewable sources</li> </ul>	<ul style="list-style-type: none"> <li>CO emission reduction assessment<sup>2</sup>: 880 Gg / year due to electricity production energy and 200 Gg / year due to heat production</li> <li>Creation of 2,500 permanent jobs,</li> <li>Improving air quality,</li> <li>Development of an industry that needs thermal energy, sustainability of forest management companies, sustainability of agriculture</li> </ul>	<ul style="list-style-type: none"> <li>Preparation 10 million</li> <li>Implementation 300 million</li> </ul>

<b>Construction of small HPPs</b>	<ul style="list-style-type: none"> <li>Installation of small HPPs with a capacity of up to 10 MW, with a total capacity of 100 MW</li> </ul>	<ul style="list-style-type: none"> <li>Increase in the share of RES in the total mix,</li> <li>Income of local communities from the sale of electricity. Energy</li> </ul>	<ul style="list-style-type: none"> <li>Directive 2009/28 / EC on the promotion of the use of energy from renewable sources</li> </ul>	<ul style="list-style-type: none"> <li>CO emission reduction assessment<sub>2</sub>: 95 Gg / year</li> <li>Development of rural parts (infrastructure),</li> <li>Technology transfer, potential for tourism development</li> </ul>	<ul style="list-style-type: none"> <li>Preparation 20 million</li> <li>Implementation 300 million</li> </ul>
<b>Construction of large HPPs</b>	<ul style="list-style-type: none"> <li>Installing 750 MW</li> </ul>	<ul style="list-style-type: none"> <li>Competitiveness of the sector</li> <li>Adaptation to climate change</li> <li>Network balancing</li> </ul>		<ul style="list-style-type: none"> <li>Smanco network factorization<sub>2</sub>; assessment of CO emission reductions: 2,100 Gg / year</li> </ul>	<ul style="list-style-type: none"> <li>Preparation 100 million</li> <li>Implementation of 2.5 billion</li> </ul>

<b>District heating</b>									
<b>Name of the measure</b>	<b>Current state of implementation of activities (planned / in the implementation phase / implemented)</b>	<b>Specific goal of the measure implementation</b>	<b>Description of activities (type of activity, realization time frame)</b>	<b>Management and coordination</b>	<b>Estimated emission reduction potential Gg CO<sub>2</sub></b>		<b>Effects of the measure</b>	<b>Other effects</b>	<b>Realization costs until 2030. KM</b>
					<b>in 2030</b>	<b>in 2050</b>			
<b>Installation of cumulative and individual meters of thermal energy consumption in all facilities connected to SDG</b>	Partially realized on the territory of BiH (new facilities that are connected to the district heating network mainly have built-in cumulative scales some and individual for apartments. The envisaged measure is entity energy development strategies.	Reduction of thermal energy consumption, lower costs for users and reduction of carbon dioxide emissions	Cumulative and individual heat meters should be installed in all facilities connected to the district heating system. Realization of this measure should be implemented in the period 2020–2030.	In FBiH–Ministry of Energy, Mining and Industry, in the Republic of Srpska–Ministry of Industry, Energy and Mining, cantonal and municipal authorities, companies district heating	33.8	39.4	Reduction of pollutant emissions and lower bills for consumed thermal energy	Improving the business of district heating companies, reducing BiH's energy dependence on imported fuels, reducing heat needs	125 million
<b>Introduction of RES in existing DGs; construction</b>	Partially realized on the territory of BiH. For now, of	CO emission reduction <sub>2</sub> , hiring new labour,	Introduction of biomass in DGs that used fossil	In FBiH- Ministry of Energy, Mining and Industry, in	70.0	224.4	CO emission reduction <sub>2</sub> ,	Reducing BiH's energy dependence	200 million



<b>of new DGs on RES / including central DHW preparation</b>	the larger projects, only the project in Gradiška, Prijedor and Banja Luka has been realized (This activity is foreseen by the entity energy development strategies, i.e. SECAP plans of municipalities and cities).	reducing the price of thermal energy	fuels; construction of new DGs on biomass, use of geothermal and solar energy preparation of DHW in DG. These projects should be implemented continuously until 2050.	RS–Ministry of Industry, Energy and mining, cantonal and municipal authorities, district heating companies			hiring new labour, reducing the price of thermal energy	on imported fuels	
<b>Reconstruction and modernization of the district heating network and thermal substations</b>	Partially implemented (only parts of the networks where frequent accidents occurred have been replaced. This activity is foreseen by the entity energy development strategies).	Increasing the overall efficiency of the system	Reconstruction and modernization of networks and thermal substations. The measure should be implemented continuously until 2050	cantonal and municipal authorities, district heating companies	8.5	39.4	CO emission reduction <sub>2</sub> , lower bills for consumed thermal energy	Improving the business of district heating companies	450 million

Transport						
Name of the measure	Description (type of activity, time frame)	Specific goal	EU Sectoral Directive	Effects of the measure	Management, coordination	Costs (KM, until 2030)
<b>Increasing the share of rail transport</b>	Investment in the reconstruction of railways, bridges, tunnels, retaining and cladding walls, signalization, level crossings, computerization, etc. Which will result in better service (speed, safety, comfort).	<ul style="list-style-type: none"> <li>• Increase in passenger kilometres by 50% by 2030 compared to 2015</li> <li>• Increase in tonne-kilometres by 20% by 2030 compared to 2015</li> </ul>	Directive 2008/57 / EC on the interoperability of the rail system within the Community (Recast)	<ul style="list-style-type: none"> <li>• Increasing the quality of railway service</li> <li>• Better connectivity and travel comfort</li> <li>• Capacity increase</li> <li>• Increase in the share of RES in transport (lower fuel imports)</li> <li>• Emission reduction by 50 Gg CO<sub>2elv</sub>/ year</li> </ul>	Ministry of Transport and Communications of bih, Federal Ministry of Transport and Communications, Ministry of Transport and Communications of RS, Government of DB,	630 million *

				<ul style="list-style-type: none"> <li>Reduction of road transport–reduction of air pollution</li> </ul>	JP Željeznice fbih, JP Željeznice RS	
<b>Increasing the share and modernizing public transport</b>	Investment in strengthening public transport in terms of volume and quality of services based on modern means of transport (electric and efficient buses), investment in infrastructure (filling stations, services, disposal of used parts, etc.)	<ul style="list-style-type: none"> <li>Increase in passenger kilometres in public transport by 20% by 2030 compared to 2015</li> <li>The share of passenger kilometres achieved by electric means of transport 20% in 2030</li> </ul>	Directive (EU) 2019/1161 on the promotion of clean and energy efficient vehicles in road transport	<ul style="list-style-type: none"> <li>Increasing the quality of service</li> <li>Reduction of air pollution</li> <li>Noise reduction in cities</li> <li>Increase in the share of RES in transport (lower fuel imports)</li> <li>Emission reduction by 20 Gg CO<sub>2</sub>eq/ year</li> </ul>	Federal Ministry of Transport and Communications, RS Ministry of Transport and Communications, DB Government Cantonal competent ministries, cities and municipalities, public transport companies (public and private)	250 million
<b>Increasing the share of environmental acceptance live vehicles</b>	Encouraging the purchase and use of hybrid, electric and plug-in passenger vehicles (procurement subsidies, the right to enter the “green” urban areas, cheaper parking, etc.); infrastructure construction (filling stations, disposal of used parts, etc.)	<ul style="list-style-type: none"> <li>Share of environmentally friendly passenger vehicles 3% in 2030 (about 30,000 vehicles)</li> </ul>	Directive (EU) 2019/1161 on promotion clean and energy efficient vehicles in road transport	<ul style="list-style-type: none"> <li>Reduction of air pollution</li> <li>Noise reduction in cities</li> <li>Increase in the share of RES in transport (lower fuel imports)</li> <li>Emission reduction by 90 Gg CO<sub>2</sub>eq/ year</li> </ul>	Federal Ministry of Transport and Communications, Ministry of Traffic and Communications of RS, Government of DB Cantonal competent ministries, cities and municipalities, entrepreneurs	1.5 billion

\* data taken from the Framework Strategy of Transport of BiH where data are given only for FBiH

<b>Building construction</b>						
<b>Name of the measure</b>	<b>Description (type of activity, time frame)</b>	<b>Specific goal</b>	<b>EU Sectoral Directive</b>	<b>Effects of the measure</b>	<b>Management, coordination</b>	<b>Costs (KM, until 2030)</b>
Completion of construction of residential buildings	Support for the completion of unfinished residential buildings (initially for refugees and internally displaced persons)–only family residential buildings, implementation by 2030. The draft Strategy for the renovation of buildings states that as much as 30% of buildings were built in the period from 1992–2014. Years without a finished facade	It is estimated to be 6 million m <sup>2</sup> residential areas. The goal is to complete all the houses and reduce their needs to a maximum of 95 kwh / m <sup>2</sup> per year	Directive 2010/31 / EU on the energy performance of buildings, Directive 2012/27 / EU on energy efficiency	Employment of domestic labour (about 9,000 jobs over a period of 10 years), better living comfort of users, lower heating costs, which is especially important because they are mostly socially disadvantaged people, better air quality reduction of GHG emissions 230 Gg CO <sub>2</sub> / year	Entity Ministries for physical planning and department of BD, competent ministries for refugees and displaced persons, and social protection, entity funds for environmental protection and energy efficiency	1.8 billion

Renovation of buildings– housing	The draft Building Renovation Strategy envisages energy rehabilitation of 1% of residential buildings annually until 2030.	Renovation 604.037 m <sup>2</sup> per year, until 2030 renovation of 10% of the fund of existing residential buildings, i.e.. 6,040,370 m <sup>2</sup>	Directive 2010/31 / EU on the energy performance of buildings, Directive 2012/27 / EU on energy efficiency	Employment of domestic labour (about 20,000 jobs over a period of 10 years), better living comfort for users, lower heating costs, better air quality reduced emissions 550 Gg CO <sub>2</sub> / year	Entity Ministries of Spatial Planning arrangement and department of BD, Entity funds for environmental protection and energy efficiency	1.8 billion
Renovation of public and commercial buildings	The draft Strategy for the renovation of buildings envisages the energy rehabilitation of 1% of public buildings per year by 2030.	Renovation of public and commercial buildings, 90,754 m per year <sup>2</sup> , in the period until 2030, 907,540 m <sup>2</sup> .	Directive 2010/31 / EU on the energy performance of buildings, Directive 2012/27 / EU on energy efficiency	Employment of domestic labour (about 20,000 jobs over a period of 10 years), better living comfort of users, lower heating costs, better air quality, reduced emissions of 80 Gg CO <sub>2</sub> / year	Entity Ministries of Physical Planning and Department of BD, Funds for environmental protection and energy efficiency	270 million
Application of solar thermal systems	Installation of solar DHW heating systems for detached houses	Share of solar energy for DHW heating by 2030 3%, installation of about 50,000 solar systems	Directive 2009/28 / EC on the promotion of the use of energy from renewable sources	Employment of domestic labour (about 1,000 jobs over a period of 10 years), lower energy costs, increase in the share of RES, reduction of 1.2 Gg CO emissions <sup>2</sup> / year	Cities, municipalities, funds for environmental protection and energy efficiency, entrepreneurs	150 million
Application of heat pumps	Use of highly efficient heat pumps for heating and cooling	Installation of 10,000 heat pumps for heating and cooling residential and non-residential buildings	Directive 2009/28 / EC on the promotion of the use of energy from renewable sources	Employment of domestic labour (about 1,000 jobs over a period of 10 years), lower energy costs, increase share of RES, reduction of 1.2 Gg CO emissions <sup>2</sup> / year	Cities, municipalities, environmental and energy funds efficiency, entrepreneurs	150 million

#### Forestry

Name of the measure	Description (type of activity, time frame)	Specific goal	EU policy	Effects of the measure	Costs (KM, until 2030)
Afforestation of bare, coppice and degraded forests	Increasing the area on bare lands and clearings (areas where there was no forest in the last 50 years; afforestation of shrubs, neglected areas, degraded forests, etc. (areas where there was forest vegetation in the last 50 years	2,500 ha / year (total 25,000 ha by 2030) Biomass production from 20 to 40 m <sup>3</sup> / ha per year	New EU Forestry Strategy (2013): Ensure that European forests are managed sustainably Strengthening the EU's contribution to promoting sustainable forest management and	<ul style="list-style-type: none"> <li>Reduction of erosion process and regulation of water regime,</li> <li>Increased carbon storage: 45 Gg CO<sub>2</sub> by 2030, 130 Gg CO<sub>2</sub> until 2050</li> <li>Strengthening seed and nursery production in the forestry sector and growing planting material</li> </ul>	100 million

			preventing deforestation worldwide		
Establishment of plantations of fast-growing species	Growing fast-growing species on degraded and neglected lands	100 ha / year (total 1,000 ha by 2030)	Directive 2009/28 / EC on the promotion of the use of energy from renewable sources New EU Forestry Strategy:	<ul style="list-style-type: none"> <li>Utilization of degraded and neglected lands</li> <li>Biomass production for energy production–higher share of RES</li> <li>Increasing carbon storage (3 Gg CO<sub>2</sub> until 2030, 10 Gg CO<sub>2</sub> until 2050)</li> <li>Reducing fossil fuel consumption–reducing GHG emissions</li> </ul>	3 million
Afforestation by erosion-affected areas	Realization of anti-erosion afforestation system (combination of selected types and system of technical technological solutions)	50 ha / year (500 ha in total until 2030)	Adaptation to climate change	<ul style="list-style-type: none"> <li>Reduced damage to agriculture by washing away fertile land, as well as direct damage due to the consequences of landslides,</li> <li>Reduction of damage to material goods</li> <li>Increased carbon storage: 45 Gg CO<sub>2</sub> by 2030, 130 Gg CO<sub>2</sub> until 2050.</li> </ul>	2.5 million

Agriculture						
Name of the measure	Description (type of activity, time frame)	Specific goal	EU Sectoral Directive / Regulation	Effects of the measure	Management and coordination	Costs (KM, until 2030)
Changes in livestock nutrition	Changing the way and diet of ruminants directly affects the reduction of methane production in the rumen (intake of up to 3% of one type of algae reduces methane emissions in cattle by up to 80%, intake of fats and oils shows a reduction of emissions of 15–20%.	Reduce GHG emissions from agriculture by 12% by 2030	Regulation (EC) No 767/2009 on the placing on the market and use of animal feed	<ul style="list-style-type: none"> <li>Increasing the productivity and sustainability of livestock production</li> <li>Positive impact on soil</li> <li>Reduction of GHG emissions 19 Gg CO<sub>2eq</sub>/year</li> </ul>	Entity and cantonal line ministries in charge of agriculture, and the department in the DB that is responsible for agriculture	25 million
Improving the manure storage system	Manure should be stored in watertight pools (e.g. concrete) which must be large enough for the fertilizer to be stored for six months.	Reducing the process of volatile GHG gases into the atmosphere, preserving useful nutrients such as nitrogen	Directive 91/676 / EEC on the protection of waters against pollution caused by nitrates from agricultural sources	<ul style="list-style-type: none"> <li>Reducing the runoff of the liquid part of the manure into the soil and water</li> <li>Preventing the spread of unpleasant odours</li> <li>Reducing the load of soil with nitrates</li> </ul>	Entity and cantonal line ministries in charge of agriculture, and the department in the DB that is responsible for agriculture	35 million

				<ul style="list-style-type: none"> <li>• Reduction of GHG emissions 2.7 Gg CO<sub>2eq</sub>/year</li> </ul>		
Use of fertilizers and biomass waste in anaerobic digestion and biogas production	Agricultural residues that cannot be used for human and animal consumption can be used for biogas production, and in particular solid and liquid manure, represent a significant source for biogas production.	Reducing the source of easily degradable carbon in the fertilizer potentially reducing N emissions, about those created in the process of nitrification Construction of a total of about 7 mwe of biogas plants	Directive 2009/28 / EC on the promotion of the use of energy from renewable sources	<ul style="list-style-type: none"> <li>• Sustainability of farms</li> <li>• Preventing the spread of unpleasant odours</li> <li>• Better fertilizer quality</li> <li>• Increase in the share of RES</li> <li>• Reduction of GHG emissions 2.7 Gg CO<sub>2eq</sub>/year</li> </ul>	Entity, cantonal line ministries in charge of agriculture, and the department in the DB in cooperation with the entity and cantonal line ministries in charge of energy, entity funds for environmental protection	35 million
Application of mineral fertilizers coated with polymers	Polymer-coated fertilizers enable a reduction in fertilizer consumption per hectare (due to lower nitrogen losses and its prolonged action) with unchanged or increased income	Reduction of losses by washing, denitrification and volatilization, reduction of phytotoxicity	Regulation (EU) 2019/1009. Laying down rules on making EU fertilizer products available on the market	<ul style="list-style-type: none"> <li>• Fertilizer consumption per hectare decreases with unchanged or increased income</li> <li>• Reduction of GHG emissions 0.76 Gg CO<sub>2eq</sub>/year</li> </ul>	Entity, cantonal line ministries in charge of agriculture, and the department in the DB in cooperation with the bih Plant Health Administration	15 million

Waste						
Name of the measure	Description (type of activity, time frame)	Specific goal	EU Sectoral Directive	Effects of the measure	Management, coordination and financing	Costs (KM, until 2030)
<b>Waste prevention / minimization and reducing the amount of solid waste generated</b>	Minimize the generation of waste that includes municipal waste, production waste that is similar in composition and characteristics to municipal waste and sludge from wastewater treatment plants. Application cleaner production improvement, education, introduction of economic instruments, application of regulations and investing in modern technologies.	The amount of waste disposed of in sanitary landfills is 34% of the generated waste Establish a waste sludge management system from 100% wastewater treatment plants Introduced 100% waste management education	Directive 2018/850 EC on landfills Council Directive 91/271 / EEC on urban waste water treatment	Efficient use of waste, active introduction of circular economy in the system of economy of BH, raised awareness of citizens about the benefits, reduction of emissions by 200 Gg CO <sub>2ekc</sub> / year	Entity Ministries of Physical Planning and Environmental Protection, Department of Environmental Protection DB, entity environmental funds, municipal utility companies, local self-government units	110 million

<b>Increasing the amount of separately collected / sorted solid waste and recycling for further reuse</b>	Develop, adopt and implement legislation that will enable for considerably increasing the amount of separately collected and recycled waste Create conditions for improving sustainable waste management Take the necessary measures for the reuse and recycling of municipal waste.	Reuse and recycling of municipal waste in a minimum share of 60% by weight of waste by 2050, quantity biowaste in relation to the total amount of municipal waste must not exceed 6%	EC Directive 2018/851 on preparation for re-use and waste recycling	Waste volume reduction, employment, lower disposal costs, space savings, resource efficiency emission reduction by 50 Gg CO <sub>2ekc</sub> / year	Entity Ministries of Physical Planning and Environmental Protection, Departments for Environmental Protection of the DB, Entity Funds for Environmental Protection, Municipal Utilities, local self-government units	36 million
<b>Providing a waste treatment system with collection and operation by exploitation landfill gas</b>	Separation of biowaste at the waste generation site will affect increase in the amount of landfill gas by 40% which will be used in a controlled manner for energy production (electricity and heat).	Disposal of landfill gas via 100% degassing system at all landfills that have a waste disposal permit (sanitary / regulated)	Directive on the promotion of the use of energy from renewable sources	Reducing the risk of Explosion, increase in the share of RES in energy production, reduction of emissions by 120 Gg CO <sub>2ekc</sub> / year	Entity Ministries of Physical Planning and Environmental Protection, Departments for Environmental Protection of the DB, Entity Funds for Environmental Protection and utility companies	80 million
<b>Reduction of the amount of disposed biodegradable waste, production of biogas and compost</b>	Reducing the amount of disposed biodegradable waste and the share of biodegradable waste that will be treated will lead to an increase in the amount of waste that will be composted. Encouraging the transfer of knowledge and technology with an emphasis on low-carbon technologies.	The amount of used biodegradable waste is 30% by 2050	Directive 2018/850 on landfills Directive 2010/75 / EU on industrial emissions	Reduction of the amount of disposed biowaste, employment, compost production, energy production from biogas, emission reduction by 120 Gg CO <sub>2ekc</sub> / year	Entity Ministries of Physical Planning and Environmental Protection, Departments for Environmental Protection of the DB, Entity Funds for Environmental Protection and utility companies	100 million



## ANNEX I: institutions responsible for the implementation of the strategy for adaptation to climate change and low-emission development

Administrative level / responsibility	Institutions
<b>State level</b>	
Participation in the work of UNFCCC	Ministry of Physical Planning, Construction and Ecology of RS (appointed contact for cooperation with UNFCCC)
Umbrella coordination of adaptation activities and climate change mitigation measures with potential donors and investors	Ministry of Foreign Trade and Economic Relations of BiH
Submission of climate change mitigation activities (NAMAs) to the register, reporting on climate change adaptation measures and mitigation activities NAMAs	Ministry of Physical Planning, Construction and Ecology of RS (appointed contact for cooperation with UNFCCC)
GHG statistics	Agency for Statistics of BiH
Reporting under UNFCCC, the European Energy Efficiency Agency and the EEA	Ministry of Physical Planning, Construction and Ecology of RS, Ministry of Foreign Trade and Economic Relations of BiH
Analysis of the progress of the Strategy and updating it	Ministry of Physical Planning, Construction and Ecology of RS (appointed contact for cooperation with UNFCCC)
<b>Entity level</b>	
Integrate climate change adaptation and mitigation goals into development policies	Governments of FBiH, RS and BD
Transposition of legal regulations and standards of the EU	Ministry of Physical Planning, Construction and Ecology of RS Ministry of Environment and Tourism of FBiH Ministry of Energy and Mining of RS Ministry of Energy, Mining and Industry of FBiH
Promotion of energy / energy efficiency through energy / energy efficiency agencies–EEA	Ministry of Energy and Mining of RS Ministry of Energy, Mining and Industry of FBiH BD Government
Submitting and coordinating climate change adaptation and mitigation activities with potential donors and investors	Ministry of Physical Planning, Construction and Ecology of RS Ministry of Environment and Tourism of FBiH Federal Ministry of Physical Planning of FBiH Ministry of Energy and Mining of RS Ministry of Energy, Mining and Industry of FBiH Ministry of Agriculture, Forestry and Water Management of RS Ministry of Agriculture, Water Management and Forestry of FBiH BD Government Other relevant ministries
Monitoring, reporting and verification of the results of climate change adaptation and mitigation activities–NAMAs	Ministry of Physical Planning, Construction and Ecology of RS Ministry of Environment and Tourism of FBiH
Managing the implementation of climate change adaptation activities and climate change mitigation activities through appropriate institutes and organizations	Relevant entity ministries and departments in the BD Government Relevant entity agencies Eco funds
<b>Regional, local and business level</b>	
Development and implementation of climate change adaptation and climate change mitigation activities NAMAs	Cantons, municipalities, agencies, public companies, companies, NGOs
Integrating climate change mitigation objectives into other activities or development plans (local development strategies, LEAP, SECAP, etc.)	Cantons, municipalities
Promoting energy efficiency	Cantons, municipalities, energy efficiency agencies, public enterprises, companies, NGOs