BOSNIA AND HERZEGOVINA
INTEGRATED ENERGY AND CLIMATE PLAN

Version 7

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INTEGRATED ENERGY AND CLIMATE PLAN

1. Plan adoption review and procedure

1.1. Summary

1.1.1. The plan political, economic, environmental and social context

The concept of today's energy in Bosnia and Herzegovina is based on the economic paradigm of the 70s of the 20th century, which is characterized by energy-intensive and inefficient use of energy in the sectors of production and consumption of electricity, heating, cooling and transport. This is why energy has a dominant influence on emissions with the greenhouse effect (GHG emissions) in BiH (over 70% of total emissions) as well as emissions of pollutants that increase the level of pollution at the local/regional level, endangering the environment and human health.

The transformation of the energy sector, especially the electric power sector (EPS), began with the signing of the Treaty Establishing Energy Community (EnC), which was ratified in 2006. With this Treaty, BiH undertook to gradually take over parts of the acquis of the European Union (EU) by transposing into its laws the requirements and rules of the corresponding EU directives and regulations in the areas of: security of supply, competition, environmental protection, energy infrastructure, energy efficiency and energy consumption from renewable sources. In this regard, Bosnia and Herzegovina is currently in a process that has as its end result inclusion in the internal market of the European Union.

In addition to the Treaty Establishing the EnC, Bosnia and Herzegovina is a signatory to the Paris Agreement and the Sofia Declaration, which it signed in November 2020, where, among other things, it decided that in order to support decarbonisation in the Western Balkans region, it will work on the introduction of carbon dioxide emission taxation mechanisms (CO_2) and on harmonisation with the European Union emissions trading system (EU ETS - EU Emission Trading System). The EU ETS is often referred to as the foundation of EU climate policy. Its goal is to reduce emissions by setting prices for emitted amounts of greenhouse gases (GHG) from the energy sector, industry and the aviation sector.

In July 2021, the European Commission (EC) proposed the Carbon Border Adjustment Mechanism (CBAM) as part of a comprehensive legal framework to reduce net greenhouse gas emissions in Europe by 2030 by at least 55%. compared to the reference year 1990. CBAM is considered a key element to avoid the risk of "carbon leakage" for European energy-intensive industries. EPS is one of the industrial branches to be included in CBAM. Although the main purpose of CBAM is not to speed up the process of decarbonisation of EPS in countries exporting electricity to the EU, its application will have an impact on the production of electricity from coal. The introduction of CBAM would have a particularly large impact on the thermal energy sector in Bosnia and Herzegovina, which exports about 50% of production from thermal power plants (TPP). Bosnia and Herzegovina has analysed the application of CBAM and the conclusion is that it is necessary to make an effort to avoid the introduction of CBAM because it is extremely unfavourable for the domestic economy. The determination of all actors in Bosnia and Herzegovina was agreed upon to move rapidly towards the introduction of the EU ETS model in Bosnia and Herzegovina. At the initiative of the Energy Community Secretariat, public company (JP) Elektroprivreda BiH d.d. – Sarajevo introduced an internal calculation of the price of CO_2 from the operation of thermal power plants, which implies the interest in introducing a CO_2 prevention model in Bosnia and Herzegovina.

At the 19th meeting of the EnC Ministerial Council, which was held on 30 November 2021 in Belgrade, the Council of Ministers adopted, among other things, the General Guidelines on the adoption of the Decarbonisation Roadmap for the EnC contracting parties. Also, a decision was made to implement directives and provisions from the EU energy package "Clean energy for all Europeans". This initiated the process of decarbonisation of the power industry in the EU member states. The key "tools" of decarbonisation in a country are the determination of the date of cessation of the use of coal for the production of electricity and the introduction of the CO2 emissions payment and trading system (EU ETS), which administratively manages the realization of the set goal (by constantly reducing the allowed annual quotas of CO_2 emissions) of getting out of coal".

The adoption of the Roadmap for decarbonisation by the Ministerial Council sends an important message about the readiness of EnC to join the European Union and other international partners in achieving net zero emissions of greenhouse gases by 2050. The transformation of the energy sector that should occur in the coming decades with the aim of decarbonisation is called an energy transition.

By signing the Treaty establishing the EnC, obligations from the UN Agenda 2030, the Paris Agreement, the Sofia Declaration, BiH expressed its clear determination for the sustainable development of the energy sector. Therefore, the guidelines for the development of BiH's energy sector should be based on sustainable development policies that have three aspects:

a) security of supply,
b) price competitiveness and availability of energy and
c) decarbonisation policy, i.e. the use of clean energy.

With a target increase in the sector efficiency and the use of renewable energy resources, BiH can achieve parallel convergence with the assumed obligations and EU policies and position energy as an instrument of the economy stability and sustainable development. Secondary effects will lead to the growth of sustainable employment, reduction of public debt and increase in the sector competitiveness. Therefore, the energy transition should be seen as a development opportunity. The key factor in the success of the implementation of energy policies and plans is the political decision to change the paradigm of energy sector development.

1.1.2. A strategy related to the five dimensions of the energy union

In 2019, the European Union completed a comprehensive update of its energy policy framework to facilitate the transition from fossil fuels to cleaner energy and meet the EU's commitments under the Paris Agreement to reduce greenhouse gas emissions. The agreement on this new energy regulation - called the Clean Energy for All Europeans package - marked a significant step towards the implementation of the energy union strategy published in 2015. Based on the Commission's proposal published in November 2016, the Clean Energy for All Europeans package consists of eight legislative documents. After the political agreement of the Council and the European Parliament (between May 2018 and May 2019) and the entry into force of various EU rules, EU countries have 1-2 years to transpose the new guidelines into national law. The new rules will bring significant benefits from a consumer, environmental and economic perspective. By coordinating these changes at EU level, the legislation also underlines the EU's leadership in the fight against global warming and makes an important contribution to the EU's long-term strategy to achieve carbon neutrality by 2050.

Below are the basic elements of the general framework resulting from EU directives and other international agreements in the field of integrated energy and climate, which Bosnia and Herzegovina is obliged to implement.

- Energy Union Strategy (COM/2015/080)[1]
- Clean energy package[2]
- Regulation on the Governance of the Energy Union and Climate Action (EU) 2018/1999[3]
- 2020 to 2030 framework for climate and energy policy - Green Book [4]
- National energy and climate plans [5]
- Recommendation of the Ministerial Council of the Energy Community [6]
- Policy guidelines for the development of national energy and climate plans according to Recommendation 2018/01/MC-EnC [7]

Since 2013, Bosnia and Herzegovina has started establishing a strategic framework guided by the carbon neutrality principles. Since then, several strategic documents have been adopted with intensive, ongoing activities to harmonise them and establish a unified approach to achieving decarbonisation goals by 2050.

As a potential candidate for EU membership, Bosnia and Herzegovina undertook to fulfil the objectives of the Stabilisation and Association Agreement (SAA) between the EU and BiH, signed in June 2008, which entered into force in 2015. According to this agreement, activities are focused on priority areas related to the *acquis communautaire* in the field of energy, based on the Treaty Establishing the Energy Community (Article 107 of the SAA), and will be developed with the aim of gradually integrating BiH into the European energy markets. Furthermore, according to Article 108 of the SAA, special attention will be paid to the ratification and implementation of the Kyoto Protocol.

The first strategic document, which covers activities related to decarbonisation in Bosnia and Herzegovina, is the Climate Change Adaptation and Low Emission Development Strategy[8], adopted by the Council of Ministers in 2013. The approach described in the Strategy includes two closely related components: adaptation to climate change and

[1] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52015DC0080&from=EN
[2] https://ec.europa.eu/energy/topics/energy-strategy/clean-energy-all-europeans_en
[3] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018R1999&from=EN
[4] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52014DC0015R(01)&from=HR
[5] https://ec.europa.eu/info/energy-climate-change-environment/implementation-eu-countries/energy-and-climate-governance-and-reporting/national-energy-and-climate-plans_en
[6] https://www.energy-community.org/dam/jcr:de3adce9-e047-4fb3-a632-f63c64a5c9c6/REC_2018_01_MC_CLI.pdf
[7] https://www.energy-community.org/dam/jcr:c9886332-a1f5-43ee-b46c-31c637aedfa6/PG_03_2018_ECS_NECP.pdf
[8] http://www.unfccc.ba/site/upload/PDF_dokumenti/Strategija%20prilagodjavanja%20na%20klimatske%20promjene%20i%20niskoemisiono%20razvoja-finalni%20nacrt%20Jun%202013.docx

low emission development. According to UNFCCC reporting obligations, the BiH Council of Ministers prepared four and adopted three national reports on communications, namely:

- The first national report of Bosnia and Herzegovina in accordance with the United Nations Framework Convention on Climate Change [9],
- Second national report of Bosnia and Herzegovina in accordance with the United Nations Framework Convention on Climate Change [10] and
- The third national report of Bosnia and Herzegovina in accordance with the United Nations Framework Convention on Climate Change [11].
- The fourth national report of Bosnia and Herzegovina in accordance with the United Nations Framework Convention on Climate Change has been completed and is currently in the adoption procedure.

Also, three updated biennial reports on climate change were published, namely:

- First biennial report of Bosnia and Herzegovina on greenhouse gas emissions in accordance with the United Nations Framework Convention on Climate Change [12],
- Second biennial report of Bosnia and Herzegovina on greenhouse gas emissions in accordance with the United Nations Framework Convention on Climate Change[13].

In addition to the above, the strategic framework for decarbonisation in Bosnia and Herzegovina includes the following:

- Second national climate contribution to the United Nations Framework Convention on Climate Change (UNFCCC) [14],
- Strategies for harmonising the legislation of Bosnia and Herzegovina with the acquis of the European Union in the field of environmental protection (EAS-BiH) [15],
- 2020-2030 draft roadmap and action plan for the implementation of the determined contributions of Bosnia and Herzegovina[16],
- 2021-2025 draft strategy for financing the Nationally Determined Contributions of BiH,
- National Emission Reduction Plan (NERP) for Bosnia and Herzegovina (BiH) [17].

The framework energy strategy of Bosnia and Herzegovina until 2035 was adopted by the Council of Ministers of Bosnia and Herzegovina in August 2018. This strategy provides guidelines regarding the energy sector development goals, with respect to environmental protection criteria, and recommends further alignment with EU directives that promote the establishment of low carbon energy. For Bosnia and Herzegovina, the need for an additional reduction of greenhouse gas emissions from coal-fired thermal power plants and a greater share of cleaner energy in the system of future production, and with regard to the CO2 equivalent/greenhouse gas trading system, new stricter standards for local emissions, etc., is particularly emphasised. Also, the Strategy defines the long-term energy sector goal in Bosnia and Herzegovina, which implies the creation of a competitive and long-term sustainable energy system, within the framework of available capacities, resources and adequate dynamics. A stable energy system is necessary for the stability and launch of other economic branches, as well as for maintaining the competitiveness of the economy as a whole. Five key priorities and related focus areas were defined:

- Efficient use of resources
- Safe and affordable energy
- Efficient use of energy
- Energy transition and environmental responsibilities
- Development and alignment of the regulatory-institutional framework

In accordance with this, entity strategies for the energy sector development were drawn up:

- Framework energy strategy of the Federation of Bosnia and Herzegovina until 2035 (draft) [18],

[9] http://www.unfccc.ba/site/upload/PDF_dokumenti/Procjena-1.%20nacionalni%20izvjestaj%20BiH%20o%20klimatskim%20promjenama(1).pdf
[10] http://www.unfccc.ba/site/upload/PDF_dokumenti/BiH_SNCBiH_BHS-L.pdf
[11] http://www.unfccc.ba/site/upload/PDF_dokumenti/TNC_Report%20_LAT.pdf
[12] http://www.unfccc.ba/site/upload/PDF_dokumenti/FBUR%20latinica%20za%20web.pdf
[13] http://www.unfccc.ba/site/upload/PDF_dokumenti/TNC_Report%20_LAT.pdf
[14] http://www.unfccc.ba/site/upload/PDF_dokumenti/INDC%20Bosnia%20and%20Herzegovina.pdf
[15] Official Gazette of Bosnia and Herzegovina, number 91/18
[16] http://ppipo.bdbih.gov.ba/data/dokumenti/pdf/NDC_BiH_Mapa_puta_i_akcijski_plan_Nacrt-april_2020.pdf
[17] http://www.mvteo.gov.ba/data/Home/Dokumenti/19012016_BiH_NERP_local_12_23_2015_Final.pdf
[18] https://fmeri.gov.ba/media/1359/okvirna_energetska_strategija_fbih_radna_verzija.pdf

- Energy development strategy of Republika Srpska until 2035 [19].

The National Renewable Energy Action Plan for Bosnia and Herzegovina (NREAP) was adopted in 2016. The NREAP set a target for 2020 for the total share of renewable energy sources (RES) in gross final energy consumption (GFEC), as well as individual sector targets, together with the necessary political interventions and measures needed to achieve those goals. The general goal for Bosnia and Herzegovina included a 40% target share of RES in the GFEC by 2020. Although there is still no official data from energy statistics, the Ministry of Foreign Trade and Economic Relations has parameter estimates from which it can be concluded that BiH has reached the goal for 2020. This plan will replace the NECP for BiH.

Accordingly, the entities have developed their own plans for the use of renewable energy sources, that is:

- Action plan for the use of renewable energy sources in the Federation of Bosnia and Herzegovina (APOEF) [20],
- Action plan of Republika Srpska for the use of renewable energy sources [21].

On the other hand, energy efficiency is an integral part of the strategic framework of the energy sector in Bosnia and Herzegovina. The BiH framework energy strategy defines the long-term goal of energy sector in Bosnia and Herzegovina which is certainly the creation of a competitive and long-term sustainable energy system, an inseparable part of which is the field of energy efficiency, both in the domain of the energy consumption sector and in the area of energy production, transmission and distribution. Bosnia and Herzegovina is currently working on the adoption of the Energy Efficiency Action Plan, which is the state's obligation under the Treaty Establishing Energy Community. The action plan is made according to the EC Secretariat template so that it is aligned with the Action Plans at the entity levels, and should be aligned with the new Directive 2012/27/EC. In this regard, the entities have developed their own energy efficiency plans, that is:

- Energy efficiency action plan of the Federation of Bosnia and Herzegovina for the period 2019-2021.[22],
- Energy efficiency action plan of Republika Srpska until 2018[23].

The Bosnia and Herzegovina integrated energy and climate plan establishes links between the existing elements of the strategic framework, and defines a new approach that introduces stronger cooperation between sectors, with the aim of establishing a clear and efficient implementation framework, based on an intersectoral approach. This new, linked strategic approach should ensure a smooth process of the energy sector decarbonisation in 2030, which aims for meeting the carbon neutrality criterion by 2050. The pillars of this strategic approach are set according to the dimensions defined by the Energy Union Strategy (COM/2015/080)[24], namely:

- Dimension 1A: Decarbonisation: Reduction and elimination of greenhouse gas emissions
- Dimension 1B: Decarbonisation: Renewable energy sources
- Dimension 2: Energy efficiency
- Dimension 3: Security of supply
- Dimension 4: Internal energy market
- Dimension 5: Research, competitiveness and innovation

For each dimension, this plan defines the goals of the dimensions, as well as the accompanying operational goals from which further activities on the implementation of policies and measures from the framework of this plan follow. Also, the strategic approach defines the main indicators for monitoring progress on the implementation of the plan, expressed in numerical values for reducing greenhouse gas emissions, reducing the use of primary energy, reducing final energy consumption, and the share of renewable sources in the total gross final energy consumption. The content of the goals by dimensions is given in the following Table.

[19] https://www.vladars.net/sr-SP-Cyrl/Vlada/Ministarstva/mper/std/Documents/StrategijaEnergetike2035Latinica.pdf
[20] https://fmeri.gov.ba/media/1858/apoef.pdf
[21] https://ers.ba/wp-content/uploads/2019/07/akcioni_plan.pdf
[22] https://fmeri.gov.ba/media/1983/eeapf-bih-2019_2021.pdf
[23] https://www.vladars.net/sr-SP-Cyrl/Vlada/Ministarstva/mper/std/Documents/APEERSdo2018.pdf
[24] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52015DC0080&from=EN

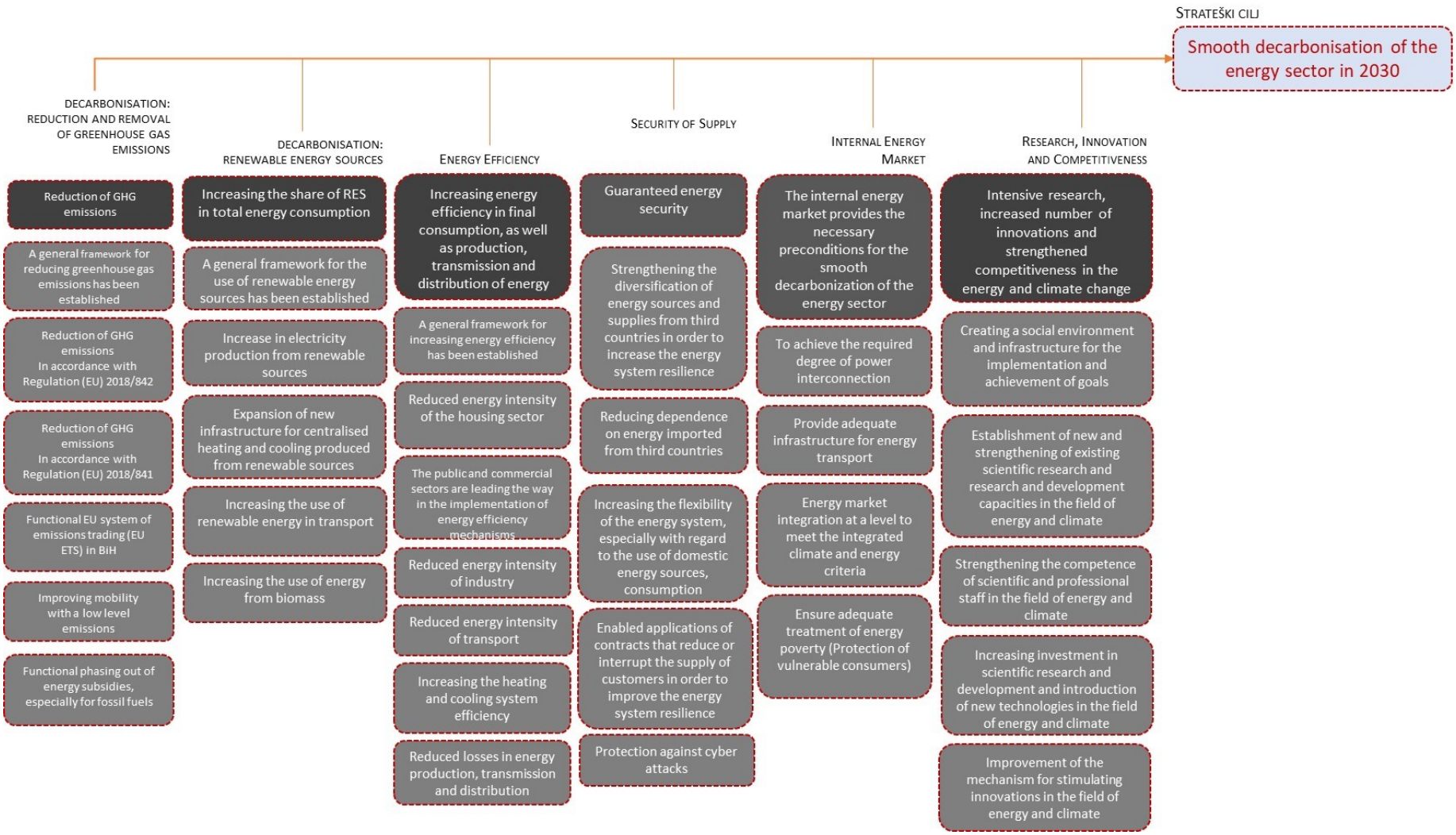

Table 1: Strategic approach to the development of the energy sector according to the decarbonisation criteria by 2030 in Bosnia and Herzegovina

1.1.3. Tabular presentation of the plan's key goals, policies and measures

1.1.3.1 Values of the main indicators for achieving the goals

The success of the implementation of the goals of the Bosnia and Herzegovina Integrated Energy and Climate Plan depends on the effectiveness of the prescribed policies and measures. The measure of this success is the evaluation of the progress of the values of the main indicators for monitoring the implementation. The framework of this plan defines the following main monitoring indicators:

- Total emission of greenhouse gases
- Share of renewable sources in gross final energy consumption
- Primary energy consumption (PEC)
- Final Energy Consumption (FEC)

The integrated energy and climate plan of Bosnia and Herzegovina defines the target value for the reduction of greenhouse gas emissions in 2030. This value was obtained as a result of planning the development of the entire energy sector, based on the sector decarbonisation and compliance with the criteria defined in order to achieve carbon neutrality by 2050. In this regard, the following goal is set:

Total CO_2-eq emission with LULUCF in 2030	15.6 $MtCO_2$
Emission reduction in 2030 compared to 1990 (with LULUCF)	41.21%

The goal implies a gradual reduction of CO_2-eq emissions in the period 2022-2030 according to the trend shown in the following chart, and distributed according to three basic emission sectors, namely:

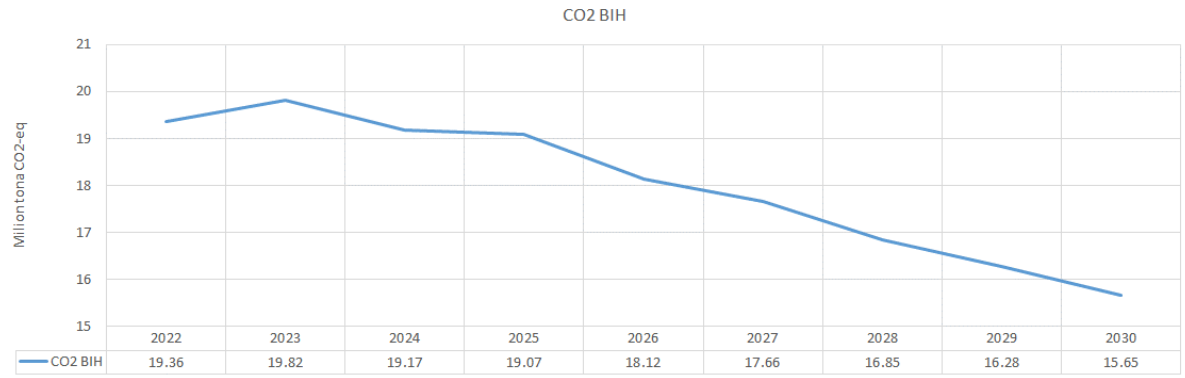

Diagram 1: The trajectory of reducing CO2-eq emissions with LULUCF in Bosnia and Herzegovina in the period 2022-2030 by sectors

The goal of the RES share in the total gross final consumption of energy in Bosnia and Herzegovina in 2030 is:

Total Share of RES in 2030	43.6 %

The trajectory of the RES share in gross final energy consumption in Bosnia and Herzegovina by 2030 is given in the following diagram:

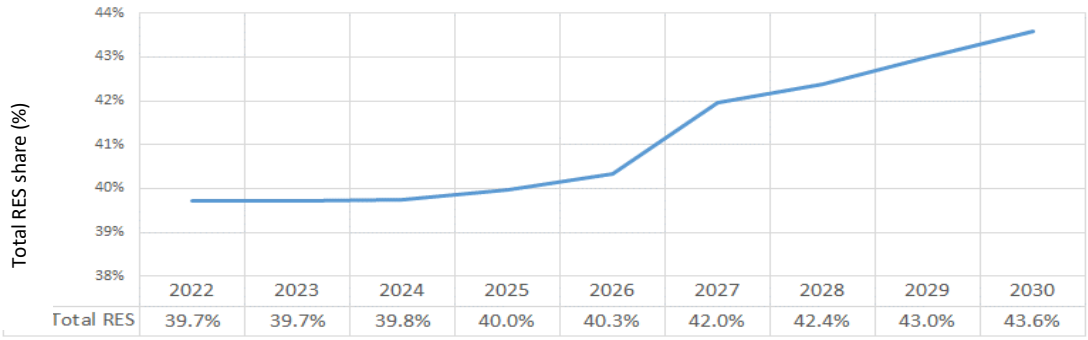

Diagram 2: Trajectory of the RES share in gross final energy consumption in Bosnia and Herzegovina for the period 2022-2030

Based on the analysis of the results obtained by modelling the trends of energy and climate indicators in Bosnia and Herzegovina, in accordance with international obligations, primarily by fulfilling the goals of the EU energy strategy, transferred by the Energy Community Treaty, energy efficiency goals for Bosnia and Herzegovina by 2030 are defined. These goals define the values of the following indicators:

- Primary energy consumption (PEC)
- Final Energy Consumption (FEC)

Also, when defining these goals, the following decisive factors were taken into account:

- Character, scope and intensity of implementation of energy efficiency measures planned for implementation within individual sectors of primary and final energy consumption; and
- Realistic organisational and financial capacity for the implementation of the energy efficiency measures required to achieve the goals.

Based on these considerations, the energy efficiency goals in Bosnia and Herzegovina for energy consumption savings by applying energy efficiency measures, for the period by 2030, are as follows:

Primary energy consumption in 2030	6.844.0 ktoe
Final energy consumption in 2030	4.339.0 ktoe

Accordingly, this plan defines a reduction in primary energy consumption, while a slight increase in final energy consumption is expected by 2030. The trajectories of PEC and FEC indicator values are shown in the following diagram.

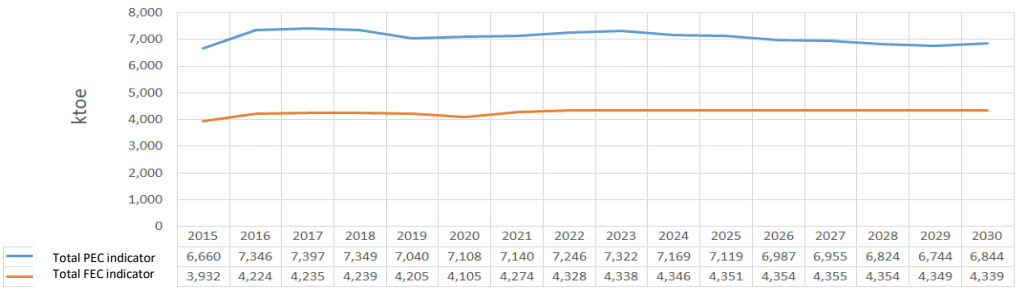

Diagram 3: Target trajectories of PEC and FEC indicators in Bosnia and Herzegovina, 2022-2030

1.1.3.2 Stages of the decarbonization process until 2050.

The integrated energy and climate plan in Bosnia and Herzegovina by 2030 is an integral part of the overall long-term approach to achieving carbon neutrality by 2050. The carbon neutrality criterion directs the development of the energy sector in such a way that in 2050 greenhouse gas emissions will be allowed in an amount equivalent to greenhouse gas sinks from land use, land-use change and forestry (LULUCF). In the long term, this represents a gradual reduction of emissions, which affects the movement of total Primary Energy Consumption (PEC) and Final Energy Consumption (FEC), for which the planning framework, of which NECP 2030 is a part, prescribes appropriate policies and measures aimed at achieving carbon neutrality.

Observing the entire period by 2050, it is necessary to ensure continuity in the implementation of policies and measures, resulting in target trends of change in the main indicators of the energy sector. This is primarily about reducing greenhouse gas emissions, LULUCF projection, and PEC and FEC indicators. The level of ambition in implementation will not be constant throughout the entire period, so it is important to determine the key stages of implementation and to project trends for them. In this regard, this plan introduces tentative key stages, namely:

- The introductory phase of the decarbonisation process by 2030
- Phase 2: Accelerated decarbonisation in the period 2030-2040
- Phase 3: Achieving carbon neutrality by 2050

The basic indicator of the process of achieving carbon neutrality is the emission of greenhouse gases. The approximate projections of this indicator are given in the following table:

MtCO2	2022	2030	2040	2050
Total CO2 emission without LULUCF - Baseline	26.44	27.39	19.63	16.24
Total CO2 emission without LULUCF - Policy	25.35	22.15	13.35	6.78
LULUCF	-6,04	-6,5	-6.662	-6.668
Net emissions - Policy	19.31	15.65	6.69	0.11

Table 2: Values of framework indicators of greenhouse gas emissions at the transition between phases

There is a significant difference between the projections of this indicator in the two scenarios (**Diagram 4**). The first "Baseline" scenario predicts developments in the event that by the end of the period, the existing policies and measures that were included in the planning are implemented. On the other hand, the "Policy" scenario takes into account the ambition of decarbonisation, which is reflected in more intensive policies and measures.

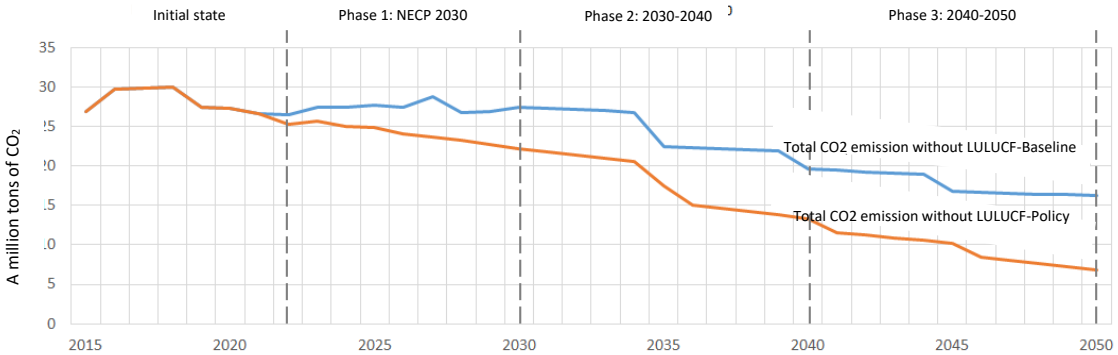

Diagram 4: Framework projections of greenhouse gas emission indicators by 2050 by phases

Looking at the LULUCF projections until 2050 (**Diagram 5**), it is noted that the planned value of the greenhouse gas emissions indicator was brought to the bottom level that year, thus indicating that the carbon neutrality criterion has been met.

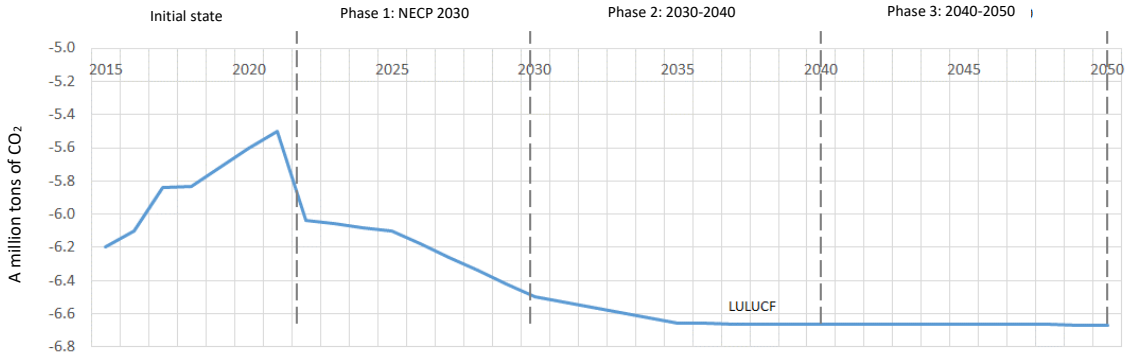

Diagram 5: Framework projections of LULUCF indicators until 2050 by phases

1.1.3.3 Policies and measures to achieve goals

The Bosnia and Herzegovina integrated energy and climate plan prescribes policy instruments and appropriate measures to achieve the goals by 2030. An overview of the plan policies and measures is given in the Table below.

1	**Decarbonisation**
1A	**Greenhouse gas emissions and sinks**
1A-0	**A general framework for reduced greenhouse gas emissions has been established**
1A-0.1	Adoption of the climate change strategy at the level of the state, entities and the Brčko District
1A-0.2	Drafting and adoption of the law on climate change
1A-0.3	Transposition of the Regulation on the Governance of Energy Union and Climate Action (EU) 2018/1999
1A-0.4	Implementation of the Covenant of Mayors for Climate and Energy
1A-0.5	Just transition of the power sector
1A-1	**Reduced GHG emissions in accordance with Regulation (EU) 2018/842**
1A-1.1	Reduced GHG emissions in transport
1A-1.2	Reduced GHG emissions in industry
1A-2	**Reduced GHG emissions in accordance with Regulation (EU) 2018/841**
1A-2.1	Increasing the sinks in the forestry sector through increased growth and sustainable forest management
1A-2.2	Increasing the sinks in the agriculture sector through sustainable practices
1A-2.3	Reduction of greenhouse gas emissions from waste
1A-3	**Functional Emissions Trading System (ETS)**
1A-3.1	Establishment and functioning of the greenhouse gas emission trading system
1A-4	**Improving low-emission mobility**
1A-4.1	Improve the system and availability of infrastructure for alternative fuels for transport
1A-5	**Functional phasing out of energy subsidies, especially for fossil fuels**

1A-5.1	Abolition of subsidies for electricity from fossil fuels
1B	**Renewable energy sources**
1B-1	Policies and measures for realizing the national contribution to the binding goal at the level of the Energy Community for 2030 with regard to energy from renewable sources
1B-1.1	Ensuring spatial planning prerequisites for the use of renewable energy sources
1B-1.2	Adoption of sustainable development strategic documents
1B-2	**Special measures for regional cooperation**
1B-2.1	Establishment of regional cooperation
1B-3	**Special measures for financial support**
1B-3.1	Functional sustainable mechanisms of incentives for renewable energy sources
1B-3.2	Increasing the use of renewable energy through models of energy communities (renewable energy communities and civil energy communities) and prosumers (buyers-producers)
1B-4	**Special measures for the introduction of one or more contact points, rationalisation of administrative procedures, provision of information and training, and easier acceptance of energy purchase contracts**
1B-4.1	Rationalisation of administrative procedures, information provision and training introduced
1B-5	**Expansion of new infrastructure for centralised heating and cooling produced from renewable sources**
1B-5.1	Encouraging the production of electricity from renewable sources
1B-5.2	Incentive measures for local self-government units
1B-6	**Biomass availability, including sustainable biomass: domestic potential and imports from third countries**
1B-6.1	Ensuring the availability of biomass, including sustainable biomass: domestic potential and imports from third countries
1B-6.2	Other uses of biomass in other sectors (agriculture and forestry sectors); as well as measures for the sustainability of biomass production and use
1B-7	**Policies and measures to achieve low-emission mobility**
1B-7.1	Sustainable use of renewable resources in the transport sector
1B-7.2	Incentive measures and subsidies for the transport sector
1B-7.3	Development of transport infrastructure at the local level
2	**Energy efficiency**
2-0	**A general framework for increasing energy efficiency has been established**
2-0.1	An incentive mechanism for the energy efficiency programme has been established
2-0.2	Establishment and implementation of energy audits and energy management systems

2-0.3	Establishment and implementation of the energy measurement and calculation system
2-0.4	Establishment and implementation of consumer information and training programmes
2-0.5	Establishment and implementation of qualification, accreditation and certification systems
2-0.6	Establishment and implementation of energy services implementation mechanisms
2-1	**Reduction of the housing sector energy intensity**
2-1.1	Implementation of measures and instruments in order to fulfil the EPBD requirements
2-1.2	Implementation of the Building Renewal Strategy
2-1.3	Implementation of eco-labelling and energy labelling of devices
2-2	**The public and commercial sectors are leading the way in the implementation of energy efficiency mechanisms**
2-2.1	Operational plan for the renovation of central government buildings
2-2.2	Establishing a framework that would enable the establishment of energy management in institutions
2-2.3	Establishing a sustainable system of financial mechanisms for improving the energy efficiency of the public sector
2-2.4	Establishment and promotion of the system of energy services for energy saving in public bodies
2-2.5	Establishment and implementation of a system for monitoring the implementation of the main energy efficiency policy measures in public bodies
2-2.6	Further improvement of the information system and reporting on energy efficiency in public bodies
2-3	**Reduced energy intensity of industry**
2-3.1	Improving the legislative framework that would enable the establishment of regular energy inspections of industrial facilities and energy management in industry and small and medium-sized enterprises
2-3.2	Establishing a sustainable system of financial incentives for improving the energy efficiency of industrial processes
2-3.3	Establishing a system of energy services to save energy in industrial processes
2-3.4	Establishment of an information system and reporting on energy efficiency in industry
2-4	**Reduced energy intensity of transport**
2-4.1	Promotion of the electrification of traffic and transport, especially in urban areas
2-4.2	Coordination of the improvement of the legislative framework to enable the use of ecologically clean vehicles in order to increase energy efficiency
2-4.3	Coordination of the establishment of a sustainable system of financial incentives for the purchase of energy-efficient vehicles

	2-4.4	Promotion of refurbishing (modernisation) of road vehicles
	2-4.5	Promotion of the use of intercity bus transport and public city transport in order to reduce the need to use individual road vehicles
	2-4.6	Promotion of the development and application of integrated multimodal freight transport
	2-4.7	Promotion of the development of sustainable integrated traffic and transport
	2-4.8	Promotion of integrated and intelligent traffic systems and development of infrastructure for non-motorised movements at the local level
	2-4.9	Promotion of the use of energy-efficient vehicles and modes of transport in freight traffic
2-5	**Increasing the heating and cooling system efficiency**	
	2-5.1	Creating a cost-benefit analysis for measures to increase energy efficiency in heating and cooling
	2-5.2	Making of a potential assessment for the application of highly efficient cogeneration and district heating and cooling systems
	2-5.3	Promotion and support for the implementation of measures for the development of energy-efficient infrastructure of district heating and cooling, highly efficient cogeneration and heating using waste heat and RES
	2-5.4	Establishing the legal obligation to perform a cost-benefit analysis.
	2-5.5	Inclusion in the current procedure for approving the construction of new power plants of the following criteria for issuing permits for the performance of electricity production activities
	2-5.6	Harmonisation of provisions related to guarantees on the origin of electricity from highly efficient cogeneration, i.e. conditions for providing support to cogeneration and district heating systems
	2-5.7	Establishment and implementation of a system for monitoring the implementation of the main policy measures in heating and cooling
	2-5.8	Further improvement of the information system and reporting on energy efficiency in the electricity generation and heating and cooling energy sectors, including efficient cogeneration
2-6	**Reduction of losses in production, transmission and distribution of energy**	
	2-6.1	Reduction of losses in the production, transmission and distribution of energy - electricity
	2-6.2	Reduction of losses in energy production, transmission and distribution – natural gas
3	**Energy security**	
3-1	**Strengthening the diversification of energy sources and supplies from third countries in order to increase the energy system resilience**	
	3-1.1	Strengthening the diversification of sources and supply from third countries in order to increase the supply system resilience - oil and petroleum products
	3-1.1.1	Diversified sources of supply of oil and petroleum products from third countries
	3-1.1.2	Train domestic sources/capacity for oil exploitation/processing
	3-1.1.3	Improve security with adequate reserves of oil and petroleum products

3-1.2	Strengthening the diversification of sources and supplies from third countries in order to increase the supply system resilience - natural gas
3-1.2.1	To achieve a satisfactory level of criterion N-1 in order to ensure the diversification of natural gas supply routes
3-1.2.2	Diversify sources of natural gas supply
3-1.2.3	Ensure the safe functioning of the existing gas pipeline
3-1.3	Strengthening the diversification of sources and supply from third countries in order to increase the supply system resilience - electricity
3-1.3.1	Enable the optimisation and transparency of trading on the domestic and regional wholesale market and encourage the nRES construction
3-1.3.2	Ensure the adequacy of the electric power system in terms of options for the development of production capacities that will meet the decarbonisation goals
3-1.3.3	Encourage the development of new services (prosumers, energy communities, aggregators, consumption management, energy storage) in the power system in order to improve the safety of its operation
3-2	**Reducing dependence on energy imported from third countries, in order to increase the resilience of domestic and regional energy systems (optional)**
3-2.1	Reducing dependence on energy imported from third countries, in order to increase the resilience of domestic and regional energy systems - oil and petroleum products
3-2.1.1	Reduce the consumption of oil and petroleum products in the transport sector through decarbonisation and electrification of the sector
3-2.1.2	Reduce the consumption of oil and petroleum products by electrifying transport and using hydrogen
3-2.1.3	Reduce the consumption of oil and petroleum products by applying energy efficiency measures
3-2.2	Reducing dependence on energy imported from third countries, in order to increase the resilience of domestic and regional energy systems - natural gas
3-2.2.1	**Use energy efficiency measures to reduce the consumption of natural gas where it is used and thereby reduce dependence on imports**
3-2.2.2	Reduce dependence on the import of natural gas by means of measures to convert fuel in industry to hydrogen and electricity
3-2.2.3	By using heat pumps, reduce the need to use natural gas in the heating sector
3-2.3	Reducing dependence on energy imported from third countries, in order to increase the resilience of domestic and regional energy systems - electricity
3-3	**Increasing the flexibility of the energy system, especially with regard to the use of domestic energy sources, consumption management and energy storage**
3-3.1	Increasing the flexibility of the supply system, especially with regard to the use of domestic energy sources, by managing energy consumption and storage - oil and petroleum products
3-3.1.1	If exploitation is profitable, exploit the deposits
3-3.1.2	Ensure flexibility through the establishment of adequate reserves of oil and petroleum products
3-3.2	Increasing the flexibility of the supply system, especially with regard to the use of domestic energy sources, by managing consumption and energy storage - natural gas

3-3.2.1	If exploitation is profitable, exploit the deposits
3-3.2.2	Build at least one more international connecting gas pipeline that will ensure the system adequacy and flexibility
3-3.2.3	Regulate the functioning of the natural gas sector in accordance with EU legislation by enacting missing and harmonising existing legislation
3-3.2.4	Enable the sector integration into the regional natural gas market
3-3.2.5	Enable consumption management to serve the purpose of system flexibility
3-3.2.6	Improve flexibility by adequately regulating the natural gas balance market
3-3.3	Increasing the flexibility of the supply system, especially with regard to the use of domestic energy sources, by managing consumption and energy storage - electricity
3-3.3.1	Build domestic production capacities to contribute to the system adequacy and flexibility
3-3.3.2	Enable the optimisation and transparency of trading on the domestic and regional wholesale market and encourage the nRES construction
3-3.3.3	Ensure the flexibility of the power system in the estimated options for the development of production capacities
3-3.3.4	Encourage the development of new services (prosumers, energy communities, aggregators, consumption management, energy storage) in the power system in order to improve the flexibility of its operation
3-4	**Enabling the application of contracts that reduce or interrupt the supply of customers in order to improve the energy system resilience**
3-4.1	Enabling the application of contracts that reduce or interrupt the supply of customers for the purpose of improving the energy system resilience - natural gas
3-4.1.1	Enable the improvement of the flexibility of the system through the application of contracts that reduce or interrupt the supply of customers with natural gas in order to improve the energy system resilience
3-4.2	Enabling the application of contracts that reduce or interrupt the supply of customers in order to improve the energy system resilience - electricity
3-4.2.1	Enable the improvement of the flexibility of the system through the application of contracts that reduce or interrupt the supply of customers with electricity in order to improve the energy system resilience
3-5	**Protection against cyber attacks**
3-5.1	Adoption of a Cyber Security Strategy in Bosnia and Herzegovina
3-5.2	Adoption of the information security legal framework
3-5.3	Establishment of a single contact point for information security at the BiH level
3-5.4	Establishment of the energy CERT (Computer Emergency Response Team)
3-5.5	Identification of network and information systems of key service operators
3-5.6	Training programme aimed at raising the level of awareness and knowledge about cyber security

4	**Internal energy market**
4-1	**To achieve the required degree of power interconnection**
4-1.1	Strengthen interconnection with neighbouring systems in order to strengthen regional interconnection. Realise planned interconnection lines with neighbouring systems
4-1.1-1	Build a 400 kV transmission line Višegrad – Bajina Bašta (PECI project)
4-1.1-2	Build a 400 kV transmission line Banja Luka – Lika (Cro) (PMI)
4-1.1-3	qQQQQQQWAQ
4-1.2	In the event that it proves necessary, and on the basis of the determined potentials and planning of the construction of renewable energy sources, to additionally strengthen the interconnection of the two electric power systems (BiH and the Republic of Croatia).
4-1.2-1	Strengthen the electric power interconnection of Dalmatia (R.C.) and Herzegovina (BiH) in order to enable the transport of electricity from renewable sources
4-2	**Provide adequate infrastructure for energy transport**
4-2.1	Development of electricity transmission infrastructure
4-2.1.1	Build the electric power infrastructure in accordance with the Long-Term Plan for the Development of the Transmission Network
4-2.1.2	Enable the timely connection of newly built nRES facilities
4-2.1.3	Ensure the reduction of high voltages in the network to an acceptable level
4-2.2	Development of infrastructure for natural gas transportation
4-2.2.1	If the role of natural gas in the energy transition is defined as essential, ensure the connection of consumer centres with the transport gas system
4-2.2.2	Carry out the gasification of consumer centres, provided that the realisation of the Operational objective 4-2-2-1 is planned
4-3	**Market integration**
4-3.1	Increasing system flexibility
4-3.1.1	Increase flexibility through the establishment of an organised market in the country and connection with neighbouring markets
4-3.1.2	Improve flexibility by enabling the establishment and operation of aggregators, storage, connection and integration of new categories of system users (prosumers, energy communities)
4-3.1.3	Improve competitiveness and the presence of independent suppliers through the elimination of subsidies and bringing wholesale and retail prices to a realistic level so that they fully reflect production costs.
4-3.1.4	Introduction of the possibility of priority dispatching and redispatching of production and redispatching of consumption management based on objective, transparent and non-discriminatory criteria
4-3.2	**Measures to strengthen the non-discriminatory participation of renewable energy sources, consumption management and storage**
4-3.2.1	By establishing an organised market in accordance with Regulation 2019/943, enable the non-discriminatory integration of nRES
4-3.2.2	Establish a market-based incentive system for nRES

	4-3.2.3	Enable the connection and integration of new users who produce electricity from nRES into the market
	4-3.2.4	Create a legal framework that will make the process of issuing permits for the construction of renewable energy sources more efficient
4-3.3	Consumer participation in the operation of the electric power system through own production using new technologies	
	4-3.3.1	With an appropriate policy, enable and encourage the participation of consumers in the operation of the electric power system through their own production using new technologies
4-3.4	Ensuring the adequacy and flexibility of the electric power system considering the participation of nRES	
	4-3.4.1	Determine an alternative policy for the development of new production capacities based on nRES and without new thermal power plants and, within this framework, define the needs for ensuring the system adequacy and flexibility.
	4-3.4.2	Establish an organised market that will facilitate the integration of nRES and the integration of new customers
	4-3.4.3	Connect with neighbouring markets and integrate into the regional and wider European market.
	4-3.4.4	By separating ODS from other functions within a vertically integrated company, ensure equal treatment of nRES and its contribution to the system adequacy and flexibility
4-3.5	Consumer protection and improvement of competitiveness on the retail market	
	4-3.5.1	Establish electricity prices that fully reflect production costs, improve tariffs for network use, use of smart meters, defining conditions for new categories of system users and create conditions for competitive participation of independent suppliers on the retail market
4-4	**Ensure adequate treatment of energy poverty (Protection of vulnerable consumers)**	
4-4.1	Protect socially vulnerable customers with an adequate policy.	
4-4.2	By the policy of protecting socially vulnerable customers, provide the necessary funds for the implementation of the policy	
4-4.3	Support the implementation of the protection programme through a policy of combined measures from different dimensions (including fiscal policy).	
4-4.4	By educating socially vulnerable customers, support the implementation of their protection policy, including the application of energy efficiency measures	
5	**Research, innovation and competitiveness**	
5-1	**Creation of a framework for the successful implementation of the research, innovation and competitiveness dimension in the context of the implementation of the energy transition and the implementation of the NECP goals**	
5-1.1	Adopting/updating strategic documents and laws	
5-1.2	Inclusion of public opinion in the Energy Transition process	
5-2	**Establishment of new and strengthening of existing scientific research and research and development capacities in the field of energy and climate**	
5-2.1	Identification and mapping of available capacities for scientific research and research development activities	

	5-2.2	Establishment of a new research and development infrastructure to support the achievement of NECP goals
	5-2.3	Establishment of new companies in the field of energy - START UP companies
	5-2.4	Encouraging innovation and patents
5-3	**Strengthening the competences of scientific and professional staff for the implementation of the energy transition and NECP**	
	5-3.1	Reform of the education system
	5-3.2	Lifelong learning
	5-3.3	Participation in international projects
	5-3.4	Creating a favourable environment for attracting young people to study committees with teaching subjects in the context of the Energy Transition and the implementation of the NECP
	5-3.5	Certification of competence and excellence for scientific research and research and development subjects in the field of energy, technology and climate
5-4	**Increasing investment in scientific research and research and development work and the development and introduction of new technologies in the field of energy and climate**	
	5-4.1	Increase in budget allocations for scientific research and research and development work
	5-4.2	Establishment/Intensification of cooperation with international development institutions with the aim of inclusion in international development projects, especially those financed by the EU (Horizon Europe, Interreg Danube, Erasmus, WIBIF, etc.)
5-5	**Improvement of mechanisms for stimulating innovations in the field of energy and climate**	
	5-5.1	Patent application and acceptance mechanisms
	5-5.2	Encouraging innovation
	5-5.3	Transfer of knowledge, technologies, experiences, licenses

Table 3: Review of the policies and measures of the Bosnia and Herzegovina Integrated Energy and Climate Plan

1.2. An overview of the policy current situation

1.2.1. The energy system in Bosnia and Herzegovina and the energy system of the Energy Community and the policy context of the integrated energy and climate plan

The concept of today's energy in Bosnia and Herzegovina is based on the economic paradigm of the 70s of the 20th century, which is characterised by energy-intensive and inefficient use of energy in the sectors of production and consumption of electricity, heating, cooling and transport. This is why energy has a dominant influence on emissions with the greenhouse effect (GHG emissions) in BiH (over 70% of total emissions) as well as emissions of pollutants that increase the level of pollution at the local/regional level, endangering the environment and human health.

The transformation of the energy sector, especially the electric power sector (EPS), began with the signing of the Treaty Establishing Energy Community (EnC), which was ratified in 2006. With this Treaty, BiH undertook to gradually take over parts of the acquis of the European Union (EU) by transposing into its laws the requirements and rules of the corresponding EU directives and regulations in the areas of: security of supply, competition, environmental protection, energy infrastructure, energy efficiency and energy consumption from renewable sources. In this regard, Bosnia and Herzegovina is currently in a process that has as its end result inclusion in the internal market of the European Union.

In addition to the Treaty Establishing the EnC, Bosnia and Herzegovina is a signatory to the Paris Agreement and the Sofia Declaration, which it signed in November 2020, where, among other things, it decided that in order to support decarbonisation in the Western Balkans region, it will work on the introduction of carbon dioxide emission taxation mechanisms (CO_2) and on harmonisation with the European Union emissions trading system (EU ETS - EU Emission Trading System). The EU ETS is often referred to as the foundation of EU climate policy. Its goal is to reduce emissions by setting prices for emitted amounts of greenhouse gases (GHG) from the energy sector, industry and the aviation sector.

In July 2021, the European Commission (EC) proposed the Carbon Border Adjustment Mechanism (CBAM) as part of a comprehensive legal framework to reduce net greenhouse gas emissions in Europe by 2030 by at least 55%. compared to the reference year 1990. CBAM is considered a key element to avoid the risk of "carbon leakage" for European energy-intensive industries. EPS is one of the industrial branches to be included in CBAM. Although the main purpose of CBAM is not to speed up the process of decarbonisation of EPS in countries exporting electricity to the EU, its application will have an impact on the production of electricity from coal. The introduction of CBAM would have a particularly large impact on the thermal energy sector in Bosnia and Herzegovina, which exports about 50% of production from thermal power plants (TPP). Bosnia and Herzegovina has analysed the application of CBAM and the conclusion is that it is necessary to make an effort to avoid the introduction of CBAM because it is extremely unfavourable for the domestic economy. The determination of all actors in Bosnia and Herzegovina was agreed upon to move rapidly towards the introduction of the EU ETS model in Bosnia and Herzegovina. At the initiative of the Energy Community Secretariat, public company (JP) Elektroprivreda BiH d.d. – Sarajevo introduced an internal calculation of the price of CO_2 from the operation of thermal power plants, which implies the interest in introducing a CO_2 prevention model in Bosnia and Herzegovina.

At the 19th meeting of the EnC Ministerial Council, which was held on 30 November 2021 in Belgrade, the Council of Ministers adopted, among other things, the General Guidelines on the adoption of the Decarbonisation Roadmap for the EnC contracting parties. Also, a decision was made to implement directives and provisions from the EU energy package "Clean energy for all Europeans". This initiated the process of decarbonisation of the power industry in the EU member states. The key "tools" of decarbonisation in a country are the determination of the date of cessation of the use of coal for the production of electricity and the introduction of the CO2 emissions payment and trading system (EU ETS), which administratively manages the realization of the set goal (by constantly reducing the allowed annual quotas of CO_2 emissions) of getting out of coal".

The adoption of the Roadmap for decarbonisation by the Ministerial Council sends an important message about the readiness of EnC to join the European Union and other international partners in achieving net zero emissions of greenhouse gases by 2050. The transformation of the energy sector that should occur in the coming decades with the aim of decarbonisation is called an energy transition.

By signing the Treaty establishing the EnC, obligations from the UN Agenda 2030, the Paris Agreement, the Sofia Declaration, BiH expressed its clear determination for the sustainable development of the energy sector. Therefore, the guidelines for the development of BiH's energy sector should be based on sustainable development policies that have three aspects:

a) security of supply,
b) price competitiveness and availability of energy and
c) decarbonisation policy, i.e. the use of clean energy.

With a target increase in the sector efficiency and the use of renewable energy resources, BiH can achieve parallel convergence with the assumed obligations and EU policies and position energy as an instrument of the economy stability and sustainable development. Secondary effects will lead to the growth of sustainable employment, reduction of public debt and increase in the sector competitiveness. Therefore, the energy transition should be seen as a development opportunity. The key factor in the success of the implementation of energy policies and plans is the political decision to change the paradigm of energy sector development.

1.2.2. Current energy and climate policies and measures related to the five dimensions of the Energy Union

1.2.2.1. Decarbonisation: Greenhouse gas emissions

By ratifying the Convention[25], the Kyoto Protocol[26] and the Paris Agreement[27,] Bosnia and Herzegovina undertook to report on greenhouse gas emissions and to determine and implement measures and activities that will contribute to achieving the goals of the Convention. In accordance with the requirements of the Convention, BiH has obligations regarding the preparation of national reports (communications), periodic reporting to the bodies of the Convention, international cooperation in the field of climate research and systematic observations, transfer of knowledge and clean technologies, adoption and implementation of adaptation measures, education, training and informing the public about the causes and possible anthropogenic impacts on climate change. At the same time, the ratification of the BiH Protocol did not introduce new obligations relative to the general obligations established by the Convention.

Considering the status of Bosnia and Herzegovina as a member of the Convention and the Kyoto Protocol, outside the so-called Annex I, i.e. belonging to the group of developing countries, Bosnia and Herzegovina had no obligation to reduce greenhouse gas emissions by 2020. After 2020, this obligation is determined by the NDC as an obligation from the Paris Agreement. So far, BiH has submitted two NDCs to the Convention. At the same time, due to this status, financial and other types of support (technology transfer, capacity building, etc.) are available to Bosnia and Herzegovina to fulfil the obligations from the Agreement.

Bosnia and Herzegovina belongs to the group of developing countries according to the Convention and can be a beneficiary of climate funds in proportion to the gross national income and the level of exposure to changed climate conditions. At the same time, the mechanisms and financial resources of the Convention will certainly be needed to fulfil the obligations of the Paris Agreement. The key challenges in the field of ensuring continuous financing in Bosnia and Herzegovina relate to the system of data collection and list of emissions and their verification, to investment projects whose implementation would affect the reduction of emissions and to the monitoring of damages due to climate changes as well as adaptation measures. The list of priority activities is specified in the Strategy for adaptation to climate change and low-emission development[28]. Initial project proposals have been prepared for financing from the Green Climate Fund, and as for bilateral projects with EU countries, preparations are underway to define a framework for cooperation.

This plan envisages an increase in electricity generation capacity in Bosnia and Herzegovina by 2030. Significant growth is expected in the capacity of renewable energy power plants, while no increase in capacity from fossil fuel combustion plants is planned. Additionally, the plan introduces new subcategories of renewable energy

[25] United Nations Framework Convention on Climate Change (UNFCCC)

[26] The Kyoto Protocol is an international treaty that expands the United Nations Framework Convention on Climate Change (UNFCCC) from 1992, which obligates member states to reduce greenhouse gas emissions, based on scientific consensus that (part one) global warming is occurring and (part two)) that it is driven by human CO2 emissions. The Kyoto Protocol was adopted in Kyoto, Japan on 11 December, 1997 and entered into force on 16 February 2005. There are currently 192 parties (Canada withdrew from the protocol, which entered into force in December 2012) to the Protocol.

[27]The Paris Agreement is an agreement within the framework of the United Nations Framework Convention on Climate Change (UNFCCC), on mitigation, adaptation and finance to climate change, signed in 2016. The language of the agreement was negotiated by representatives of 196 state parties at the 21st Conference of the Parties to the UNFCCC in Le Bourget, near Paris, France, and adopted by consensus on 12 December 2015. As of February 2021, 191 members of the UNFCCC are parties to the agreement. Of the six UNFCCC member states that have not ratified the Agreement, the only major air emitters are Iran, Iraq and Turkey, although the Iraqi president has approved the accession of these countries. [7] The United States withdrew from the agreement in 2020, but officially joined it on 19 February 2021. [8]

[28] http://www.unfccc.ba/site/publikacije/spkp.pdf

power plants, specifically addressing capacity within incentive programs and the formation of Renewable Energy Communities (RECs).

Therefore, the planned period includes the establishment and operation of electricity generation facilities according to the following types:

- Gacko Thermal Power Plant
- KK5 Thermal Power Plant
- KK6 Thermal Power Plant
- KK7 Thermal Power Plant
- Stanari Thermal Power Plant 300 MW
- TZ 4 Thermal Power Plant
- TZ 3 Thermal Power Plant
- TZ 5 Thermal Power Plant
- TZ 6 Thermal Power Plant
- Ugljevik Thermal Power Plant
- Photovoltaic - programs
- Photovoltaic - industry
- Photovoltaic - large-scale
- Photovoltaic - prosumers
- Wind farms
- Wind farms - programs
- Hydroelectric power plants
- Pumped-storage hydroelectric power plants
- Small hydropower plants

On the other hand, a significant increase in capacity for electricity generation from hydropower is expected, primarily through the construction of new capacities in large-scale hydropower plants. Capacities of small hydropower plants and community-based hydropower plants also increase, but with significantly lower capacities.

Furthermore, an increase in wind power capacity is anticipated, with the majority coming from unsubsidized large-scale wind farms, while a smaller portion is directed through support programs and renewable energy communities.

Finally, a substantial growth in capacity for electricity generation from photovoltaic plants is projected, with dominant installations for the market and self-consumption within the prosumer status. Additionally, a portion of the capacity is intended to be established through renewable energy communities.

The existing policy instruments in Bosnia and Herzegovina, which regulate the framework for reducing greenhouse gas emissions, are shown in the Table below.

Measures in BiH		
Name of the measure	Document/legal basis	Short description of the measure
Participation in international financial mechanisms for reducing GHG emissions	Decision on the establishment of an authorised body for the implementation of the Clean Development Mechanism (CDM) of the Kyoto Protocol of the UNFCCC in BiH (Official Gazette of BiH", No. 102/10)	It allows entities developing GHG emission reduction projects to convert emission reductions into tradable units.
Creating an inventory of greenhouse gases	The Law on Air Protection ("Official Gazette of Republika Srpska", No. 124/11), in FBiH and DB, there is no legal basis	The inventory for BiH is done on a project basis. Completed inventories for the period 1990 – 2018. The RS Hydrometeorological Institute,

		the competent institution for the preparation of annual inventories.
Exclusion of substances that damage the ozone layer	Decision on the conditions and method of implementation of the Montreal Protocol and the gradual exclusion from the use of substances that damage the ozone layer in BiH (Official Gazette of BiH", No. 36/07), Law on Air Protection of FBiH - Rulebook on the gradual exclusion of substances that damage the ozone layer ("Official Gazette of the Federation of Bosnia and Herzegovina", No. 39/05), Law on Air Protection - Decree on Gradual Exclusion of Substances that Deplete the Ozone Layer ("Official Gazette of the RS", No. 94/05), Decree on Dealing with Substances that Deplete the Ozone Layer and Substitute Substances (Official Gazette of the RS No. 66/20), Law on Air Protection, Rulebook on the Gradual Exclusion of Substances that Damage the Ozone Layer ("Official Gazette of the BD BiH", No. 30/06)	Prescribed conditions and methods of gradual exclusion from the use of controlled substances and their replacement with alternative (substitute) substances; dealing with these substances, substitute substances, as well as new controlled substances, dealing with products that contain substances or were produced using these substances, dealing with substances after the end of use of products and equipment containing them, the method of their collection, recovery and processing and the issuing procedure consents for import, export and marketing of substances that damage the ozone layer.
Special fees for environmental protection when registering a vehicle	Law on Air Protection of RS - Decision on Unit Charges for Environmental Pollution for Motor Vehicles (Official Gazette of the RS 116/2018), Decree on Special Charges for the Environment Payable Upon Registration of Motor Vehicles	Prescribed unit fees for certain types of motor vehicles, on the basis of which the environmental pollution fee is calculated, vehicles with higher energy consumption pay a higher fee.

Table 4: Existing policy instruments for reducing greenhouse gas emissions in Bosnia and Herzegovina

1.2.2.2. Decarbonisation: Renewable energy sources

The careful use of renewable resources is increasingly on the agenda of global and European economies, which can be seen through the dynamics and changes in the structure of the share of RES in global production and gross final consumption. With the increasing availability of technology, a key role in the popularisation of RES is played by energy policies and laws that unequivocally encourage this trend. In accordance with the Renewable Energy Directive 2009/28/EC, by 2020 in the European Union, the share of renewable energy sources in consumption must be 20%. In the long term, the goals of the share of RES in energy consumption by 2040 in the European Union reach over 50%.

Bosnia and Herzegovina (BiH) is one of the Contracting Parties (CP) to the Treaty Establishing the Energy Community for Southeastern Europe. As such, the country is committed to the transposition and implementation of the energy acquis communautaire [29] in its legal system. Since renewable energy sources (RES)

[29] Acquis communautaire (EU acquis) is a set of rights and obligations that bind and bind all member states within the European Union. The term acquis refers to the overall rights, obligations and commitment to the Community, which have been accumulated through the development of the integration process, or which the EU has achieved to date, in a legal and political sense. See more at http://www.dei.gov.ba/dokumenti/default.aspx?id=4533&langTag=bs-BA, februar 2019.

represent one of the central topics of UEnC, which affects and is affected by other topics such as electricity markets, energy efficiency, energy statistics, climate change, competition and state aid, the environment, etc. this document elaborates the need for efficient coordination mechanisms for formulating and monitoring the energy policy in BiH, in relation to the country's obligations towards UEnC. According to UEnC, the requirements for implementation require an adequate institutional structure capable of ensuring a harmonized approach to making strategic decisions in the creation of RES policy. This is especially applicable in BiH, bearing in mind its complex legal and institutional structure, the role of the entity when it comes to the formulation and implementation of energy policy.

The Framework Energy Strategy (FES) of BiH by 2035 was adopted by the BiH Council of Ministers in August 2018. The FES provides strategic guidelines regarding environmental protection goals and recommends further alignment with EU directives that promote the establishment of low-carbon energy systems in Europe. For BiH, the need for an additional reduction of greenhouse gas emissions from coal-fired thermal power plants and a greater share of cleaner energy in the system of future production is particularly emphasized, considering the CO2 equivalent/greenhouse gas trading system, new stricter standards for local emissions, etc. Analysis of potential opportunities for the development of production of the mix by 2035 included a scenario of renewable sources that envisages a gradual decrease in the share of coal in the production portfolio and a proportional increase in the share of renewable sources. In the period up to 2035, the Energy Strategy predicts a continuous increase in the share of RES-E, dominated by hydropower (about 84% of the share compared to RES-E in 2035). When planning hydroelectric power plants (HE) projects, the need for detailed analyses from the aspect of environmental protection, the diversity of the legal framework in the use of watercourses, and sustainable development was highlighted. The relative share of wind farms is predicted to remain at a relative level from 2020 and amount to ~ 9% of total production. In order to achieve the estimated biomass contribution of ~ 4%, the need to encourage the use of solid biomass in cogeneration plants was highlighted. The framework energy strategy plans a negligible share of energy from solar power plants. The energy strategy analysed four scenarios for the development of the production portfolio (and one alternative) in the EU until 2035.

At the state level, the Action Plan for renewable energy sources in BiH by 2018 was adopted, which represented an obligation under the Directive on the promotion of the use of energy from renewable energy sources from 2009 [30] and which set goals and obligations for BiH. The action plan for renewable energy sources in Bosnia and Herzegovina is based on previously adopted entity action plans for the use of renewable energy sources.

The action plan for renewable energy sources in BiH is harmonized with the strategic and planning documents of the Federation of Bosnia and Herzegovina, Republika Srpska and the Brčko District of Bosnia and Herzegovina and, among other things, it defines an overview of energy consumption from RES in the reference year 2009 and in the period 2010 - 2020, including:

- planned total final energy consumption from RES in heating and cooling, electricity and transport, taking into account the effects of energy efficiency and energy saving, expressed in kilotons of oil equivalent (ktoe),
- the planned share of RES in the total final consumption of energy from RES in heating and cooling, electricity and transport, expressed as a percentage,
- share of renewable energy of each sector in final energy consumption,
- share of renewable energy in transport,
- assessment of the total share (installed capacity of total electricity generation) expected from each technology for renewable energy,
- the maximum level of installed power of privileged producers for each technology (hereinafter: dynamic quotas),
- policy and measures for the promotion and encouragement of the use of RES energy, in accordance with regulations in the field of competition and state aid,
- joint measures of ministries and institutions

Regarding the regulatory framework, it is necessary to differentiate between regulations that are adopted at the state and entity level.

At the state level, there are the following key laws that govern the field of electricity:

[30] Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources

- Law on Transmission of Electric Power, Regulator and System Operator of Bosnia and Herzegovina [31]
- Law on the Establishment of the Company for the Transmission of Electric Power in Bosnia and Herzegovina [32]
- Law on the Establishment of an independent system operator for the transmission system in Bosnia and Herzegovina [33]

The aforementioned laws do not prescribe measures for renewable energy sources, but generally prescribe the functioning of electricity transmission itself, which also includes electricity from renewable energy sources.

Furthermore, in BiH, that is, at the entity level, the following laws are key for the part related to renewable energy sources:

- Law on the use of renewable energy sources and efficient cogeneration of the Federation of Bosnia and Herzegovina[34]
- Law on Electricity in the Federation of Bosnia and Herzegovina [35]
- Law on Energy [36]
- Law on renewable energy sources and efficient cogeneration [37]
- Law on Electricity (Republika Srpska)[38]
- Law on Electricity (Brčko District)[39]

[31] "Official Gazette of Bosnia and Herzegovina", No. 7/2002, 13/2003, 76/2009 and 1/2011
[32] "Official Gazette of Bosnia and Herzegovina", No. 35/2004, 76/2009 i 20/2014
[33] "Official Gazette of Bosnia and Herzegovina", No. 35/04
[34] "Official Gazette of the Federation of Bosnia and Herzegovina", No.70/13 i 05/14
[35] "Official Gazette of the Federation of Bosnia and Herzegovina", No. 66/13
[36] "Official Gazette of Republika Srpska", No. 49/09
[37] "Official Gazette of Republika Srpska", No. 16/22
[38] "Official Gazette of Republika Srpska", No. 68/20
[39] Official Gazette of the Brčko District of BiH, No.27/11

Measures in BiH		
Name of the measure	Document/legal basis	Short description of the measure
Guaranteed purchase price (feed in tariff)	Law on the use of renewable energy sources and efficient cogeneration [40], Action plan for the use of renewable energy sources in the Federation of Bosnia and Herzegovina [41], Decision on establishing binding goals for the use of renewable energy sources in the Federation of Bosnia and Herzegovina [42]	It represents the most important incentive mechanism. Energy from RES&EC is purchased from privileged producers for a period of 12 years at a fixed price.
Reference price of electricity	Law on the use of renewable energy sources and efficient cogeneration[43], Action plan for the use of renewable energy sources in the Federation of Bosnia and Herzegovina [44], Decision on establishing binding goals for the use of renewable energy sources in the Federation of Bosnia and Herzegovina [45]; FBiH Electricity Law [46]	Redemption at the reference price was made possible by the law after the expiration of 12 years of redemption at the guaranteed purchase price. The reference price means the purchase price of electricity from plants that use renewable sources and cogeneration, the production of which is not encouraged and is used to determine the fees to be paid for renewable sources, and it is determined by the Regulatory Commission, and it is the same for all primary sources for the production of electricity from RES&EC
An advantage in handling requests	Law on the use of renewable energy sources and efficient cogeneration [47]	Electricity producers that use RES have an advantage in resolving requests for connection to the power grid, compared to plants that do not use RES, and in accordance with the applicable regulations and rules governing connection to the transmission and distribution network
The advantage of supplying electricity from RES&EC	Law on the use of renewable energy sources and efficient cogeneration[48], FBiH Electricity Law [49]	Producers of electricity using RES, who have acquired the status of a qualified producer, have the following benefits: a) the advantage of delivering electricity

[40] Official Gazette FBiH No.70/13, 05/14
[41] Official Gazette FBiH no. 48/14, 94/18
[42] Official Gazette FBiH no. 17/21, 36/21, 47/22
[43] Official Gazette FBiH no. 70/13, 05/14
[44] Official Gazette FBiH no. 48/14, 94/18
[45] Official Gazette FBiH no. 17/21, 36/21, 47/22
[46] Official Gazette FBiH no.66/2013, 94/2015, 54/2019
[47] Official Gazette FBiH no.70/13, 05/14
[48] Official Gazette FBiH No.70/13, 05/14
[49] Official Gazette FBiH No. 66/2013, 94/2015, 54/2019

		produced from RES&EC to the grid, that is, the advantage in dispatching, in accordance with the current regulations and rules governing the operation of the electric power system of Bosnia and Herzegovina. b) the advantage of delivering electricity to the network produced in plants with an installed capacity of less than 150 kW, without reporting the daily schedule to the Network Operator
Guarantees of origin for energy produced from RES&EC	Law on the use of renewable energy sources and efficient cogeneration [50]	The guarantee of origin is a certificate issued to the producer for the purpose of proving that the origin of the electricity produced in their production facilities is from renewable energy sources
Encouraging production in RES micro-plants up to 23 kW	Law on the use of renewable energy sources and efficient cogeneration [51], FBiH Electricity Law [52]	Shortened procedures are foreseen for micro-installations, and the purchase is made at guaranteed purchase prices for the first 12 years and then at the reference price. Micro-producers do not have the obligation to balance or submit a production plan. Shortened procedures according to the Law on Electricity are also foreseen.
Special measures to encourage the use of RES for heating and cooling	Law on the use of renewable energy sources and efficient cogeneration [53]	There is a possibility of introducing incentives for the domestic production and procurement of equipment used for heating and cooling using RES, such as solar collectors for the preparation of hot water, heat pumps for the use of aerothermal, geothermal and hydrothermal energy
Special measures to encourage the use of RES for heating and cooling	Law on the use of renewable energy sources and efficient cogeneration	It refers to the creation of a local market for thermal energy produced from RES by introducing a registry of the guarantee of origin of thermal energy and by introducing an obligation for large consumers of thermal energy.

[50] Official Gazette FBiH No.70/13, 05/14
[51] Official Gazette FBiH No. 70/13, 05/14
[52] Official Gazette FBiH No. 66/2013, 94/2015, 54/2019
[53] Official Gazette FBiH No. 70/13, 05/14

Special measures to encourage the use of RES in transport	Law on the use of renewable energy sources and efficient cogeneration of energy and efficient cogeneration [54]	Minimum share of biofuels in the fuel mix sold to end users for each year during the period 2012 - 2020
Simplified procedures for electricity producers	FBiH Electricity Law [55]	Natural persons who register their business in accordance with the current law can also engage in the production of electricity. This measure applies to plants up to 150 kW. The registration of a trade is simpler than that of a company, so it can be considered that the procedures are easier.
Guaranteed purchase price (feed in tariff)	Law on renewable energy sources and efficient cogeneration [56], Action plan of Republika Srpska for the use of renewable energy sources [57]	It represents the most important incentive mechanism. Energy from RES&EC is purchased from producers for a period of 15 years at a fixed price.
Premium for own needs	Law on renewable energy sources and efficient cogeneration [58]	Producers are entitled to a premium if they use electricity for their own needs or sell it on the market
Measures to encourage the use of renewable energy sources for heating and cooling and in transport	Law on renewable energy sources and efficient cogeneration [59]	Subsidies and other incentives for domestic production and procurement of equipment used for heating and cooling using renewable energy sources (solar collectors for preparing hot water, heat pumps for using aerothermal, geothermal and hydrothermal energy, etc.),
Measures to encourage the use of renewable energy sources for heating and cooling and in transport	Law on renewable energy sources and efficient cogeneration [60]	Introducing an obligation for large consumers of heat energy (industrial and city heating plants) to produce part of the heat energy from renewable energy sources
Guarantee of origin of electricity produced from renewable sources	Law on renewable energy sources and efficient cogeneration [61], Law on Energy [62]	The guarantee of origin is a certificate issued to the producer to prove that the origin of the electricity produced in their production facilities is from renewable energy sources.

[54] Official Gazette FBiH No. 70/13, 05/14
[55] Official Gazette FBiH No. 66/2013, 94/2015, 54/2019
[56] Official Gazette of RS No.39/13, 108/13, 79/15, 26/19
[57] Official Gazette of RS No. 45/14, 111/15, 96/18, 97/18, 3/20, 124/20
[58] Official Gazette of RS No. 39/13, 108/13, 79/15, 26/19
[59] Official Gazette of RS No. 39/13, 108/13, 79/15, 26/19
[60] Official Gazette of RS No. 39/13, 108/13, 79/15, 26/19
[61] Official Gazette of RS No. 39/13, 108/13, 79/15, 26/19
[62] Official Gazette of RS No.49/09, 16/23

Net metering up to 50 kW	Law on renewable energy sources and efficient cogeneration[63]	The possibility of net metering for end customers whose facilities are connected to a network of voltage level 0.4 kV, with a connection power that corresponds to the main installation fuse up to a maximum of 63 A, which provides electricity for its own needs and by its own production of electricity from production plants that use renewable energy sources whose installed capacity does not exceed 50 kW.
Benefits when connecting to the network and advantages in accessing the network	Law on renewable energy sources and efficient cogeneration [64]	The operator of the distribution system is obliged to provide each new producer that uses renewable energy sources or efficient cogeneration and that requires connection to the distribution network, at its own expense, a detailed analysis of the possibilities and conditions for connection, with an estimate of the connection costs and a time frame for the implementation of the proposed connection method.
Benefits when connecting to the network and advantages in accessing the network	Law on renewable energy sources and efficient cogeneration [65]	Producers who are in the incentive system at a guaranteed purchase price for electricity produced in plants whose power is less than 500 kW do not report the daily work schedule and do not bear balancing costs
Benefits for the payment of a bank guarantee	Law on renewable energy sources and efficient cogeneration [66]	Producers of electricity in plants with a capacity of up to 250 kW are not required to pay a cash deposit or provide a bank guarantee to the incentive system Operator in the amount of 2% of the investment value before signing the preliminary agreement on the incentive referred to in paragraph 5 of this Article.
Relief for the daily schedule	Law on Electricity [67]	Plants up to 500 kW do not report the daily schedule,

[63] Official Gazette of RS No. 39/13, 108/13, 79/15, 26/19
[64] Official Gazette of RS No. 39/13, 108/13, 79/15, 26/19
[65] Official Gazette of RS No. 39/13, 108/13, 79/15, 26/19
[66] Official Gazette of RS no. 39/13, 108/13, 79/15, 26/19
[67] Official Gazette of RS no. 68/2020

Benefits when connecting to the network and advantages in accessing the network	Law on Electricity [68]	Producers whose total installed power of power plants does not exceed 500 kW are not required to report the daily work schedule
Network facilities	Law on Electricity [69]	Ensuring priority in network access and dispatching to producers who produce electricity from renewable sources and in efficient cogeneration, in accordance with relevant regulations, respecting the technical capabilities of the distribution system;
Obligation to purchase electricity from RES	Law on Electricity [70]	The supplier of end customers on the District territory is obliged to take over and purchase the share of electricity produced using renewable energy sources and in efficient cogeneration in accordance with the regulations governing the area of electricity production from renewable energy sources and in efficient cogeneration.
Simplified procedures for prosumers	Law on Electricity [71]	The operator of the distribution system, with the consent of the SERC, adopts the Rules on the connection of facilities of users of the distribution system to the distribution network. (2) The rules referred to in paragraph 1 of this Article prescribe the conditions, procedure and method of connecting network users' facilities to the distribution network, as well as a simplified procedure for connecting production facilities of customer-producers.

Table 5: Existing policy instruments for renewable energy sources in Bosnia and Herzegovina

1.2.2.3. Energy efficiency

Energy efficiency means using less energy to perform the same process, and it brings various advantages: reduction of greenhouse gas emissions, reduction of demand for energy imports and reduction of costs at the level of households and at the level of the entire economy. Although renewable energy technologies also help in achieving these goals, improving energy efficiency is the cheapest and often the most immediate way to reduce the use of fossil fuels. There are huge opportunities for improvement in every sector of the economy, be it buildings, transport, industry or energy production. Energy efficiency includes a wide range of activities that

[68] Official Gazette of the Brčko District of BiH no. 27/21
[69] Official Gazette of the Brčko District of BiH no. 27/21
[70] Official Gazette of the Brčko District of BiH no. 27/21
[71] Official Gazette of the Brčko District of BiH no. 27/21

lead to improvements (heating / cooling, electricity and water) inside the building. By applying measures in buildings or facilities, it is possible to reduce excessive energy consumption. As a result, users of the building or facility realize direct financial savings. In addition to saving energy, these measures will improve the ambient conditions for people who live or work in the building. Also, greenhouse gas emissions, including CO_2, are reduced. Considering the reduced need for primary energy, the energy efficiency is comparable to a new energy source.

In accordance with the obligations of Bosnia and Herzegovina imposed by the Treaty Establishing Energy Community and its decisions on the transposition of Directive 2006/32/EC on final energy consumption and energy efficiency services (ESD), Directive 2010/31/EU on energy efficiency of buildings (EPBD) and Directive 2012/27/EU on energy efficiency (EED) into the legislation of the signatory countries of this Treaty, the Action Plan for Energy Efficiency in Bosnia and Herzegovina for the period 2016-2018 was prepared and adopted. The plan was created due to planned, systematic and continuous action in the field of rational use of energy and increasing energy efficiency in all sectors.

In Bosnia and Herzegovina, the key laws that fully or partially govern the field of energy efficiency are the following:

- Law on Energy Efficiency of the Federation of Bosnia and Herzegovina [72]
- Law on spatial planning and land use at the level of the Federation of Bosnia and Herzegovina [73]
- Law on Electricity in the Federation of Bosnia and Herzegovina [74]
- Law on Energy of Republika Srpska[75]
- Law on Energy Efficiency of Republika Srpska[76]
- Law on Spatial Planning and Construction of Republika Srpska[77]
- Law on Electricity [78]
- Law on road transport of Republika Srpska[79]

The existing measures in Bosnia and Herzegovina, which regulate the energy efficiency framework, are given in the following table:

Measures in BiH		
Name of the measure	Document/legal basis	Short description of the measure
Cantonal energy efficiency plans	Law on Energy Efficiency (FBiH)[80]	The cantonal government or the administrative body assigned by it are responsible for adopting cantonal energy efficiency plans
Energy efficiency improvement programme in local communities	Law on Energy Efficiency (FBiH)[81]	The programmes include the adaptation and maintenance of buildings and other constructed facilities used by local self-government units and the improvement of the energy efficiency of utility services in the local community.
Programme for improving the energy efficiency of a large consumer	Law on Energy Efficiency (FBiH)[82]	The programme includes a detailed analysis of large consumers by consumption structure, consumption characteristics, assessment of the state of energy efficiency, indicative goals for energy saving, measures to improve energy efficiency, sources of funds and other necessary data.

[72] "FBiH Official Gazette", no 22/17
[73] "FBiH Official Gazette", no 2/06, 72/07, 32/08, 4/10, 13/10 i 45/10, 8/21, 92/21
[74] "FBiH Official Gazette", no 66/13
[75] "Official Gazette of Republika Srpska", no 49/09
[76] "Official Gazette of Republika Srpska", no 59/13
[77] "Official Gazette of Republika Srpska", no 40/2013, 2/2015 decision US, 106/2015 and 3/2016 - corr., 104/2018 - decision US and 84/2019)
[78] "Official Gazette of Republika Srpska", no 68/20
[79] "Official Gazette of Republika Srpska", no 47/17
[80] " FBiH Official Gazette", No. 22/17
[81] " FBiH Official Gazette", No. 22/17
[82] " FBiH Official Gazette", No. 22/17

Obligation to renew the public sector	Law on Energy Efficiency (FBiH)[83]	Public administration bodies, organisations, regulatory bodies, public institutions, agencies, local self-government units and Public Companys are obliged to manage energy in the premises where they operate and other means with which they operate. This means that energy efficiency measures must be implemented in the public sector.
Public procurement of goods and services	Law on Energy Efficiency (FBiH)[84]	An energy efficiency criterion is introduced in the field of public procurement, where users of funds from the budget of the Federation of Bosnia and Herzegovina or the budget of cantons or local self-government units will, when deciding on the choice of suppliers in the public procurement process, evaluate the energy efficiency of goods and services together with other criteria, and the priority will be given, under equal conditions, to the procurement of equipment and services that enable a higher level of energy efficiency.
Obligations of the building owner	Law on Energy Efficiency (FBiH)[85]	Introductions require that when selling or renting a building or parts of a building, the advertisement for sale or rental must include an indicator of the energy characteristics of the building or part of the building.
Eco-design of products	Law on Energy Efficiency (FBiH)[86]	Products that use energy can be displayed on the market only if they meet the conditions prescribed for such a product, if their compliance with the requirements is confirmed in the prescribed procedure and if they are labelled in accordance with the regulations adopted for that type of product.
Provision of individual devices for measuring energy consumption	Law on Energy Efficiency (FBiH)[87]	The distribution system operator, energy supplier, small distribution system operator and small supplier are obliged to install to the end consumers of energy their own individual devices for measuring energy consumption purchased at competitive prices, i.e. to install an attested device independently purchased by the end consumer of energy, for each part of the building that forms an independent entity that will provide end consumers of energy with accurate data on current and total energy consumption and time of use, wherever it is technically feasible and financially justified in relation to possible energy savings.
Measures from the Energy Efficiency Action Plan of the Federation of BIH for the period 2019-2021	Energy efficiency action plan of the Federation of Bosnia and Herzegovina for the period 2019-2021[88]	The aim of the measure is to reduce the total energy consumption in the housing sector by improving the thermal insulation characteristics of residential buildings and houses. The measure may include the following activities (individually

[83] " FBiH Official Gazette", No. 22/17
[84] " FBiH Official Gazette", No. 22/17
[85] " FBiH Official Gazette", No 22/17
[86] " FBiH Official Gazette", No 22/17
[87] "Official Gazette of FBiH", no 22/17
[88] "Official Gazette of FBiH", no 11/21

		or in appropriate combinations): 1. procurement and installation of thermal insulation of external walls; 2. procurement and installation of thermal insulation of roofs, ceilings and floors; 3. replacement of existing windows 4. 5. other measures
Action plan of the local self-government unit	Law on Energy Efficiency (RS)[89]	The obligation to adopt action plans of the local self-government unit for a period of three years.
Operational plan for improving energy efficiency in the republic's administrative bodies	Law on Energy Efficiency (RS) [90]	The operational plan will determine the measures that must be implemented by the republic's administrative bodies, as well as the dynamics and methodology of implementation. The funds necessary for implementation will also be determined
Energy efficiency plan for large consumers	Law on Energy Efficiency (RS) [91]	The large consumer plan contains a comprehensive analysis and structure of the consumption of a large consumer and the characteristics of its consumption, assessments of the state of energy efficiency, goals, a programme of measures to improve energy efficiency and other necessary data
Measures from the Energy Efficiency Action Plan of Republika Srpska	Energy efficiency action plan of Republika Srpska[92]	
Measures from the Action Plan for Energy Sustainable Development of the Brčko District of BiH	Action plan for energy sustainable development of the Brčko District of BiH [93]	

Table 6: Existing policy instruments for energy efficiency in Bosnia and Herzegovina

1.2.2.4. Energy security and internal energy market

Bosnia and Herzegovina, as a party to the Treaty Establishing Energy Community (Treaty), undertook to harmonise its legislation with the Treaty, thus, in accordance with the decisions of the Ministerial Council of the Energy Community, it should harmonise it with the provisions applicable to EU member states. By accepting the Treaty on the Energy Community, Bosnia and Herzegovina undertook to take over the basic guidelines of EU energy legislation, the so-called acquis communautaire. The Treaty and the acquis are constantly evolving to cover new sectors, as well as to update or replace older acts. In order to continue to monitor the development of European Union law, Articles 24 and 25 of the Treaty allow for the adaptation of the acquis and the implementation of possible amendments. This ensures that the contracting parties of the Energy Community are abreast of EU developments and continuously harmonise their regulatory frameworks in the energy and related sectors with the EU. Decisions on the adoption of new legal acquis and amendments to existing legal obligations are generally made by majority vote of the Council of Ministers based on the proposal of the European Commission.

1.2.2.4.1. Electric power

The legal regulation defined at the level of Bosnia and Herzegovina, which touches on the issue of energy security and the internal electricity market, is provided by the following laws:

- Law on Transmission of Electric Power, Regulator and System Operator of Bosnia and Herzegovina [94]

[89] "Official Gazette of RS" no.59/13
[90] "Official Gazette of RS" no. 59/13
[91] "Official Gazette of RS" no.59/13
[92] "Official Gazette of RS" no. 1/2014, 109/17
[93] Official Gazette of the Brčko District of BiH no. - Adopted by the Brčko District Government on 29 April 2015.
[94] "Official Gazette of Bosnia and Herzegovina", No.7/2002, 13/2003, 76/2009 i 1/2011

- Law on the Establishment of the Company for Electricity Transmission in Bosnia and Herzegovina [95]
- Law on the establishment of an independent system operator for the transmission system in Bosnia and Herzegovina [96] (it is stipulated that the preliminary draft Law on the Regulator of Electricity and Natural Gas, Transmission and Market of Electricity regulates the issue of energy security and transposes obligations from EU directives).

The legal regulation defined by the Federation of Bosnia and Herzegovina, which touches on the issue of energy security and the internal electricity market, is provided by the following laws:

- Law on Electricity of the Federation of Bosnia and Herzegovina [97]

In Republika Srpska, the laws that fully or partially touch on the issue of energy security and the internal market are as follows:

- Law on Energy of Republika Srpska[98]
- Law on Electricity of Republika Srpska[99]

In the Brčko District of Bosnia and Herzegovina, the laws that fully or partially touch on the issue of energy security and the internal market are as follows:

- Law on Electricity of the Brčko District [100]
- Law on the tariff system for the sale of electricity [101]
- Law on utility activities [102]

At the time of writing this document, public companies in BiH have not carried out restructuring in accordance with the provisions of the Treaty, and they function as vertically integrated companies. Some progress was made in RS, with the adoption of a new law on electricity, on the basis of which certain steps were taken towards complete separation, but this process has not yet been completed. Vertically integrated Public Companys in the electric power sector in Bosnia and Herzegovina are: Elektroprivreda Bosne i Herzegovina (EPBIH), Elektroprivrede Hrvatske zajednice Herceg-Bosne (EPHZHB) and Elektroprivreda Republika Srpska (ERS). Public company (JP) Komunalno Brčko District, which provides distribution and supply services to less than 100,000 customers in the Brčko District, is exempt from the separation rule. Elektroprivreda Republika Srpska has five distribution companies that are legally and financially separated from supply and production activities. The processes of establishing complete independence of the administration and functional separation have not yet been completed. In the Federation of Bosnia and Herzegovina, distribution companies are still part of a vertically integrated company. It is expected that the new Law on Electricity, which is in the process of being adopted, will oblige the two power companies to separate.

When it comes to ensuring access to the electricity network, network fees are defined and applied without discrimination. After considering the proposal of the transmission company (Elektroprijenos BiH), the State Electricity Regulatory Commission (SERC) decided to maintain the prices of the transmission network for 2022 with a simultaneous increase in the tariff for the work of the independent system operator (ISO BiH). Fees for supply and distribution services were raised only in the Brčko District.

The three public companies that trade in bilateral contracts are the dominant traders on the domestic wholesale market. Unlike EPBIH and EPHZHB, which use an intermediary for trading on their behalf, ERS deals with direct trading on the organised SEEPEX market in Serbia. The establishment and functioning of the organised market is not defined by the existing Law on Transmission of Electric Power, Regulator and System Operator of Bosnia and Herzegovina from 2002. Attempts to determine the final proposal for amendments to the Law on Transmission of Electric Power, Regulator and System Operator of Bosnia and Herzegovina, which would, among other things, enable the establishment of an organised market in Bosnia and Herzegovina, failed due to the disagreement of political parties from the two Entities. Since 2016, there has been a competitive balanced market. Regulation (EU) No. 1227/2011 (REMIT) on wholesale energy market integrity and transparency was

[95] "Official Gazette of Bosnia and Herzegovina", No.35/2004, 76/2009 i 20/2014
[96] "Official Gazette of Bosnia and Herzegovina", No.35/04
[97] "Official Gazette of the Federation of Bosnia and Herzegovina", No. 66/13, 94/15, 54/19, 1/22, 61/22
[98] "Official Gazette of Republika Srpska", No. 49/09.
[99] "Official Gazette of Republika Srpska", No, 68/20
[100] "Official Gazette of Brčko District of Bosnia and Herzegovina", No. 36/04, 28/07, 61/10 and 4/13
[101] "Official Gazette of Brčko District of Bosnia and Herzegovina", No. 37/04, 28/07 and 4/13
[102] "Official Gazette of Brčko District of Bosnia and Herzegovina ",No. 30/04, 24/07 and 9/13

implemented through the Rulebook on wholesale electricity market integrity and transparency adopted on 14 May 2020.

Three public companies supply the majority of domestic consumers with electricity. Competition on the retail market is low because public companies supply consumers at prices that are below market prices in the region. Consumers who qualify for universal service, such as households and small customers, have access to regulated prices. Two electricity companies in the Federation of Bosnia and Herzegovina are responsible for providing universal service in their areas at prices determined by the methodology determined by the entity regulator FERC. The entity regulator ERCRS in Republika Srpska adopts universal service tariffs based on production costs in the electricity company ERS. About 2% of electricity consumption is consumed by the Brčko District, and SERC determines the prices for the universal service. Before the price jump in the second half of 2021, prices in the competitive retail market were open for negotiation. Qualified customers in both entities negotiate electricity supply prices with suppliers because these prices are not regulated. In the Federation of Bosnia and Herzegovina, by an amendment to the Law on Electricity, which was ratified in December 2021, a clause was implemented to limit the increase in prices for qualified consumers to a maximum of 20% per year. There are no systematic, legally defined protection programmes for consumers who are in the category of energy poverty in any area of electricity supply.

Through regionally coordinated auctions in the SEE CAO, interconnection capacity on the borders with Montenegro and Croatia is allocated on an annual, monthly and daily basis. Intraday capacity auctions and capacity distribution for all periods on interconnections with Serbia are bilaterally coordinated between the respective system operators. Within the SHB control block, a common tertiary reserve is applied, while the balance tertiary energy is exchanged on a bilateral basis with Serbian and Montenegrin operators.

There is no legal framework at the state level for cyber-security, and the NIS Directive (EU) 2016/1148 has not been implemented in the Law of Republika Srpska on Information Security.

The existing policy instruments of Bosnia and Herzegovina, which regulate the framework for energy security and the market in the electricity sector, are given in the following table:

Measures in BiH		
Name of the measure	Document/legal basis	Short description of the measure
Electricity market in Bosnia and Herzegovina	Law on Transmission of Electric Power, Regulator and System Operator of Bosnia and Herzegovina [103] Law on the establishment of an independent system operator for the transmission system in Bosnia and Herzegovina [104]	The scope, conditions and dynamics of the electricity market opening in Bosnia and Herzegovina in the electricity production and supply activities have been established[105] This is the basis for determining the conditions and criteria for acquiring the status of a qualified customer. Also, market rules were introduced, the main objectives of which are: ▪ creation of conditions for safe operation of the BiH electric power system through an efficient system of auxiliary services and balance market ▪ balancing the electric power system of BiH with as little costs as possible ▪ creation of conditions for efficient functioning and further development of the wholesale and retail electricity market in Bosnia and Herzegovina.
Tariff rules	Law on Transmission of Electric Power, Regulator	The basics of the procedure for considering requests and all other submissions regarding tariffs, the methodology for determining tariffs

[103] "Official Gazette of Bosnia and Herzegovina", No. 7/2002, 13/2003, 76/2009 and 1/2011
[104] "Official Gazette of Bosnia and Herzegovina", No. 35/04
[105] https://www.derk.ba/DocumentsPDFs/Odluka%20o%20otvaranju%20trzista%20BS.pdf

	and System Operator of Bosnia and Herzegovina [106]	and the standards for adopting tariffs, which are necessary for the State Electricity Regulatory Commission to fulfil its obligations in accordance with the Law, have been established. Also, there are rules for setting tariffs for electricity transmission services, independent system operator and auxiliary services, as well as rules for setting tariffs for electricity distribution and supply services in the Brčko District of Bosnia and Herzegovina.
EES rules and codes	Law on Transmission of Electric Power, Regulator and System Operator of Bosnia and Herzegovina [107]	The Network Code regulates the way of planning and development of the transmission system, the conditions for connection (procedures, contracts, criteria), the way of operational planning (consumption forecasting, balance responsible parties, management of network restrictions) and operational work (dispatching, procedures, communications), measures in unforeseen situations (control of consumption, restoration of system operation after a total breakdown), the way in which accounting measurements are performed in the power system and other necessary technical measures for high-quality and reliable operation of the transmission system. Also, the Market Rules regulate relations between ISO BiH and licensed participants in the electricity market, defining the participants themselves, the scope of their activities and commercial relations in the electricity market. The market rules also define the manner in which ISO BiH fulfills its obligations concerning the management and operation of the balancing mechanism, management of agreements for the procurement of auxiliary services, provision of data for the settlement of energy transactions (commercial measurements), congestion management, distribution of fees for unwanted discrepancies with external control zones, account branch for auxiliary services and balancing, etc. The following instruments regarding EES rules and codes are in force in Bosnia and Herzegovina: ▪ Network codex [108] ▪ Market rules [109] ▪ Approving the cancellation of the maximum possible acceptance power from unmanageable energy sources [110] ▪ Rules on the operation of networks regarding connection [111]

[106] "Official Gazette of Bosnia and Herzegovina", No. 7/2002, 13/2003, 76/2009 and 1/2011
[107] "Official Gazette of Bosnia and Herzegovina", No. 7/2002, 13/2003, 76/2009 and 1/2011
[108] https://www.derk.ba/DocumentsPDFs/Mrezni-Kodeks-2021-b.pdf
[109] https://www.derk.ba/DocumentsPDFs/Trzisna-pravila-13-10-2021-b.pdf
[110] https://www.derk.ba/DocumentsPDFs/Odluka-o-odobr-ukidanja-maks-moguce-snage-prihvata-2022-b.pdf
[111] https://www.derk.ba/DocumentsPDFs/Pravilnik-o-radu-mreza-22_02_2019-b.pdf

		▪ Criteria for approving deviations from the application of the rules for connecting production modules [112] ▪ Criteria for approving deviations from the application of connection rules for new and existing high-voltage DC transmission systems and DC-connected power park modules[113] ▪ Criteria for approving deviations from the application of the rules for connecting the customer's facilities [114] ▪ Rules on third-party access to the transmission system [115] ▪ Rules on the safety zones of overhead power lines with a nominal voltage of 110 kV to 400 kV [116] ▪ Technical norms for the construction of overhead power facilities.
Licenses	Law on Transmission of Electric Power, Regulator and System Operator of Bosnia and Herzegovina [117]	The procedure and criteria for issuing licenses by SERC, including the procedure for submitting applications, reviewing applications and issuing licenses, as well as essential criteria for approving or rejecting applications for granting licenses and the content and conditions of the license are defined[118]. Also, the method of changing, suspending and revoking the license is defined, as well as the procedures for selling, assigning, renting or transferring the license in some other way. The process of issuing a license is public and is conducted in accordance with objective and publicly known criteria in a non-discriminatory and transparent manner. Other instruments related to licenses are as follows: ▪ Standard conditions for the use of a license for international electricity trade activities [119] ▪ Form and content of forms for submitting applications for licenses [120] ▪ Register of licenses [121] ▪ Register of submitted requests [122] ▪ Register of electricity traders [123]

[112] https://www.derk.ba/DocumentsPDFs/Odluka-Odstupanja-631-b.pdf
[113] https://www.derk.ba/DocumentsPDFs/Odluka-Odstupanja-1447-b.pdf
[114] https://www.derk.ba/DocumentsPDFs/Odluka-Odstupanja-1388-b.pdf
[115] https://www.derk.ba/DocumentsPDFs/pravila%20o%20pristupu%20trece%20strane%20na%20prenosni%20sistem%2007-12-06%20BOS.pdf
[116] https://www.derk.ba/DocumentsPDFs/Odluka%20o%20odobrenju%20Pravilnika%20o%20sigurnosnim%20zonama%2027feb08%20-%20b.pdf
[117] "Official Gazette of Bosnia and Herzegovina", no. 7/2002, 13/2003, 76/2009 and 1/2011
[118] https://www.derk.ba/DocumentsPDFs/Pravilnik-o-licencama-Precisceni-tekst-2016-b.pdf
[119] https://www.derk.ba/DocumentsPDFs/Odluka-o-utvrdj-Standard-uvjeta-sa-prilogom-15-12-15-b.pdf
[120] https://www.derk.ba/DocumentsPDFs/Odluka-o-licencnim-obrascima-2016-b.pdf
[121] https://www.derk.ba/ba/licence/registar-licenci
[122] https://www.derk.ba/ba/licence/podnijeti-zahtjevi
[123] https://www.derk.ba/ba/licence/registar-trgovaca-elektrinom-energijom

Connection to the portable network	Law on Transmission of Electric Power, Regulator and System Operator of Bosnia and Herzegovina [124]	Rules have been established that prescribe the procedure for the connection of new facilities of producers or customers to the transmission network of the voltage level 400, 220 and 110 kV, the connection of facilities to the medium voltage level of 35, 20, 10 and 6 kV in the 110/x kV substations of Elektroprijenos, as well as for the existing facilities in the event of an increase in installed power, extension or reconstruction of the facility
REMIT - integrity and transparency of the wholesale electricity market	Law on Transmission of Electric Power, Regulator and System Operator of Bosnia and Herzegovina [125] Decision on the transposition of the regulation on the integrity and transparency of the wholesale energy market [126]	The adapted REMIT Regulation[127] regulates the uniform rules of conduct on the wholesale electricity and natural gas markets in the Contracting Parties of the Energy Community. This ensures a unique European framework on the wholesale markets of the European Union and the Energy Community for: ▪ defining market abuse in terms of market manipulation, attempts at market manipulation and trading based on privileged information, ▪ the introduction of an explicit ban on market abuse, ▪ establishing a new framework for the supervision of wholesale markets in order to detect and prevent market manipulation and insider trading, and ▪ definition of prohibitions and implementation of punishments at the national level in case of detection of market abuse. Accordingly, the following instruments have been established in Bosnia and Herzegovina: ▪ Rules on the wholesale electricity market integrity and transparency[128] ▪ Register of participants in the wholesale electricity market [129]
Energy permits	Law on Electricity of the Federation of Bosnia and Herzegovina [130] Law on Energy of Republika Srpska[131] Law on Electricity of Republika Srpska[132]	In the Federation of Bosnia and Herzegovina, the Energy Regulatory Commission of the Federation of Bosnia and Herzegovina (FERC) issues preliminary permits for the construction of production and distribution facilities, as well as work permits-licenses for the electricity production, distribution and supply activities[134]. In Republika Srpska, the Energy Regulatory Commission of Republika Srpska (ERCRS) issues

[124] "Official Gazette of Bosnia and Herzegovina", No. 7/2002, 13/2003, 76/2009 and 1/2011
[125] "Official Gazette of Bosnia and Herzegovina", No. 7/2002, 13/2003, 76/2009 and 1/2011
[126] https://www.derk.ba/DocumentsPDFs/Odluka-o-transponiranju-Ured-velepr-trzista-REMIT-b.pdf
[127] Regulation (EU) no. 1227/2011 of the European Parliament and the Council of 25 October 2011 on the wholesale energy market integrity and transparency
[128] https://www.derk.ba/DocumentsPDFs/REMIT-Pravilnik-14Maj20-b.pdf
[129] https://www.derk.ba/DocumentsPDFs/Odluka-o-registru-ucesnika-na-velepr-trzistu-el-energije-b.pdf
[130] "Official Gazette of the Federation of BiH", No. 66/13, 94/15, 54/19, 1/22, 61/22
[131] "Official Gazette of Republika Srpska", No. 49/09
[132] "Official Gazette of Republika Srpska", No. 68/20
[134] https://www.ferk.ba/_ba/images/stories/2021/pravilnik_dozvole_bs.pdf

	Law on Electricity of the Brčko District [133]	permits [135], prescribes and regulates the procedure for issuing, renewing, changing, revoking and seizing permits for performing energy activities, issuing criteria, permit conditions, permit types, content and validity periods, method of keeping the permit register, as well as the monitoring method. In the Brčko District of Bosnia and Herzegovina, the State Energy Regulatory Commission (SERC) issues licenses for the performance of electric power activities for the electricity production and distribution and for the management of the electricity distribution system, supply and trade.
Connections to the distribution network	Law on Electricity of the Federation of Bosnia and Herzegovina [136] Law on Energy of Republika Srpska[137] Law on Electricity of Republika Srpska[138] Law on Electricity of the Brčko District [139]	In the Federation of Bosnia and Herzegovina, FERC prescribes the methodology for calculating fees for connection and defining deadlines and conditions for connection to the distribution network [140]. In accordance with the foregoing, FERC publishes unit amounts of fees for connection to the distribution network of JP Elektroprivreda BiH d.d. - Sarajevo and JP Elektroprivreda HZHB“ d.d. Mostar. In Republika Srpska, ERCRS determines the methodology for calculating fees for connection and for defining deadlines and conditions for connection to the distribution network [141]. In the Brčko District of BiH, the Public Company "Komunalno Brčko", d.o.o., the Brčko District of BiH defines the methodology for determining the fee for connection to the distribution network of the Brčko District of BiH [142].
Tariffs and the market	Law on Electricity of the Federation of Bosnia and Herzegovina [143] Law on Energy of Republika Srpska[144] Law on Electricity of Republika Srpska[145] Law on Electricity of the Brčko District [146]	In the Federation of Bosnia and Herzegovina, FERC determines the tariff methodology and tariff procedures [147]. Accordingly, the following tariff and market instruments were developed: ▪ Rules for creating and applying load diagrams [148] ▪ Rules on the supply of qualified customers with electricity and the procedure for changing the supplier [149].

[133] "Official Gazette of Brčko District of Bosnia and Herzegovina", No. 36/04, 28/07, 61/10 and 4/13
[135] https://reers.ba/wp-content/uploads/2021/08/Pravilnik-o-izdavanju-dozvola-jul-2021.-godine-Sluzbeni-glasnik-RS-0719.pdf
[136] "Official Gazette of the Federation of BiH", No. 66/13, 94/15, 54/19, 1/22, 61/22
[137] "Official Gazette of Republika Srpska", No. 49/09
[138] "Official Gazette of Republika Srpska", No. 68/20
[139] "Official Gazette of Brčko District of Bosnia and Herzegovina", No. 36/04, 28/07, 61/10 and 4/13
[140] https://www.ferk.ba/_ba/images/stories/2014/pravilnik_metodologija_naknade_prikljucenje_bs.pdf
[141] https://reers.ba/wp-content/uploads/2019/05/Pravilnik_Prikljucak_na_DistMrezu_sa_Obrascem_zahtjeva_cir.pdf
[142] http://komunalno.ba/wp-content/uploads/2020/02/metodologija_za_utvrdjivanje_bosanki.pdf
[143] "Official Gazette of the Federation of BiH", No. 66/13, 94/15, 54/19, 1/22, 61/22
[144] "Official Gazette of Republika Srpska", No. 49/09
[145] "Official Gazette of Republika Srpska", No. 68/20
[146] "Official Gazette of Brčko District of Bosnia and Herzegovina", No.36/04, 28/07, 61/10 and 4/13
[147] https://www.ferk.ba/_ba/images/stories/2013/tarifna_metodologija_2013_bs.pdf
[148] https://www.ferk.ba/_ba/images/stories/2014/pravilnik_dijagram_opterecenja_bs.pdf
[149] https://www.ferk.ba/_ba/images/stories/2014/pravilnik_opskrba_kvalificiranih_kupaca_bs.pdf

		In Republika Srpska, ERCRS determines the tariff methodology and tariff procedures [150]. Also, the methodology for determining the prices of public and reserve electricity supply is determined [151]. In the Brčko District of Bosnia and Herzegovina, SERC prescribes the methodology for creating tariffs for electricity distribution services in the Brčko District of Bosnia and Herzegovina [152].
General conditions for the delivery of electricity	Law on Electricity of the Federation of Bosnia and Herzegovina [153] Law on Energy of Republika Srpska[154] Law on Electricity of Republika Srpska[155] Law on Electricity of the Brčko District [156]	In the Federation of Bosnia and Herzegovina, FERC establishes general conditions for the delivery and supply of electricity [157] In Republika Srpska, ERCRS establishes general conditions for the delivery and supply of electricity [158]. In the Brčko District of BiH, the Public Company "Komunalno Brčko", d.o.o., the Brčko District of BiH determines the general conditions for the delivery and supply of electricity to the Brčko District of BiH [159]
Network distribution rules	Law on Electricity of the Federation of Bosnia and Herzegovina [160] Law on Energy of Republika Srpska[161] Law on Electricity of Republika Srpska[162] Law on Electricity of THE Brčko District [163]	In the Federation of Bosnia and Herzegovina, the distribution network rules of the Distribution System Operator of the Public Company Elektroprivreda Bosne i Herzegovina d.d. - Sarajevo [164] and Public Company "Elektroprivreda Hrvatske zajednice Herceg Bosna", joint stock company Mostar [165] the operation and way of running the distribution network in the electric power system under their jurisdiction are regulated. In Republika Srpska, the operation and management of the distribution network in the electric power system is governed by network rules. Network rules are made by the distributor and approved by the Regulator. These rules cannot conflict with the rules made by ISO for the transmission network. In the Brčko District of BiH, the Public Company "Komunalno Brčko", d.o.o. the Brčko District of BiH determines the distribution network rules [166], that regulate the operation and management of

[150] https://reers.ba/wp-content/uploads/2019/05/Pravilnik_o_tarifnoj_metodologiji_sept2012.pdf
[151] https://reers.ba/wp-content/uploads/2021/08/Pravilnik-o-metodologiji-za-utvrdjivanje-cijena-javnog-i-rezervnog-snabdijevanja-elektricne-energije-jul-2021.-godine-Sluzbeni-glasnik-br.-7421.pdf
[152] https://www.derk.ba/DocumentsPDFs/Tarifna_metodologija-Brcko_DBiH-26Okt2011-b.pdf
[153] "Official Gazette of the Federation of BiH", No. 66/13, 94/15, 54/19, 1/22, 61/22
[154] "Official Gazette of Republika Srpska", No. 49/09
[155] "Official Gazette of Republika Srpska", No. 68/20
[156] "Official Gazette of Brčko District of Bosnia and Herzegovina", No. 36/04, 28/07, 61/10 and 4/13
[157] https://www.ferk.ba/_ba/images/stories/2014/opci_uvjeti_bs.pdf
[158] "Official Gazette of Republika Srpska", No 13/22
[159] "Official Gazette of the Brčko District of Bosnia and Herzegovina", No.36/04, 3/06, 28/07, 25/08 and 4/13
[160] "Official Gazette of the Federation of BiH", No. 66/13, 94/15, 54/19, 1/22, 61/22
[161] "Official Gazette of Republika Srpska", No 49/09
[162] "Official Gazette of Republika Srpska", No. 68/20
[163] "Official Gazette of the Brčko District of Bosnia and Herzegovina", No.36/04, 28/07, 61/10 and 4/13
[164] https://www.ferk.ba/_hr/images/stories/2018/mrezna_pravila_epbih_818_hr.pdf
[165] https://www.ferk.ba/_hr/images/stories/2017/odluka_usvajanje_mrezna_pravila_jpephzhb_hr.pdf
[166] http://komunalno.ba/wp-content/uploads/2020/02/distributivna_mrezna_pravila_bosanski_jezik.pdf

		the distribution network in the electric power system, with the aim of ensuring the safe and high-quality operation of the distribution system.

Table 7: Existing policy instruments in Bosnia and Herzegovina for energy security and internal market

1.2.2.4.2. Natural gas

In accordance with Directive 2003/55/EC concerning common rules for the internal market in natural gas, Directive 2004/67/EC concerning measures to safeguard security of natural gas supply and Regulation (EC) 1775/2005 on conditions for access to the natural gas transmission networks, Bosnia and Herzegovina does not have a legal and regulatory framework to regulate the natural gas sector at the state level. Article 9 of the Law on Ministries of the Council of Ministers of Bosnia and Herzegovina defines the role of MFTER in the natural gas sector.

When it comes to the unbundling of the natural gas system, one of the two operators in Republika Srpska, Gas Promet Pale, received the entity regulator's approval to work in accordance with the ownership unbundling model and acts as the transport system operator. The other, which deals with supply, system operation, distribution and transport, is still not separated. According to the Regulation on the organisation and regulation of the gas sector, the company BH Gas manages the transport network in the Federation of Bosnia and Herzegovina, however, there is no legal basis for separation under the Third Energy Package because no law has been passed in the FBiH that regulates this area.

Access to the gas network in Bosnia and Herzegovina is defined in a manner that, for the gas network in Republika Srpska, access by third parties is possible; according to the current Decree in the Federation, access is being negotiated. Entity governments set tariffs that are included in the price of gas at the distribution level.

Two parallel entity natural gas markets make up the market in Bosnia and Herzegovina, which reduces energy security and market establishment. Prices on the wholesale market in Republika Srpska are still unregulated, but there is only one major gas importer. The entity government establishes wholesale prices in the Federation of Bosnia and Herzegovina as well. Bilateral contracts form the basis of every transaction. The Federation does not have and does not act as a virtual trading post for Republika Srpska. There is no organised natural gas market in BiH. Natural gas prices in both entities are regulated and change with the price changes of the only supplier, Gazprom.

Although the Framework Energy Strategy of Bosnia and Herzegovina plans to build more interconnecting capacities for the transport of natural gas, at the time of writing this document, two of them are defined as temporary. One is the so-called *the Southern Interconnection* connecting central Bosnia via western Herzegovina with the network in Croatia, while the other is the *new interconnecting gas transport pipeline Serbia-BiH* (RS). Both projects are in the initial stages, while a feasibility study was done for the Southern Interconnection and the corresponding Law was passed in FBiH. Decree on the organisation and regulation of the gas industry sector[167].

Regulation (EU) 2017/1938 has not yet been implemented in Bosnia and Herzegovina. In Republika Srpska there are only a few regulations.

The legal regulation defined by the Federation of Bosnia and Herzegovina, which touches on the issue of energy security and the natural gas internal market, is provided by the following laws:

- Decree on the organisation and regulation of the gas industry sector [168]

The gas sector legal framework in Republika Srpska:

- Law on Gas in Republika Srpska[169]
- Law on Energy of Republika Srpska[170]
- Law on Pipeline Transportation of Gas Pipelines and Liquid Hydrocarbons and Distribution of Gaseous Hydrocarbons [171]

[167] "Official Gazette of the Federation of Bosnia and Herzegovina", No. 83/07 and 71/21
[168] "Official Gazette of the Federation of Bosnia and Herzegovina", No. 83/07 and 71/21
[169] "Official Gazette of Republika Srpska", No 22/18 and 15/21
[170] "Official Gazette of Republika Srpska", No 22/18
[171] "Official Gazette of Republika Srpska", No 52/12

- Regulation on security of supply and delivery of natural gas [172]
- Law on the Basics of Transportation Safety by Oil and Gas Pipelines [173]

The existing policy instruments in Bosnia and Herzegovina, which regulate the framework for energy security and the internal natural gas market, are shown in the following table:

Measures in BiH		
Name of the measure	Document/legal basis	Short description of the measure
Construction of direct gas pipelines	Decree on the organisation and regulation of the gas sector [174] Law on Gas in Republika Srpska[175]	In the Federation of Bosnia and Herzegovina, a gas energy entity that wants to contract for gas supply, but due to technical or other reasons cannot be granted the right to access the distribution or transport system, can build a direct gas pipeline. The construction of a direct gas pipeline can only be started with the approval of the Ministry. In Republika Srpska, the ERCRS determines the rules [176] on the construction of direct gas pipelines, which prescribe the conditions for the construction of direct gas pipelines and the procedure for issuing a preliminary approval for construction.
Operators of transportation and distribution systems and natural gas storage systems and LNG facilities	Decree on the organisation and regulation of the gas sector [177] Law on Gas in Republika Srpska[178]	In the Federation of Bosnia and Herzegovina, ▪ the company "BH-Gas" d.o.o. Sarajevo is designated as the operator of the gas transportation system in FBiH., ▪ A distribution system operator is a gas energy entity that has a license to carry out gas distribution activities and that has a gas distribution concession or a concession for the construction of a distribution system and gas distribution. ▪ The gas storage system operator is a legal entity that has a license to perform gas storage activities. ▪ An LNG plant operator is a legal entity that has a license to operate an LNG plant. In Republika Srpska, ▪ The transport system operator is an independent energy entity that performs the activity of transport and management of the natural gas transport system. ▪ The operator of the natural gas distribution system performs the activity according to the conditions of the license issued by the Regulatory

[172] "Official Gazette of Republika Srpska", No 17/11
[173] "Official Gazette of SFRY", No. 64/73
[174] "Official Gazette of the Federation of Bosnia and Herzegovina", No. 83/07 and 71/21
[175] "Official Gazette of Republika Srpska", No 22/18 i 15/21
[176] "Official Gazette of Republika Srpska", No 34/19
[177] "Official Gazette of the Federation of Bosnia and Herzegovina", No. 83/07 i 71/21
[178] "Official Gazette of Republika Srpska", No 22/18 and 15/21

		Commission, in accordance with the law and regulations. ▪ A warehouse operator that is part of a vertically integrated entity is obliged to ensure independence in terms of legal form, organisation and decision-making in relation to other activities that are not related to the activity of transport and management of the transport system, distribution and management of the distribution system and storage. Also, ERCRS establishes rules [179] on the certification of operators of the natural gas transportation system.
Public supply of natural gas	Decree on the organisation and regulation of the gas sector [180] Law on Gas in Republika Srpska[181]	In the Federation of BiH, the Government of the Federation of BiH, at the proposal of the Federation Ministry of Trade, with the previously obtained opinion of the Ministry, to regulate the price for gas supply to the gas supplier of tariff customers who perform public service in the FBiH. In Republika Srpska, ERCRS establishes the following rules related to the public supply of natural gas: ▪ Rules on public supply of natural gas [182] ▪ Rules on the supply of the last choice with natural gas [183] ▪ Rules on changing the supplier of natural gas [184]
Tariffs	Decree on the organisation and regulation of the gas sector [185] Law on Gas in Republika Srpska[186]	In the Federation of BiH, the Government of the FBiH, on the proposal of the Federal Ministry of Trade, approves the wholesale price of natural gas for distribution companies on the territory of the FBiH. In Republika Srpska, ERCRS establishes the following rules related to natural gas transportation, storage and distribution tariffs: ▪ Rules on tariff methodology and tariff system for natural gas transportation and storage [187] ▪ Rules on tariff methodology and tariff system for natural gas distribution [188] ▪ Rules on tariff methodology and tariff system for natural gas distribution and natural gas supply [189]

[179] "Official Gazette of Republika Srpska", No. 31/19
[180] "Official Gazette of the Federation of Bosnia and Herzegovina", No. 83/07 and 71/21
[181] "Official Gazette of Republika Srpska", No. 22/18 and 15/21
[182] "Official Gazette of Republika Srpska", No. 111/22
[183] "Official Gazette of Republika Srpska", No. 38/19
[184] "Official Gazette of Republika Srpska", No. 38/19
[185] "Official Gazette of the Federation of Bosnia and Herzegovina", No. 83/07 and 71/21
[186] "Official Gazette of Republika Srpska", No. 22/18 and 15/21
[187] "Official Gazette of Republika Srpska", No. 77/22
[188] "Official Gazette of Republika Srpska", No.111/22
[189] "Official Gazette of Republika Srpska", No. 51/14

Connections to the natural gas distribution and transport system	Law on Gas in Republika Srpska[190]	In the Federation of Bosnia and Herzegovina, the operators of the transport and distribution system are obliged to connect to the transport and distribution system those legal entities that have received the operator's energy consent for the gas system, that is, that have met the requirements of the by-laws. In Republika Srpska, ERCRS establishes rules on the methodology for calculating the costs of connection to the natural gas distribution or transport system [191].
Technical norms	Law on Gas in Republika Srpska[192]	In Republika Srpska, the Ministry of Energy and Mining establishes technical standards in the field of natural gas, namely: ▪ Norms on aerosol dispensers [193] ▪ Norms on technical conditions and norms for natural gas odorisation [194] ▪ Norms for gas boilers [195] ▪ Norms for the safe transport of natural gas through main gas pipelines and gas pipelines for international transport [196] ▪ Norms on appliances that burn gaseous fuels [197] ▪ Norms on new hot water boilers with liquid and gaseous fuels and requirements for the efficiency level [198] ▪ Norms for gas distribution pipelines made of steel and polyethylene pipes [199] ▪ Norms for indoor gas installations (with a list of standards)[200] ▪ Norms on technical standards for the design, construction, operation and maintenance of gas boilers (with a list of standards)[201] ▪ Norms for domestic gas connection for working pressure up to 4 bar (with a list of standards)[202] ▪ Norms on taking a professional exam in the field of gas technology [203] ▪ Norms for pumps and compressors [204]

[190] "Official Gazette of Republika Srpska", No. 22/18 and 15/21
[191] "Official Gazette of Republika Srpska", No. 51/14
[192] "Official Gazette of Republika Srpska", No. 22/18 and 15/21
[193] "Official Gazette of Republika Srpska", No. 43/22
[194] "Official Gazette of Republika Srpska", No. 30/21
[195] "Official Gazette of Republika Srpska", No. 18/21
[196] "Official Gazette of Republika Srpska", No. 43/19
[197] "Official Gazette of Republika Srpska", No. 13/18
[198] "Official Gazette of Republika Srpska", No. 26/17
[199] "Official Gazette of Republika Srpska", No. 22/21
[200] "Official Gazette of Republika Srpska", No. 16/14
[201] "Official Gazette of Republika Srpska", No. 7/14
[202] "Official Gazette of Republika Srpska", No. 115/13
[203] "Official Gazette of Republika Srpska", No. 82/20
[204] "Official Gazette of SFRY", No. 32/74

		▪ Norms for installation of boiler rooms in open space [205] ▪ Norms on the determination of household gas appliances that can be put on the market only if they are supplied with a warranty card and technical instructions and on the minimum duration of the warranty period and the period of guaranteed servicing for these appliances[206].

Table 8: Existing policy instruments for energy security and internal natural gas market in Bosnia and Herzegovina

1.2.2.4.3. Oil and petroleum products

Bosnia and Herzegovina does not have a national policy consistent with the standards of Directive 2009/119/EC and legislation at the state level regulating mandatory stocks of oil and petroleum products. Article 9 of the Law on Ministries of the Council of Ministers of Bosnia and Herzegovina defines the role of MFTER in the Oil and Petroleum products Sector. The work of the Working Group responsible for making special recommendations for the model of oil stocks at the state level in accordance with the Directive 2009/119/EC on oil stocks did not result in any specific recommendations. Bosnia and Herzegovina has not yet adopted a draft harmonised Quality Decision on the quality of gasoline and diesel fuels (Directive 98/70/EC), although currently the legal framework of the oil and petroleum products sector at the level of Bosnia and Herzegovina is the Decision on the Quality of Petroleum-derived Liquid Fuels[207]. The Decision defines the quality of liquid oil fuels traded on the BiH market. On the basis of this Decision, entity ministries monitor the quality of liquid oil fuels.

When it comes to the legal framework in the field of oil and petroleum products in the Federation of Bosnia and Herzegovina, the Law on Petroleum products of the Federation of Bosnia and Herzegovina is in force [208]. This law, among other things, prescribes the establishment of mandatory stocks of petroleum products in accordance with Directive 2009/119/EC. Back in 2008, the Government of FBiH passed the Decree on types, content and quality of biofuels in motor fuels, which, among other things, defines the types and quality of biofuels and determines the content of biofuels in motor fuels. The following secondary legislation is in force in the Federation of Bosnia and Herzegovina:

- Rulebook on determining the quality of petroleum liquid fuels [209];
- Rulebook on the requirements for the minimum technical equipment of business premises for the performance of commercial services [210] adopted on the basis of the Law on Trade [211],
- Rulebook on the manner of registration and control of the circulation of petroleum products and other products and services at petrol stations through installed equipment in the FBiH [212].
- Rulebook on issuing permits for performing energy activities falling within the scope of the oil industry sector [213]

In Republika Srpska, oil and petroleum products are regulated by the Law on Petroleum products[214]. Also, this area is defined by the Law on conditions for the sale of shares of companies from the oil industry of Republika Srpska[215] and the Law on the Basics of Transportation Safety by Oil and Gas Pipelines [216]. In 2016, the

[205] "Official Gazette of SFRY", No. 12/85
[206] "Official Gazette of SFRY", No. 4/81
[207] "Official Gazette of Bosnia and Herzegovina", No. 27/02, 28/04, 16/05, 14/06, 22/07, 101/08, 71/09, 58/10 and 73/10
[208] "Official Gazette of the Federation of Bosnia and Herzegovina", No. 52/14
[209] "Official Gazette of the Federation of Bosnia and Herzegovina", No. 29/04, 58/04, 28/05, 59/05, 25/06, 65/06, 32/07, 73/07, 27/08, 69/08, 34/09, 71/09, 28/10, 68/10, 31/11, 76/11, 48/12 and 94/12 and 39 /13
[210] "Official Gazette of the Federation of Bosnia and Herzegovina", No. 49/12
[211] "Official Gazette of the Federation of Bosnia and Herzegovina", No. 40/10
[212] "Official Gazette of the Federation of Bosnia and Herzegovina", No. 12/05
[213] https://www.ferk.ba/_ba/index.php/akti-ferk-a/pravilnici/18750-naftna-privreda
[214] "Official Gazette of Republika Srpska", No. 36/09 and 102/12
[215] "Official Gazette of Republika Srpska", No. 20/07, 68/07 and 63/11
[216] "Official Gazette of SFRY", No. 64/73

Government of Republika Srpska adopted the Decree on types, content, quality and participation of biofuels in transport [217]. The following secondary legislation is in force in Republika Srpska:

- Rulebook on the construction of fuel supply stations for motor vehicles and on the storage and transfer of fuel [218]
- Rulebook on the construction of facilities for flammable liquids and on the storage and transfer of flammable liquids [219]
- Rulebook on the construction of liquefied petroleum gas facilities and on the storage and transfer of liquefied petroleum gas [220]
- Rulebook on technical conditions and norms for the safe transport of liquid and gaseous hydrocarbons by main oil and gas pipelines and oil and gas pipelines for international transport - the Rulebook is applicable only in the part that refers to oil pipelines, the part that refers to gas pipelines has been repealed[221]
- Rulebook on the placement and storage of heating oil [222]

1.2.2.5. Research, innovation and competitiveness

The constitutional and legal structure of Bosnia and Herzegovina defines a decentralized approach in the development of science. Competence for strategic programming and the adoption of regulations in the field of science on the territory of Bosnia and Herzegovina is realized at several levels of the legislative and executive authorities. The Constitution of Bosnia and Herzegovina regulates the competences and relations between the institutions of Bosnia and Herzegovina and the Entities. The competence of the state with regard to the legal regulation of scientific research and research development activities refers to the fulfillment of international obligations, while the authority for the normative regulation of the field of science is transferred to the Entities, and the Federation of BiH, by formally legal decrees, transfers it to cantons.

According to the Framework Law on the Basics of Scientific Research Operations and Coordination of Internal and International Scientific Research Cooperation of Bosnia and Herzegovina[223], for the purpose of determining the basic principles, coordinating activities, harmonising and determining the strategy for the development of scientific research activity in Bosnia and Herzegovina on the international level, the Ministry of Civil Affairs of Bosnia and Herzegovina cooperates with the appropriate bodies and institutions of entities, cantons and the Brčko District of Bosnia and Herzegovina. This law established the **Council for Science of Bosnia and Herzegovina**, for the purpose of monitoring and improving the situation in the field of science and technology in Bosnia and Herzegovina. The Council is an advisory and expert body of the Ministry of Civil Affairs of Bosnia and Herzegovina.

According to the Law on scientific research activities and technological development of Republika Srpska[224], **the Ministry for Scientific and Technological Development, Higher Education and Information Society of Republika Srpska** performs, among other things, administrative and other professional tasks related to: scientific and technological development, improvement of higher education and development of the information society, as well as the creation and monitoring of strategies in the aforementioned areas; improving and encouraging the development of fundamental, developmental and applied research; encouraging innovation and economic development through the use of new technologies; harmonising education policy with global technological trends. The Ministry also monitors the academic and research network of Republika Srpska; coordination of technological and IT projects in the public sector; promotion of the use of new technologies; preparation of laws and by-laws from within the competence of the Ministry; participation in the implementation of projects financed by international financial organisations; providing information through the media and other forms of information about one's work, and other tasks in accordance with the law.

The Ministry of Science and Education (FMSE) is part of the FBiH Government. The responsibilities of this Ministry, among other things, are to carry out tasks and activities related to: planning and coordinating the

[217] "Official Gazette of Republika Srpska", No. 8/16
[218] "Official Gazette of Republika Srpska", No. 26/12
[219] "Official Gazette of Republika Srpska", No. 26/12
[220] "Official Gazette of Republika Srpska", No. 26/12
[221] "Official Gazette of SFRY", No. 26/85
[222] "Official Gazette of SFRY", No. 26/85
[223] "Official Gazette of Bosnia and Herzegovina", No. 43/09
[224] "Official Gazette of Republika Srpska", no. 6/12 and 33/14

development strategies of higher education, monitoring the situation and undertaking activities for the development of higher education in the Federation of Bosnia and Herzegovina in terms of personnel potential, the condition of the infrastructure and the quality of the conditions for carrying out educational and scientific process at higher education institutions; reform of the higher education system in the Federation; coordinating planning and performing activities in the field of science and technology; development of scientific and research work; coordination of scientific research activities; development of scientific research organisations; encouraging fundamental and applied research; development of scientific and research infrastructure and scientific personnel; monitoring innovations, development and improvement of technologies; Register of scientific institutions, scientific personnel, scientific projects and infrastructure investments in the Federation of Bosnia and Herzegovina; access to international databases relevant to the field of science and technology; planning, analysis and supervision of current transfer funds for financing science and technology;

Cantons have legal and institutional competences in the field of education at all levels in the Federation of Bosnia and Herzegovina.

Different organisational models for scientific research are available in Bosnia and Herzegovina. These models are often limited by the peculiarities of the state administration system. The most important institutions for scientific research work in Bosnia and Herzegovina are:

- academies of sciences with associated institutes;
- universities (with institutes and faculties within them);
- institutes in the status of public-law or private-law institutions or enterprises;
- research centers or institutes in companies.

In Bosnia and Herzegovina, there are 7 academies of science and art that bring together prominent scientists and artists: The oldest one is the Academy of Science and Art of Bosnia and Herzegovina (ANUBIH), formed in 1966. In addition to this Academy, the following academies exist and operate in Bosnia and Herzegovina: Academy of Sciences and Arts of Republika Srpska, Croatian Academy of Sciences and Arts of Bosnia and Herzegovina, Croatian Academy of Sciences and Arts (HAZU), Bosnian Academy of Sciences and Arts (BANU), International Academy of Sciences and Arts of Bosnia and Herzegovina (IANUBIH), Bosnian Academy "Kulin ban" (BANUK)

There are eight public universities in Bosnia and Herzegovina, six of which are in the Federation of Bosnia and Herzegovina: Universities in Sarajevo, Tuzla, two in Mostar, Bihać and Zenica, and two in Republika Srpska: Universities in Banja Luka and East Sarajevo. Furthermore, in addition to 19 private universities (12 in the FBiH and 7 in the RS), there are numerous autonomous faculties and colleges. There are 44 accredited institutions of higher education in Bosnia and Herzegovina. With a total of 140 faculties and 10 art academies, they are divided into 26 universities (8 public and 18 private) and 18 independent faculties (16 private and 2 public). Most competitive funds for research in Bosnia and Herzegovina go to eight public universities, the largest of which are in Sarajevo and Banja Luka. In order to get harmonised with the European standards of higher education, all universities in Bosnia and Herzegovina are undergoing reforms.

In Bosnia and Herzegovina, there are institutions that bear the name "institute", but they do not meet the requirements for conducting scientific research in accordance with the laws of the country. As such, they are registered in the court register, but not in the register of scientific and research institutions under the relevant ministries. In addition, there are cases in which a legal entity known as an "institute" is registered in the court register and, despite having a research component in the description of its activities and conditionally being engaged in scientific research work, it is not registered in the register of institutions engaged in scientific research. Such an "institute" usually had an established legal status before the law regulating scientific research activity was passed.

The general conclusion is that scientific research institutes in BiH are in a difficult situation in terms of: equipment, programmes, financial resources and personnel. Thirty institutes are currently registered in the Register of Scientific Research Institutions managed by the Ministry of Science and Technology in Republika Srpska. Of these, fourteen institutes are within public universities, and six institutes are within private universities. There are 24 officially registered scientific research institutes in the Federation of Bosnia and Herzegovina, of which 20 institutes are within universities.

1.2.3. Key issues of cross-border importance

By ratifying the Paris Agreement, Bosnia and Herzegovina, as a member of the UN, undertook to join the international community with the aim of reducing greenhouse gas emissions. In addition, as a member of the Energy Community and as a candidate for EU membership, Bosnia and Herzegovina has undertaken to fulfil the goals of the Energy Community and the European Union in the field of renewable energy, energy efficiency, reduction of greenhouse gas emissions, security of supply and establishment of an organised and integrated energy market. In order to fulfil these obligations and achieve the set goals, it must harmonise and coordinate its energy and climate policy.

The fulfilment of the aforementioned goals is closely related to the cross-border cooperation of Bosnia and Herzegovina with neighbouring countries and other countries of the region. Issues of cross-border importance primarily refer to:

- Fulfilment of common goals regarding the reduction of GHG emissions, as a contracting party of the Energy Community,
- An integrated approach to environmental protection and reducing the impact on climate change
- Establishing an organised regional electricity and gas market,
- Construction of the necessary infrastructure for adequate interconnection for energy transport in the region
- Optimising the use of resources for the production of electricity (hydropotential, for example),
- Optimisation of the construction and use of oil reserves and petroleum products and natural gas storage
- Optimising the construction of new facilities for the production of electricity, which, together with the establishment of a connected regional organised market Day Ahead (DA) and Inside the Day (ID), and the balance market, will improve the economy of the operation of each individual energy system and the regional one. Regionalisation will improve the safety of the operation of individual and the entire system, help each country in particular in fulfilling its decarbonisation obligations, and finally, free the region from traditional dependence on the import of electricity.
- Adequate infrastructural connection with neighbours and other countries in the region along with the functioning of the regional market (DA, ID and balanced) will facilitate the integration of RES and its balancing.

Bosnia and Herzegovina, as well as some EU member countries, does not have all the capacities to implement the national goals of the NECP. Therefore, international cooperation is necessary for the transfer of knowledge and skills in organisation, management, and expert knowledge and technologies from technologically advanced countries, which have been implementing the Energy Transition for almost two decades and are working on the implementation of national goals for reducing greenhouse gas emissions, first by 2020, and now by 2030. The only way for Bosnia and Herzegovina to reach the NECP goals 2022-2030 is to join international scientific and technological networks in the form of target and strategic partnerships through its political advocacy and the activation and coordination of its research and development capacities (HORIZON Europ, INTERREG Danube, Erasmus, WIBIF, Innovation Fund...). Another important aspect of international cooperation is focused, passable regional scientific and technological cooperation with complementary institutions of neighbouring countries in the field of energy and climate.

1.2.4. Administrative structures for the implementation of energy and climate policies

Competencies for the implementation of energy and climate plans in Bosnia and Herzegovina are divided to dimensions, as well as to state or entity jurisdictions for certain areas. Below is an overview of the administrative structure for the implementation of energy and climate plans.

1.2.4.1. Decarbonisation: Greenhouse gas emissions

According to the Law on Ministries and Other Administrative Bodies of Bosnia and Herzegovina:

- Ministry of Foreign Trade and Economic Relations (MFTER)[225]

[225] "Official Gazette of Bosnia and Herzegovina", No. 5/03

- Agency for Statistics of Bosnia and Herzegovina (BHAS) / Department for Agriculture, Environment and Regional Statistics / Department for Environment, Energy and Regional Statistics [226]
- Inter-entity body for environmental protection

In the Federation of Bosnia and Herzegovina, the competent institutions are as follows:

- Federation Ministry of Environment and Tourism (FMOIT)[227]
- Federation Bureau of Statistics (FZS)[228]
- Environmental Protection Fund of the Federation of Bosnia and Herzegovina (EPFFBiH)[229]

In Republika Srpska, the competent institutions are as follows:

- Ministry of Spatial Planning, Construction and Ecology of Republika Srpska(MUPGE RS)[230]
- Republic Administration for Inspection Affairs (RAIA)[231]
- Republic Institute for Statistics of Republika Srpska (RZS)[232]
- Fund for environmental protection and energy efficiency of Republika Srpska(FZOEE RS)[233]

In the Brčko District of Bosnia and Herzegovina, the **Government of the Brčko District / Department for Urban Planning and Property and Legal Affairs** has jurisdiction in the field of climate change.

1.2.4.2. Decarbonisation: Renewable energy sources

In the field of renewable energy sources, competences are primarily distributed at the entity level, while the performance of tasks and activities at the international level, which fall within the competence of BiH, according to the Law on Ministries and Other Administrative Bodies of Bosnia and Herzegovina[234], which relate to defining policy, basic principles, coordinating activities and harmonising plans of Entity authorities and institutions, is assigned to the **Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina (MFTER).**

Other institutions that have competence in this area are as follows:

- State Regulatory Commission for Electricity (SERC)[235],
- Independent system operator in Bosnia and Herzegovina (ISO BiH)[236]
- "Elektroprenos - Elektroprijenos BiH" a.d. Banja Luka [237].

In the Federation of Bosnia and Herzegovina, in accordance with the competences prescribed by the Law on Federation Ministries and Other Bodies of the FBIH Administration [238], the **Federation Ministry of Energy, Mining and Industry (FMERI)** performs administrative, professional and other tasks established by law related to the realisation of the FBiH competences in the areas of industry, energy, mining, geological research and entrepreneurship.

Other institutions that have competence in this area are as follows:

- Energy Regulatory Commission in the Federation of Bosnia and Herzegovina (FERC) [239]
- Operator for renewable energy sources and efficient cogeneration [240]
- Federation Ministry of Spatial Planning (FMPU)[241]
- Environmental Protection Fund of the Federation of Bosnia and Herzegovina (EPFFBiH)[242]

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[226] Law on Statistics of BiH (Official Gazette of BiH, No. 26/04, 42/04)
[227] Article 20a of the Law on Federation Ministries and Other Bodies of Federation Administration (Official Gazette of the Federation of BiH, No. 58/02, 19/03, 38/05, 2/06 and 8/06)
[228] Article 18 of the Law on Federation Ministries and Other Bodies of Federation Administration (Official Gazette of the Federation of BiH, No. 58/02, 19/03, 38/05, 2/06 and 8/06 and the Law on Inspection Activities (Official Gazette of the Federation of BiH, No. 74 /14)
[229] Law on the Environmental Protection Fund (Official Gazette of the Federation of Bosnia and Herzegovina, No. 33/03)
[230] Article 29 of the Law on Ministries (Official Gazette of RS, No. 115/18)
[231] Law on Inspections of the RS (Official Gazette of the RS, No. 74/10, 109/12, 117/12 and 44/16)
[232] Article 29 of the Law on Ministries (Official Gazette of RS, No. 115/18)
[233] Law on Environmental Protection Fund and Financing (Official Gazette RS 117/11, 63/14 and 90/16)
[234] "Official Gazette of Bosnia and Herzegovina", No. 5/03, 42/03, 26/04, 42/04, 45/06, 88/07, 35/09 and 103/09
[235] "Official Gazette of Bosnia and Herzegovina", No. 7/2002, 13/2003, 76/2009 and 1/2011
[236] "Official Gazette of Bosnia and Herzegovina", No. 7/2002, 13/2003, 76/2009 and 1/2011
[237] "Official Gazette of Bosnia and Herzegovina", No. 35/04
[238] "Official Gazette of the Federation of Bosnia and Herzegovina", No. 58/02, 19/03, 38/05, 2/06, 8/06, 61/06, 52/09, 80/10 and 48/11
[239] "Official Gazette of the Federation of Bosnia and Herzegovina", No. 66/13 and 94/15
[240] "Official Gazette of the Federation of Bosnia and Herzegovina", No. 70/13 and 5/14
[241] "Official Gazette of the Federation of Bosnia and Herzegovina", No. 58/02, 19/03, 38/05, 2/06, 8/06, 61/06, 52/09, 80/10 and 48/11
[242] Law on the Environmental Protection Fund (Official Gazette of the Federation of Bosnia and Herzegovina, No. 33/03)

In Republika Srpska, the **Ministry of Energy and Mining of Republika Srpska (MER)** has powers prescribed by the Law on the Republic Administration of Republika Srpska[243] which, among other things, include conducting energy policy in general, planning and conducting energy strategy, energy balancing and long-term planning, awarding concessions for research, construction and exploitation of energy facilities, geological research and exploitation of natural and technological mineral raw materials, supervision of the work of public companies and other companies with majority state ownership from the relevant ministry competence, participation in the drafting and adoption of technical regulations from the relevant ministry competence and their harmonisation with EU legislation, and other jobs in the fields of industry, energy, mining and geology.

Other institutions that have competence in this area are as follows:

- Energy Regulatory Commission of Republika Srpska (ERCRS)[244]
- Incentive system operator
- Ministry of Spatial Planning, Construction and Ecology of Republika Srpska(MUPGE RS)[245]
- Fund for environmental protection and energy efficiency of Republika Srpska(FZOEE RS)[246]

According to the Law on Renewable Energy Sources and Efficient Cogeneration of the Brčko District of Bosnia and Herzegovina[247], **the Brčko District Government** prescribes the production of electricity from renewable sources, planning, promoting and encouraging the production and consumption of energy from renewable sources and in efficient cogeneration, defining appropriate goals, technologies for the use of renewable energy sources, incentive measures for energy production using renewable energy sources and in efficient cogeneration and their implementation, issuing a guarantee of origin, keeping a register of projects and facilities and other issues of importance for this area. In order to carry out the administrative-financial and other operational tasks of the incentive system for energy production from renewable energy sources, the **Incentive System Office** is formed as an integral part of the Department for Utility Affairs, the Sub-Department for the Development and Strategy of Utility Services.

1.2.4.3. Energy efficiency

In the field of energy efficiency, as in the case of renewable energy sources, competences are distributed at the entity level while, according to the Law on Ministries and Other Administrative Bodies of Bosnia and Herzegovina[248], the performance of tasks and activities falling within the competence of BiH and related to the definition of policy, basic principles, coordination of activities and harmonisation of plans of entity authorities and institutions on the international level is assigned to the **Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina (MFTER).**

In the Federation of Bosnia and Herzegovina, the **Federation Ministry of Energy, Mining and Industry (FMERI)**, in accordance with the competences prescribed by the Law on Federation Ministries and other bodies of the FBIH administration [249], performs administrative, professional and other tasks established by law and related to the realisation of the competences of the FBiH in the areas of industry, energy, mining, geological research and entrepreneurship. The Energy Sector and the Mining Sector are organised within the framework of FMERI. According to the cantonal constitutions, cantons in the FBiH have their own powers in the field of energy, which refer to the adoption of regulations on local plants for energy production and ensuring their availability. Within this framework, FMERI has competences in the field of energy efficiency, as defined by the Law on Energy Efficiency of the Federation of Bosnia and Herzegovina[250].

Other institutions that have competence in this area are as follows:

- Federation Ministry of Spatial Planning (FMSP)[251]
- Federation Statistical Office (FSO)
- Environmental Protection Fund of the Federation of Bosnia and Herzegovina (EPFFBiH)[252]

[243] "Official Gazette of Republika Srpska", no. 118/08, 11/09, 74/10, 86/10 – ispr., 24/12, 121/12, 15/16 and 57/16
[244] "Official Gazette of Republika Srpska", no. 68/20
[245] Article 29 of the Law on Ministries (Official Gazette of RS, No. 115/18)
[246] Law on Environmental Protection Fund and Financing (Official Gazette RS No. 117/11, 63/14 and 90/16)
[247] "Official Gazette of the Brčko District of Bosnia and Herzegovina", No. 22/22
[248] "Official Gazette of Bosnia and Herzegovina", No. 5/03, 42/03, 26/04, 42/04, 45/06, 88/07, 35/09 and 103/09
[249] "Official Gazette of the Federation of Bosnia and Herzegovina", No. 58/02, 19/03, 38/05, 2/06, 8/06, 61/06, 52/09, 80/10 and 48/11
[250] "Official Gazette of the Federation of Bosnia and Herzegovina", No. 22/17
[251] Article 18 of the Law on Federal Ministries and Other Bodies of Federal Administration (Official Gazette of the Federation of BiH, No. 58/02, 19/03, 38/05, 2/06 and 8/06)
[252] Law on the Environmental Protection Fund (Official Gazette of the Federation of Bosnia and Herzegovina, No. 33/03)

In Republika Srpska, according to the Law on Energy Efficiency of Republika Srpska[253] and the Law on the Republic Administration of Republika Srpska[254], **the Ministry of Energy and Mining of Republika Srpska (MIER)** has powers that, among others, include competences in the field of energy efficiency and energy policy implementation in general, energy strategy planning and management, energy balancing and long-term planning, awarding of concessions for research, construction and exploitation of energy facilities, geological research and exploitation of natural and technological mineral raw materials, supervision of the work of Public Companies and other enterprises with majority state ownership from the relevant ministry competence, participation in drafting and adoption of technical regulations from the relevant ministry competences and their harmonisation with EU legislation, as well as other tasks in the fields of industry, energy, mining and geology. The Department for Power Engineering, the Department for Energy Products and the Department for Mining are organised within the MIER.

Other institutions that have competence in this area are as follows:

- Ministry of Spatial Planning, Construction and Ecology of Republika Srpska(MUPGE RS)[255]
- Republic Administration for Inspection Affairs (RAIA)[256]
- Republic Institute for Statistics of Republika Srpska (RZS)[257]
- Fund for environmental protection and energy efficiency of Republika Srpska(FZOEE RS)[258]

According to the Law on Energy Efficiency of the Brčko District of Bosnia and Herzegovina[259], **the Government of the Brčko District** prescribes and regulates the area of efficient energy use and establishes a framework for promoting and implementing energy efficiency in the Brčko District of Bosnia and Herzegovina, intended to achieve a high degree of energy efficiency improvement in the supply and use of energy, in energy efficiency of large consumers and in energy characteristics of buildings, as well as to meet appropriate requirements for information and characteristics of energy-related products.

1.2.4.4. Energy security and internal energy market

In the field of energy security and the energy market, according to the Law on Ministries and Other Administrative Bodies of Bosnia and Herzegovina[260], the performance of tasks and activities falling within the scope of responsibility of BiH and related to the definition of policy, basic principles, coordination of activities and harmonisation of the plans of entity authorities and institutions on the international level is assigned to the **Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina (MFTER).**

Other institutions that have competence in this area are as follows:

- State Electricity Regulatory Commission (SERC)[261],
- Independent system operator in Bosnia and Herzegovina (ISOBiH)[262]
- "Elektroprenos - Elektroprijenos BiH" a.d. Banja Luka [263].

In the Federation of Bosnia and Herzegovina, the competences related to electricity are covered by the energy sector in the **Ministry of Energy, Mining and Industry of the Federation of Bosnia and Herzegovina**.

Other institutions that have competence in this area are as follows:

- FERC - Energy Regulatory Commission in the Federation of Bosnia and Herzegovina [264]

In Republika Srpska, the Electricity Sector at the **Ministry of Energy and Mining of the Republika Srpska** covers responsibilities in the field of electricity.

[253] "Official Gazette of Republika Srpska", no. 59/13
[254] "Official Gazette of Republika Srpska", no. 118/08, 11/09, 74/10, 86/10 – ispr., 24/12, 121/12, 15/16 and 57/16
[255] Article 29 of the Law on Ministries (Official Gazette of RS, No. 115/18)
[256] Law on Inspections of the RS (Official Gazette of the RS, No. 74/10, 109/12, 117/12 and 44/16)
[257] Article 29 of the Law on Ministries (Official Gazette of RS, No. 115/18)
[258] Law on Environmental Protection Fund and Financing (Official Gazette RS, No. 117/11, 63/14 and 90/16)
[259] "Official Gazette of the Brčko District of Bosnia and Herzegovina", No. 25/22
[260] "Official Gazette of Bosnia and Herzegovina", No. 5/03, 42/03, 26/04, 42/04, 45/06, 88/07, 35/09 and 103/09
[261] "Official Gazette of Bosnia and Herzegovina", No. 7/2002, 13/2003, 76/2009 and 1/2011
[262] "Official Gazette of Bosnia and Herzegovina", No. 7/2002, 13/2003, 76/2009 and 1/2011
[263] "Official Gazette of the Federation of Bosnia and Herzegovina", No. 35/04“
[264] "Official Gazette of the Federation of Bosnia and Herzegovina", No. 66/13 and 94/15

Other institutions that have competence in this area are as follows:

- ERCRS - Energy Regulatory Commission of Republika Srpska[265]

Activities related to the supply of electricity to the Brčko District are carried out by the **Government of the Brčko District of Bosnia and Herzegovina** through the Department for Utility Affairs.

1.2.4.5. Research, innovation and competitiveness

The constitutional and legal structure of Bosnia and Herzegovina defines an overall decentralised approach in the development of science. Competence for strategic programming and adoption of regulations in the field of science on the territory of Bosnia and Herzegovina is realised at several levels of legislative power. The Constitution of Bosnia and Herzegovina regulates the competences and relations between the institutions of Bosnia and Herzegovina and the entities. The competence of the state with regard to the legal regulation of scientific research and research and development activities refers to the fulfilment of international obligations, while the authority for the normative regulation of the field of science is transferred to the entities, and the Federation of BiH formally by legal decrees transfers it to the cantons.

According to the Framework Law on the Basics of Scientific Research Activity and Coordination of Internal and International Scientific Research Cooperation of Bosnia and Herzegovina[266], for the purpose of determining the basic principles, coordinating activities, harmonising and determining the strategy for the development of scientific research activity in Bosnia and Herzegovina on the international level, the **Ministry of Civil Affairs of Bosnia and Herzegovina** cooperates with the appropriate bodies and institutions of entities, cantons and the Brčko District of Bosnia and Herzegovina.

Other institutions that have competence in this area are as follows:

- Council for Science of Bosnia and Herzegovina
- Federation Ministry of Science and Education
- Ministry of Scientific and Technological Development, Higher Education and Information Society of Republika Srpska[267]
- Competent cantonal ministries for science and education
- Academy of Sciences and Arts of Bosnia and Herzegovina
- Academy of Sciences and Arts of Republika Srpska
- Croatian Academy of Science and Arts of Bosnia and Herzegovina
- Croatian Academy of Sciences and Arts (HAZU)
- Bosnian Academy of Sciences and Arts (BANU).

There are eight public universities in Bosnia and Herzegovina, six of which are in the Federation of Bosnia and Herzegovina: Universities in Sarajevo, Tuzla, Mostar, "Džemal Bijedić" in Mostar, Bihać and Zenica, and two in Republika Srpska: Universities in Banja Luka and East Sarajevo. Furthermore, in addition to 19 private universities (12 in the FBiH and 7 in RS), there are numerous autonomous faculties and colleges. There are 44 accredited institutions of higher education in Bosnia and Herzegovina. With a total of 140 faculties and 10 art academies, they are divided into 26 universities (8 public and 18 private) and 18 independent faculties (16 private and 2 public). Most competitive funds for research in Bosnia and Herzegovina go to eight public universities, the largest of which are in Sarajevo and Banja Luka. In order to get harmonised with the European Higher Education Area, all universities in Bosnia and Herzegovina are undergoing reforms.

[265] "Official Gazette of Republika Srpska", No. 8/08, 34/09, 92/09, 1/11 and 68/20
[266] "Official Gazette of Bosnia and Herzegovina", No 43/09
[267] "Official Gazette of Republika Srpska", No. 6/12 and 33/14

1.3. Consultations and participation of parties from BiH and entities of the Energy Community and the outcome of the consultation

1.3.1. Participation of the BiH Parliament

It is planned that the Parliament will participate in the National Energy and Climate Plan (NECP) adoption process by holding a conference in the Parliament, which will bring together EU representatives, experts and relevant institutions. After the adoption by the governments in accordance with their competences, the NECP will be presented to the appropriate working groups/commissions of the Parliament, as well as to the Green Club of the Parliament of Bosnia and Herzegovina, for discussion.

This process enables the Parliament of Bosnia and Herzegovina to actively participate in decision-making on the National Energy and Climate Plan. Through discussions and analyses in the Parliamentary Working Groups/Commissions and the Green Club of the Parliament, MPs will have the opportunity to study the NECP in detail and present their views, suggestions and recommendations. An open debate on the NECP in Parliament enables transparency and democratic legitimacy in the process of adopting this important document. In addition, the involvement of the Parliament provides an opportunity for expert analysis and evaluation of the NECP, as well as for checking its compliance with national interests and goals. Taking into account the role of the Parliament in the legislative process, the involvement of the Parliament in drafting and discussing the NECP ensures a broad perspective and support for key decisions related to the energy transition and reduction of greenhouse gas emissions in Bosnia and Herzegovina.

In the context of the implementation of the National Energy and Climate Plan (NECP), regularly informing the parliamentary structures about the progress is of great importance. Parliament should be provided with relevant information on the implementation of the NECP to ensure transparency, progress monitoring and democratic control.

Regular information of parliamentary structures can be achieved through the following mechanisms:

- **Reports and presentations**: Competent institutions can periodically prepare reports on the progress of NECP implementation and submit them to parliamentary working groups/commissions. These reports may contain information on the goals achieved, measures implemented, financial reporting and other relevant aspects of implementation.
- **Regular questions and answers**: Parliamentary working groups/commissions have the right to ask questions to competent institutions and seek answers about progress in the implementation of the NECP. This enables direct communication between the parliament and the executive authority and ensures that the parliament has access to the necessary information.
- **Special sessions and discussions**: Periodic sessions or debates in Parliament may be devoted to monitoring and evaluating progress in the implementation of the NECP. This allows parliamentarians to ask questions, express their views, discuss key issues and provide guidance for further steps.
- **Annual reports on NECP:** Annual reports on the implementation of the NECP can be presented in Parliament, providing a comprehensive analysis of progress, challenges and plans for the future. These reports can be the basis for further discussions and decision-making in parliamentary structures.
- **Through regular information and open communication,** the Parliament can actively monitor and influence the implementation of the NECP, ensuring that the goals and measures are aligned with national interests and needs.

1.3.2. Participation of local and regional authorities

When it comes to consultations with local authorities in the context of establishing the process of an integrated energy and climate plan in Bosnia and Herzegovina, it is important to follow certain steps to ensure transparency, involvement and support of the local community. Here are some tips on how to handle the process:

- **Identifying local bodies:** It is necessary to identify local authorities that are relevant to the area of NECP implementation. These can be cities, municipalities, regional authorities or other relevant institutions. It is important to identify all relevant stakeholders to ensure their participation.
- **Organisation of information meetings:** It is necessary to organise information meetings with local authorities to familiarize them with the aims, purposes and benefits of the NECP. Explain how the plan will affect the local level and how they can participate in the process.

- **Holding workshops and consultations:** Workshops and consultations with local authorities should be organised to obtain their suggestions, ideas and feedback on the NECP. Open communication will allow local authorities to express their needs, concerns and interests.
- **Provision of educational materials:** Educational materials on energy and climate need to be provided so that local authorities better understand the importance of the NECP. Providing information on current energy and climate challenges will help local authorities make informed decisions.
- **Involvement of local experts:** Involve local experts and civil society organisations to participate in the drafting of the NECP. Their expertise and local knowledge can be of great help in identifying specific needs and opportunities at the local level.
- **Providing support and resources:** It is necessary to provide support to local authorities by providing them with resources, technical support and financial means for the implementation of the NECP at the local level. This will demonstrate your commitment to establishing the IPEK process.
- **Monitoring and evaluation:** Regular communication with local authorities during NECP implementation. Monitoring progress, evaluating results and providing feedback to local authorities will help maintain their motivation and engagement.

It is important to keep in mind that the process of consultation with local authorities will be specific for each area and can be adapted according to the needs and context of Bosnia and Herzegovina. These tips offer general guidelines that you can use as a starting point. Cooperation with relevant national and regional bodies that have experience in implementing similar processes of integrated plans for energy and climate is recommended.

Also, the implementation of the integrated energy and climate plan in Bosnia and Herzegovina includes a multi-governance approach and a participatory process of establishment and implementation. This approach ensures the involvement of various stakeholders and institutions at all levels of government, as well as the active participation of citizens and non-governmental organisations. Here are some elements to consider in the context of a multi-governance approach and participatory process:

- **Multi-level management:** the plan implementation involves coordination between different levels of government, including state, entity and local governments. This ensures alignment of objectives, policies and measures at all levels to achieve integrated and coordinated action.
- **Coordination of institutions**: Various institutions and bodies, such as ministries, agencies, commissions and local governments, cooperate in the process of implementing the plan. A coordination mechanism and regular dialogue between these institutions is being established to ensure consistency and alignment of activities.
- **Partnerships with the private sector**: The plan also encourages collaboration with the private sector to ensure their active role in achieving the plan's goals. Partnerships can be established with energy companies, the industrial sector and other relevant stakeholders to encourage investment, innovation and the implementation of energy efficiency measures and renewable energy sources.
- **Participation of citizens**: The process of establishing and implementing the plan includes the active participation of citizens and civil society. There is a room for public consultations, dialogues, workshops and citizen participation in decision-making and progress monitoring. This ensures transparency, accountability and broader social engagement in the energy transition process.
- **Monitoring and reporting**: The plan also considers the establishment of mechanisms for monitoring and reporting on progress in the implementation of the plan. This includes regular data collection, evaluation of results and reporting on achievements and challenges. Transparent reporting ensures the responsibility of all stakeholders and enables the adaptation of strategies and measures as needed.

In general, the multi-governance approach and participatory process ensure that the implementation of the integrated energy and climate plan in Bosnia and Herzegovina is inclusive, transparent and effective. This creates a basis for achieving the goals of energy transition and climate sustainability, taking into account the different perspectives and contributions of all relevant stakeholders.

1.3.3. Consultations with actors, including social partners, and the involvement of wider civil society and the wider public

The process of creating the National Energy and Climate Plan (NECP) is led by the competent state ministry - the Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina. As a member of the Energy Community, Bosnia and Herzegovina is obliged to develop the NECP in accordance with the recommendation of the Council of Ministers of the Energy Community (2018/1/MC-EnC), which is similar to the process in EU member states. A working group was formed to develop the NECP, and it was divided into thematic working

groups in accordance with the five dimensions of the Energy Community: emissions and reduction of greenhouse gases, energy efficiency, renewable energy sources, energy security and the internal energy market, and research, innovation and competitiveness. Representatives of the competent ministries, the Brčko District Government, independent operators, regulators, power companies, power distribution companies, gas distributors, agencies, funds, chambers of commerce, universities, statistical institutes and other relevant domestic and foreign institutions took part in the work of the working groups.

In the process of creating the NECP, a series of meetings and consultations were held. However, due to the crisis caused by the COVID-19 pandemic, the holding of meetings and consultations slowed down and was transferred to virtual forms, in order to ensure the safety and health of all participants. Despite the challenges, the involvement of relevant institutions and organisations in the process of creating the NECP ensures the inclusion of various stakeholders and experts from the energy and climate change sectors. Virtual consultations enable a continuous exchange of information and opinions, in order to ensure the quality preparation and adoption of the NECP, which reflects the specific needs and goals of Bosnia and Herzegovina.

Taking into account the unfavourable situation caused by the COVID-19 pandemic, the process of creating the National Energy and Climate Plan (NECP) was adapted to the new circumstances through virtual consultations. This adaptation allows the NECP development process to continue and ensures that relevant stakeholders and experts are included, even though meetings and consultations are held remotely.

With the support of the competent ministries, the Brčko District Government and a wide range of institutions such as operators, regulators, power companies, power distribution companies, gas distributors, agencies, funds, chambers of commerce, universities, statistical offices and others, virtual consultations enable a continuous exchange of information and ideas. In this way, it is ensured that all relevant stakeholders are included in the NECP development process, despite the limitations of travel and holding physical meetings. Taking into account the importance and complexity of the NECP, regular information and discussion about the plan will be made possible through the relevant parliamentary working groups/commissions and the Green Club of the Parliament of Bosnia and Herzegovina. This will enable the parliamentary structures to be informed about the progress in the creation of the NECP and provide their views, suggestions and recommendations.

Bosnia and Herzegovina continues with the process of creating the NECP with the aim of developing and implementing sustainable policies and measures in the field of energy and climate change. Consultations enable continuity and engagement of all relevant stakeholders, to ensure that the NECP reflects national priorities and goals, taking into account the specificities of Bosnia and Herzegovina.

1.3.4. Consultation with other Contracting Parties and member states of the European Union

As a member of the EnC, Bosnia and Herzegovina participates in the work of the Energy and Climate Committee. The goal of consultations in this committee and its technical working group is to exchange the experiences of EnC member countries and to discuss issues relevant to several members. In the context of the establishment of an integrated energy and climate plan (NECP) in Bosnia and Herzegovina, there are various possibilities for consultations with other Contracting Parties and member states of the European Union. Here are a few ways in which this cooperation can be achieved:

- **European Union (EU):** Bosnia and Herzegovina is a candidate for EU membership, which means that there is a framework for cooperation with the EU during the process of establishing the NECP. You can contact the European Commission or the EU Delegation in Bosnia and Herzegovina to find out about the possibilities for consulting, technical support and exchange of experiences related to the NECP.
- **Member States of the European Union**: EU Member States have a wealth of experience in developing and implementing integrated energy and climate plans and can provide valuable information and examples of best practice. Cooperation should be established with relevant national authorities or organisations in Member States to share knowledge, experience and technical support related to the NECP.
- **Regional initiatives**: In the region of Southeast Europe, there are regional initiatives that promote cooperation in the field of energy and climate change. Through these initiatives, connect with other countries in the region and exchange experiences and knowledge on integrated energy and climate plans.
- **International organisations**: Contact relevant international organisations dealing with energy, climate change and sustainable development, such as the United Nations (UN), the International Renewable

Energy Agency (IRENA), the International Atomic Energy Agency (IAEA) or the Organisation for Economic Co-operation and Development (OECD). These organisations can provide professional support, technical assistance and opportunities for cooperation with other countries.

Cooperation with other countries can be useful in many ways. There are different formats of cooperation and connection with other Contracting Parties and EU member states in the context of the establishment of an integrated energy and climate plan in Bosnia and Herzegovina:

- **Working groups and forums:** Participation in working groups, forums or international conferences dedicated to energy and climate change issues. These gatherings provide a platform for dialogue, exchange of experiences and creation of partnerships with other countries and experts.
- **Twinning projects:** Participation in twinning projects that connect institutions from Bosnia and Herzegovina with institutions from other countries for the purpose of exchanging knowledge and expertise. These projects can be financed through EU funds or other international cooperation programmes.
- **Mentoring and technical support:** Provide a mentoring programme or technical support from other countries that have already gone through the process of developing and implementing integrated energy and climate plans. Mentoring can provide valuable guidance and opportunities to learn from experienced professionals.
- **Exchange of data and information:** Establishing mechanisms for the exchange of data and information with other countries to gain insight into the latest trends, technologies and policies in the field of energy and climate change. This may include the exchange of reports, analyses, case studies and other relevant materials.
- **Partnerships and projects:** Consider partnerships with other countries in the implementation of joint projects in the field of energy and climate change. These partnerships may include technology exchange, project funding, joint research or the development of pilot projects.
- **Diplomatic activities:** Use diplomatic channels to establish contacts with other countries and express interest in cooperation in the field of energy and climate change. Embassies and consulates can serve as bridges to establish connections and open doors for cooperation.

Through these different forms of cooperation, you can gain access to the knowledge, experiences and resources of other countries, which will help you in the development and implementation of an integrated energy and climate plan in Bosnia and Herzegovina.

1.3.5. Iterative procedure with the Energy Community Secretariat

The iterative procedure with the Secretariat of the Energy Community (EnC) represents an important aspect of Bosnia and Herzegovina's cooperation with the EnC in the context of the establishment of an integrated energy and climate plan (NECP). This procedure includes the following activities and institutions:

- **Council of Ministers:** Representatives of Bosnia and Herzegovina participate in the work of the Council of Ministers, which represents the member governments of the Energy Community Treaty. The minister responsible for energy represents Bosnia and Herzegovina at these meetings.
- **Permanent High Level Group (PHLG):** Representatives of the Ministry of Foreign Trade and Economic Relations (MFTER) of Bosnia and Herzegovina participate in the work of the PHLG. This group is responsible for making decisions and leading the negotiation process related to energy policy within the Energy Community.
- **Working groups:** Representatives of the state and entity ministries participate in the work of the working groups for Energy Efficiency, Renewable Energy Sources and Environment, which were established within the EnC. These working groups enable the exchange of information, discussions and cooperation on specific issues related to energy and environmental protection.
- **Technical workshops and forums:** Bosnia and Herzegovina also participates in technical workshops and forums organised by EnC. These events provide an opportunity to share experiences, best practices and expertise on energy and climate change.

The cooperation of Bosnia and Herzegovina institutions with EnC was established and intensified in the process of preparing the NECP. This cooperation enables dialogue, exchange of information and technical support for the development and implementation of an integrated energy and climate plan in accordance with obligations under the EnC and European energy and climate policies.

It is important to maintain continuous communication and cooperation with EnC in order to ensure compliance with international standards and achieve progress in the energy sector of Bosnia and Herzegovina.

1.4. Regional cooperation in the development of the plan

1.4.1. Elements that are subject to joint or coordinated planning with other Contracting Parties and member states of the European Union

When it comes to joint or coordinated planning with other EnC Contracting Parties and European Union member states in the context of an integrated energy and climate plan, some of the elements that may be covered are:

- **Climate goals and strategies:** Defining long-term climate goals and strategies in accordance with international agreements such as the Paris Agreement. These goals and strategies can be coordinated with other countries to achieve synergy and joint contribution to the global reduction of greenhouse gas emissions.
- **Energy change and transition:** Planning and coordination of energy transition towards a more sustainable energy system. This may include the exchange of experiences and best practices in the field of renewable energy sources, energy efficiency, decentralised energy and carbon reduction.
- **Sector policies and measures**: Coordination of policies and measures in different sectors relevant to energy and climate. This may include transport, industry, agriculture, forestry, construction and other sectors. The goal is to achieve alignment and synergy between national plans in order to reach the overall goal of reducing emissions.
- **Financing and investments**: Exchange of information and cooperation regarding financing and investments in the field of energy and climate change. This may include mutual support in accessing financial resources, identifying projects, attracting investments and developing financial instruments for sustainable energy projects.
- **Technical support and professional knowledge**: Exchange of technical support, expertise and best practices between countries to facilitate the implementation of integrated energy and climate plans. This may include experts, study visits, trainings, workshops and other forms of cooperation.
- **Monitoring, reporting and evaluation**: Establishing mechanisms for monitoring, reporting and assessing progress in the implementation of the integrated energy and climate plan. This activity can be coordinated with other countries to compare results, identify good practices and areas for improvement.

It is important that these elements of planning are considered in the context of the specific needs and goals of Bosnia and Herzegovina and that continuous communication and cooperation with other Contracting Parties and EU member states be established so as to achieve synergy and joint action in the fight against climate change.

1.4.2. An explanation of how regional cooperation is elaborated in the plan

In the energy and climate plan of Bosnia and Herzegovina, regional cooperation is elaborated as an important element for achieving the goals of sustainable energy and reducing greenhouse gas emissions. Regional cooperation enables the sharing of knowledge, resources and experiences with other countries in the region in order to achieve greater progress in the field of energy transition and the fight against climate change. As part of the energy and climate plan, Bosnia and Herzegovina is considering the possibilities of cooperation with other countries in the region on several levels:

- **Energy projects:** The plan considers cooperation in terms of joint energy projects, such as the construction and management of energy infrastructures. This may include the construction and connection of cross-border power grids, the development of shared renewable energy sources, or the application of energy efficiency at the regional level.
- **Exchange of knowledge and experiences**: The plan promotes the exchange of knowledge, experiences and best practices with other countries in the region. This may include organising workshops, seminars or study visits to share information on successful energy and climate change policies, technologies and solutions.

- **Policy coordination**: Bosnia and Herzegovina is considering the coordination of its energy and climate policies with other countries in the region. This may include aligning goals, developing joint strategies, or establishing regional institutions to monitor progress and implement energy measures.
- **Financing and funds**: The plan also considers the possibility of joint access to regional and international funds for financing projects in the field of energy and climate change. This can enable the sharing of financial resources and provide additional support for the implementation of measures in the region.

Consideration of regional cooperation in the energy and climate plan of Bosnia and Herzegovina recognises the importance of synergy and joint action with other countries in order to achieve sustainable energy goals and reduce greenhouse gas emissions. This collaboration can bring many benefits, including:

- **Cost reduction:** Cooperation with other countries in the region enables cost sharing of infrastructure projects, research and development, and application of technological solutions. This can reduce the financial burden for each country individually and enable the achievement of a larger volume of projects.
- **Increasing security and stability of energy supply**: Regional cooperation can contribute to the creation of integrated energy systems that ensure reliable energy supply. The connection of power grids and the development of joint energy projects can reduce dependence on energy imports and increase the region's energy security.
- **Improving the quality of life**: Cooperation in the field of energy efficiency, renewable energy sources and reduction of greenhouse gas emissions can contribute to improving air quality, reducing pollution and protecting the environment. This can have a positive impact on people's health and quality of life in the region.
- **Strengthening political stability**: Regional cooperation in the field of energy and climate change can contribute to strengthening political stability and mutual trust among countries in the region. Through dialogue and joint action, issues of common interest can be resolved and long-term partnership relationships can be built.
- **Access to international funds and initiatives**: Cooperation with other countries in the region enables joint access to international funds and initiatives to support the energy transition and the fight against climate change. This can open up new opportunities for financing and supporting projects implemented in the region.

Through the plan for energy and climate of Bosnia and Herzegovina, concrete activities for the improvement of regional cooperation in the energy sector are also being considered. Some of the elements considered in relation to regional cooperation in the plan are as follows:

- **Interconnections and infrastructure:** The plan includes the identification and promotion of interconnection projects with neighbouring countries. This includes the construction or modernisation of cross-border transmission lines, gas pipelines and other infrastructure that will enable the free flow of energy between countries. This aspect of the plan aims to improve regional integration of energy systems and increase security of supply.
- **Energy exchange**: The plan also promotes encouraging and facilitating energy trade between Bosnia and Herzegovina and other countries in the region. Openness to mutual energy exchange contributes to greater flexibility in the management of energy systems, better utilisation of resources and cost reduction.
- **Harmonisation of regulation**: The plan considers the harmonisation of regulatory frameworks and rules with neighbouring countries in order to create a single energy market. This aspect facilitates energy trade, joint planning and project development, and harmonisation of energy policies in the region.
- **Exchange of information and experiences**: The plan encourages the exchange of information, experiences and best practices with other countries in the region. This may include the establishment of mechanisms for the regular exchange of data on energy markets, experiences in the implementation of renewable energy sources, energy efficiency and reduction of greenhouse gas emissions.
- **Cooperation in research and development**: The plan also promotes cooperation in research and development of energy technologies with other countries in the region. This cooperation may include joint research projects, exchange of experts and joint application for funding of research and innovation in the energy sector.

Regional cooperation has the potential to create synergies, reduce costs and achieve better results in achieving energy and climate goals. Bosnia and Herzegovina recognises the importance of this cooperation and is actively working to improve regional cooperation within its integrated energy and climate plan.

2.1 Dimension: Decarbonisation

2.1.1 Greenhouse gas emissions and sinks

In order to ensure a strategic approach to the implementation of the sub-dimension reduction of greenhouse gas emissions, as part of achieving the overall strategic goal of an integrated energy and climate approach to decarbonisation of the energy sector in Bosnia and Herzegovina (BiH), the structure of expected results in this regard is defined. This structure introduces several basic elements for which it is necessary to systematically monitor their implementation, and for the purpose of quality periodic revision of the entire process. This approach introduces the following elements, as the subject of the implementation of policies and measures and an efficient monitoring and reporting system. These elements are as follows:

- Strategic goals, dimension goals and operational goals,
- Target values of indicators (targets) and
- Indicators.

2.1.1.1 BiH binding target for greenhouse gas emissions and binding annual restrictions in accordance with Regulation (EU) 2018/842

The integrated energy and climate plan of Bosnia and Herzegovina defines the target value for the reduction of greenhouse gas emissions in 2030. This value was obtained as a result of planning the development of the entire energy sector, based on the sector decarbonisation and compliance with the criteria defined in order to achieve carbon neutrality y 2050. In this regard, the following goal is set:

Total CO_2-eq emission with LULUCF in 2030	15.65 MtCO2
Total CO_2-eq emission without LULUCF in 2030	22.15 $MtCO_2$
Total emission of CO_2-eq with LULUCF in 1990	26.62 $MtCO_2$
Emission reduction in 2030 compared to 1990 (with LULUCF)	41.21%

The goal implies a gradual reduction of CO2-eq emissions in the period 2022-2030 according to the trend shown in the following diagram, and distributed according to three basic emission sectors, namely:

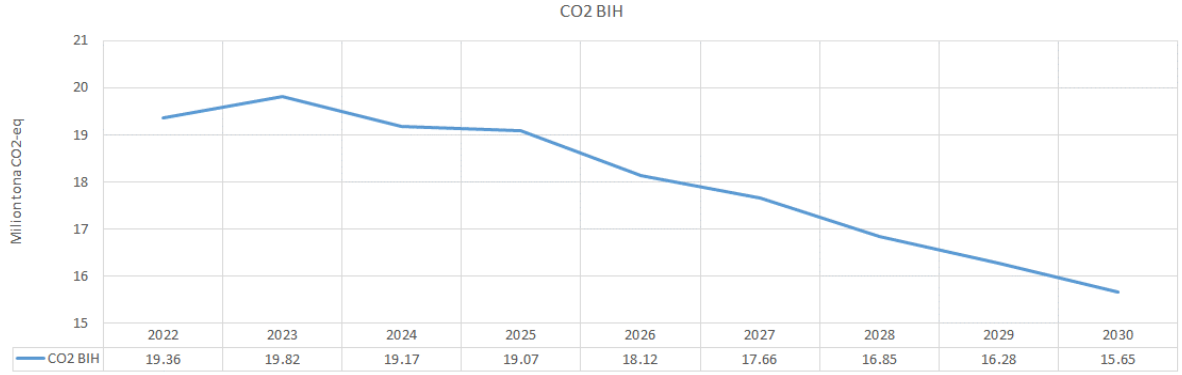


Diagram 6: The trajectory of reducing CO2-eq emissions with LULUCF in Bosnia and Herzegovina 2022-2030

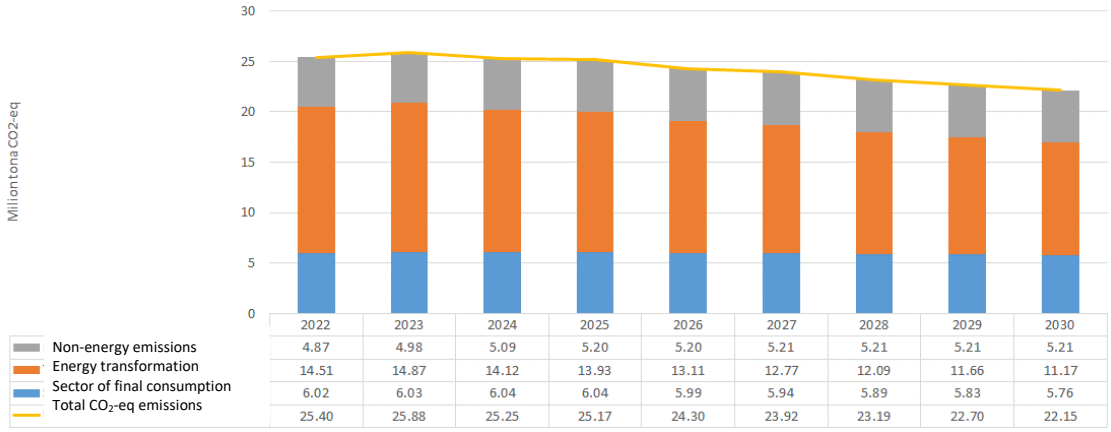


Diagram 7: The trajectory of reducing CO2-eq emissions without LULUCF in Bosnia and Herzegovina 2022-2030, by sectors

2.1.1.2 Other goals that are in line with the Paris Agreement and existing long-term strategies

As part of the preparation of national reports on climate change and biennial reports on greenhouse gas emissions, BiH calculates and reports on emission sinks. Considering the unavailability of some data for calculating the sink, it is necessary to improve the reliability of the calculation. In the period 1990 - 2018, there was a noticeable sink drop.

In addition to calculations and reporting, BiH is obliged to ensure that emissions in the sector of land use, land conversion and forestry in the period 2021 - 2030 are compensated by at least an equivalent amount of sinks. In this regard, the following goal is set:

Amount of LULUCF in 2030	6.51 $MtCO_2$
Amount of LULUCF in 2018	5.83 $MtCO_2$
Increase in LULUCF in 2030 compared to 2018	11.68%

The goal implies a gradual increase in LULUCF in the period 2022-2030 according to the trend shown in the following diagram:

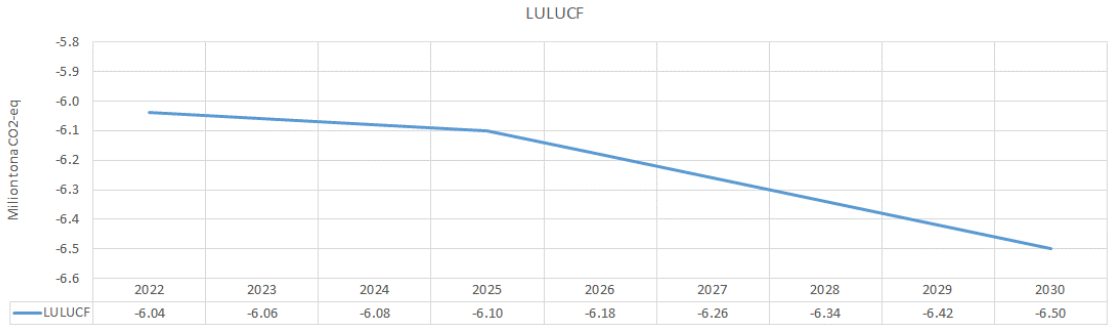
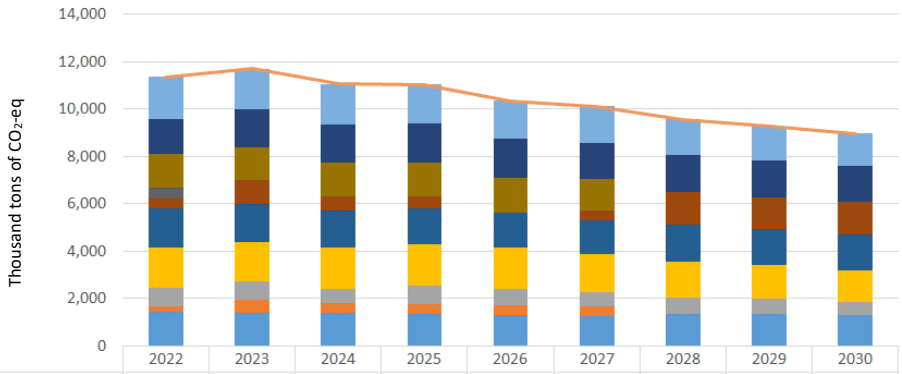


Diagram 8: LULUCF trajectory in Bosnia and Herzegovina in the period 2022-2030

Considering the high share in total emissions, the key sector for achieving the goals of reducing emissions by 2030 is the electric power sector. The sectoral target for emissions from the power industry is:

Emissions from the power sector in 2030	8.96 $MtCO_2$

The following diagram shows the trend of emissions from the power sector in the period 2022 - 2030:



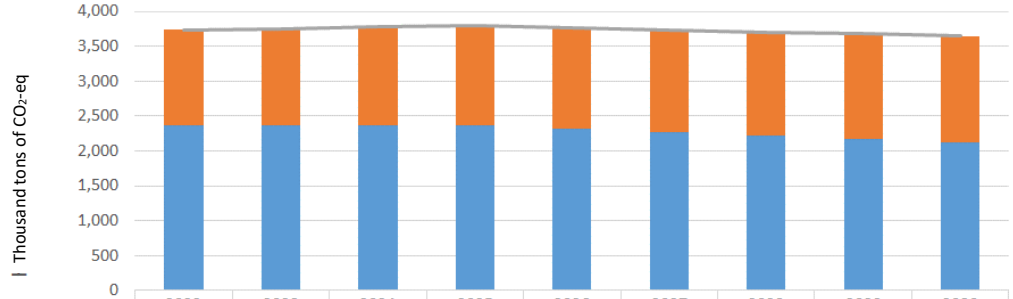
	2022	2023	2024	2025	2026	2027	2028	2029	2030
TE Ugljevik 300 MW	1,785.0	1,728.8	1,694.7	1,641.9	1,599.4	1,536.3	1,493.9	1,442.7	1,384.5
TE TZ6 215 MW	1,469.9	1,584.4	1,594.2	1,635.7	1,649.1	1,518.7	1,584.3	1,547.1	1,501.9
TE TZ5 200 MW	1,405.5	1,404.3	1,453.5	1,448.8	1,467.6	1,369.4	-	-	-
TE TZ3 100 MW	486.1	-	-	-	-	-	-	-	-
TE TZ 4 200 MW	394.2	980.7	593.7	495.3	-	397.1	1,355.4	1,337.8	1,370.6
TE Stanari 300 MW	1,659.0	1,603.1	1,568.6	1,517.5	1,477.0	1,418.3	1,547.9	1,520.7	1,499.9
TE Petroleum products	0.8	0.7	0.7	0.7	0.6	0.6	0.5	0.5	0.5
TE KK7 230 MW	1,692.8	1,691.3	1,712.2	1,744.9	1,759.1	1,592.0	1,525.0	1,442.4	1,365.7
TE KK6 110 MW	779.2	764.5	629.6	788.2	669.5	635.7	689.7	638.1	514.0
TE KK5 110 MW	220.4	540.6	424.2	423.1	419.4	409.2	-	-	-
TE Gacko 300 MW	1,448.2	1,400.1	1,370.7	1,326.8	1,292.1	1,241.4	1,355.7	1,338.8	1,321.3
Total emissions from electricity production	11,341.2	11,698.5	11,042.0	11,023.0	10,333.7	10,118.6	9,552.4	9,268.1	8,958.5

Diagram 9: Target emissions of greenhouse gases from electricity production in Bosnia and Herzegovina, 2022-2030

The second sector in terms of share in total emissions is transport. The sectoral target for transport emissions is:

Emissions from transport in 2030	3.65 $MtCO_2$

The following diagram shows the movement of emissions from transport in the period from 2022 to 2030:



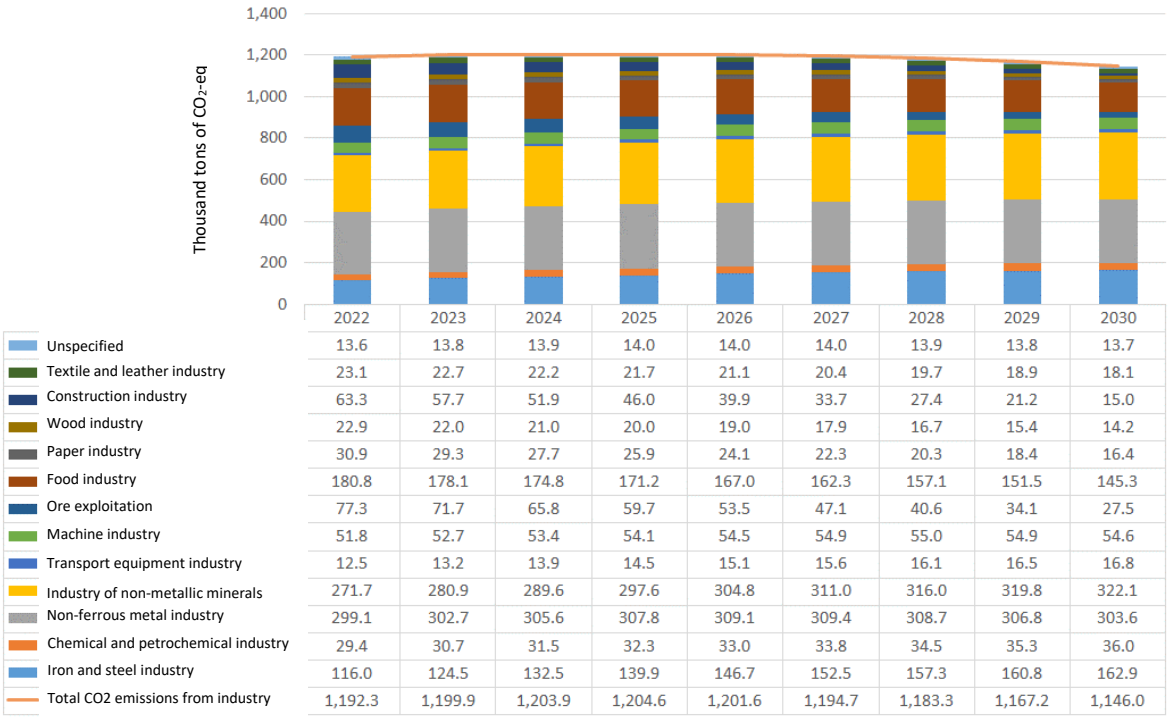
	2022	2023	2024	2025	2026	2027	2028	2029	2030
Freight	1,362.1	1,383.2	1,404.5	1,424.7	1,445.1	1,465.8	1,486.7	1,507.9	1,527.9
Passenger	2,374.1	2,373.0	2,371.6	2,367.5	2,318.1	2,268.9	2,219.9	2,171.2	2,120.6
Total CO2 emissions from transport	3,736.2	3,756.1	3,776.2	3,792.2	3,763.1	3,734.6	3,706.6	3,679.1	3,648.5

Diagram 10: Target emissions of greenhouse gases from the transport sector in Bosnia and Herzegovina, 2022-2030

With regard to the expected growth of industrial production, the sectoral target for industry is important, which amounts to:

Emissions from industry in 2030	1.15 $MtCO_2$

The following diagram shows the trend of emissions from industry in the period 2022 - 2030:



	2022	2023	2024	2025	2026	2027	2028	2029	2030
Unspecified	13.6	13.8	13.9	14.0	14.0	14.0	13.9	13.8	13.7
Textile and leather industry	23.1	22.7	22.2	21.7	21.1	20.4	19.7	18.9	18.1
Construction industry	63.3	57.7	51.9	46.0	39.9	33.7	27.4	21.2	15.0
Wood industry	22.9	22.0	21.0	20.0	19.0	17.9	16.7	15.4	14.2
Paper industry	30.9	29.3	27.7	25.9	24.1	22.3	20.3	18.4	16.4
Food industry	180.8	178.1	174.8	171.2	167.0	162.3	157.1	151.5	145.3
Ore exploitation	77.3	71.7	65.8	59.7	53.5	47.1	40.6	34.1	27.5
Machine industry	51.8	52.7	53.4	54.1	54.5	54.9	55.0	54.9	54.6
Transport equipment industry	12.5	13.2	13.9	14.5	15.1	15.6	16.1	16.5	16.8
Industry of non-metallic minerals	271.7	280.9	289.6	297.6	304.8	311.0	316.0	319.8	322.1
Non-ferrous metal industry	299.1	302.7	305.6	307.8	309.1	309.4	308.7	306.8	303.6
Chemical and petrochemical industry	29.4	30.7	31.5	32.3	33.0	33.8	34.5	35.3	36.0
Iron and steel industry	116.0	124.5	132.5	139.9	146.7	152.5	157.3	160.8	162.9
Total CO2 emissions from industry	1,192.3	1,199.9	1,203.9	1,204.6	1,201.6	1,194.7	1,183.3	1,167.2	1,146.0

Diagram 11: Target emissions of greenhouse gases from the industry sector in Bosnia and Herzegovina, 2022-2030

2.1.2 Energy from renewable sources

In order to ensure a strategic approach to the implementation of the renewable energy sources sub-dimension, as part of achieving the overall strategic goal of an integrated energy and climate approach to decarbonisation of the energy sector in Bosnia and Herzegovina (BiH), the structure of expected results in this regard is defined. This structure introduces several basic elements for which it is necessary to systematically monitor their implementation, for the purpose of quality periodic revision of the entire process. This approach introduces the following elements, as the subject of the implementation of policies and measures and an efficient monitoring and reporting system. These elements are as follows:

- Strategic goals, dimension goals and operational goals,
- Target values of indicators (targets) and
- Indicators.

2.1.2.1 Binding target of BiH for the share of renewable sources

The total share of renewable energy sources (RES) consists of individual sectoral shares RES-E, RES-T and RES-H&C with all their specificities, which must be taken into account when determining the total share.

The goal of the share of RES in the total gross final consumption of energy in Bosnia and Herzegovina in 2030 is:

Total Share of RES in 2030	43.6 %

The trajectory of the share of RES in gross final energy consumption in Bosnia and Herzegovina by 2030 is shown in the following diagram:

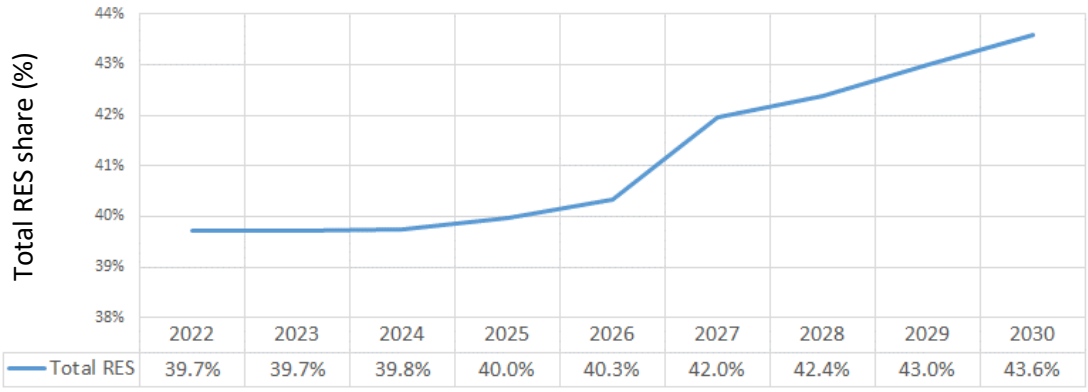


Diagram 12: Trajectory of the RES share in gross final energy consumption in Bosnia and Herzegovina, 2022-2030

Target sectoral and total shares and actual consumption of energy from renewable sources in Bosnia and Herzegovina in 2030 (Article 22(1)(a) of Directive 2009/28/EC) are shown in the following table:

	2030
RES-H&C	60.8 %
RES-E	70.1 %
RES-T	8.4 %
Total RES	**43.6 %**

Table 9: Sectoral (electricity, heating and cooling, and transport) and total share of energy from renewable sources in Bosnia and Herzegovina in 2030

The budget table for the contribution of renewable energy for each sector of final energy consumption is shown as follows, (ktoe).

ktoe	2030
(A) Gross final energy consumption from RES for heating and cooling	1,313.0
(B) Gross final consumption of electricity from RES	702.0
(C) Energy consumption from RES in transport	109.9
(D) Gross final consumption of energy from RES	2,015.1
(E) Transfer of energy from RES to other countries	0
(F) Transfer of energy from RES from other countries	0
(G) Adjusted gross final energy consumption from RES (D)-(E)+(F)	2,015.1

Table 10: Target values of energy consumption from RES in Bosnia and Herzegovina in 2030

2.1.2.2 Estimated trajectories for the sectoral share of energy from renewable sources in final energy consumption in the electric power sector, heating and cooling sector and transport sector

2.1.2.2.1 Target RES share in electricity consumption

The target share of RES in electricity production is the ratio of gross final energy consumption from renewable sources for heating and cooling and gross final energy consumption for heating and cooling, and is expressed as a percentage (%) according to the equation:

$$RES\ E\ = \frac{\text{Gross final consumption of electricity from renewable sources}}{\text{Gross final consumption of electricity}}\ [\%]$$

The gross final consumption of electricity from renewable sources is determined as the sum of the following elements:

- Gross production of electricity from hydropower in accordance with normalisation rules, excluding production of electricity in pumping and storage units from water previously pumped uphill. The gross production of electricity in mixed hydroelectric power plants is included without the production of electricity from pumped storage.
- Gross production of electricity by wind farms, in accordance with normalisation rules.
- Gross production of electricity from clean biofuels.
- Gross production of electricity from mixed biofuels, to be reported from 2011 — only production from compliant (sustainable) mixed bioliquids should be reported, and only produced electricity corresponding to the mixed part should be reported.
- Gross production of electricity from biogas.
- Gross production of electricity from biogas mixed into the natural gas network — only the share corresponding to the ratio of biogas mixed into natural gas.
- Gross production of electricity from other renewable sources: geothermal; solar (photovoltaic and thermal); renewable municipal waste; solid biofuels (solid biomass).

In multi-fuel plants using renewable and conventional sources, only the part of electricity produced from renewable energy sources is taken into account.

The gross final consumption of electricity is determined as:

- Gross production of electricity from all energy sources (actual production, without normalisation for hydro and wind), excluding production of electricity in pumped storage units from water previously pumped uphill,
- plus the total import of electricity,
- minus the total export of electricity.

Considering the foregoing, the target value of the RES share in electricity consumption in Bosnia and Herzegovina in 2030, which is foreseen by this plan, is as follows:

The RES share in electricity consumption in 2030	70.1 %

Projection of this share for the period 2022-2030 is shown in the following diagram:

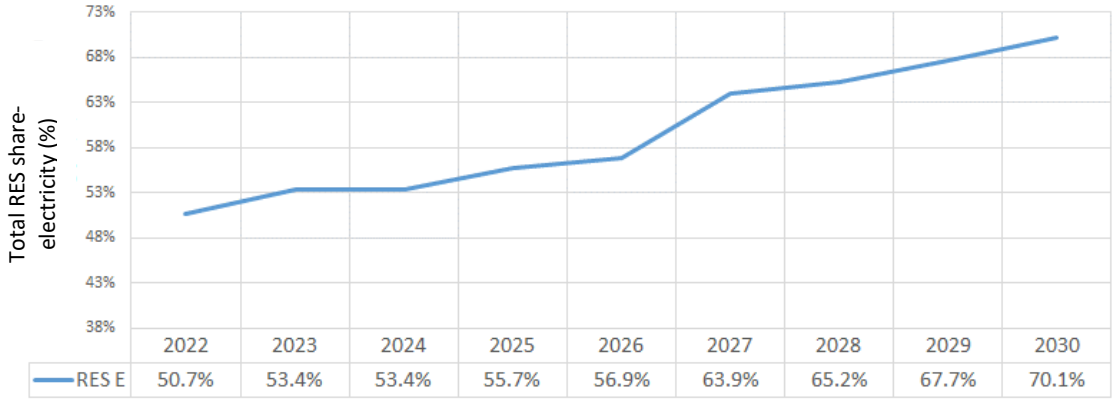


Diagram 13: The trajectory of the RES share in electricity consumption in Bosnia and Herzegovina 2022-2030

The structure of the presented share is reflected in the ratio of Gross final consumption of energy from renewable sources in electricity consumption, and Gross final consumption of electricity, whose values for the period 2022-2030 are shown in the following diagram:

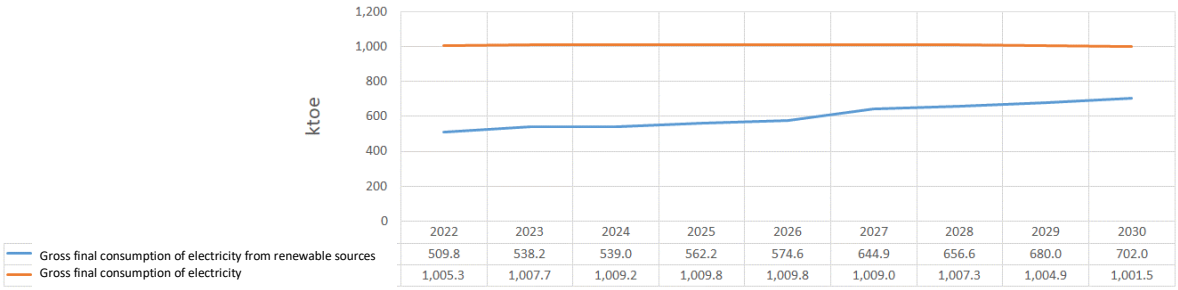


Diagram 14: Trajectory of Gross final consumption of electricity from renewable sources and Gross final consumption of electricity in Bosnia and Herzegovina for the period 2022-2030

2.1.2.2.2 Target RES share in heating and cooling

The target share of RES in heating and cooling is the ratio of gross final energy consumption from renewable sources for heating and cooling and gross final energy consumption for heating and cooling, and is expressed as a percentage (%) according to the equation:

$$RES\ H\&C\ = \frac{\text{Gross final consumption of energy from renewable sources for heating and cooling}}{\text{Gross final energy consumption for heating and cooling}}\ [\%]$$

Gross final consumption of energy from renewable sources for heating and cooling is defined as the sum of the following elements:

- Final energy consumption of renewable energy sources other than electricity, thermal energy and biofuels in sectors other than transport, which covers:
  - all consumption listed under 'Industrial sector' and 'Other sectors' on the questionnaire on renewable energy sources;
  - all consumption listed under "Transformation Sector — Blast Furnace" on the renewable energy questionnaire.
- Biofuels consumed in the "Transformation Sector - Blast Furnaces", "Industry Sector" and "Other Sectors":
  - pure biofuel;
  - corresponding part of mixed biofuels (biogasoline, biojet kerosene, biodiesel).
- Derived thermal energy produced from geothermal energy, solar heat, renewable municipal waste, solid biofuels and biogas.
- Derived thermal energy from the following biofuels:
  - thermal energy produced from clean biofuels;
  - corresponding part of heat energy produced from mixed biofuels (biogasoline, biojet kerosene, biodiesel).
- The share of biogas mixed into the natural gas network applied to the consumption of natural gas in the "Transformation Sector — Blast Furnaces", "Industry Sector" and "Other Sectors".
- The share of biogas mixed into the natural gas network that is applied to thermal energy produced from natural gas.
- Contribution of renewable energy from heat pumps calculated on the basis of EU Commission Decision 2013/114/EU14 (reported under document C(2013) 1082).

Gross final energy consumption for heating and cooling is defined as the sum of the following elements:

- Final energy consumption of all types of energy except electricity in sectors other than transport, which covers:
  - all consumption listed under “Industrial Sector” and “Other Sectors”, taking into account renewable energy sources, coal, oil and natural gas;
  - all consumption listed under "Transformation Sector — Blast Furnaces" taking into account renewable energy sources, coal, oil and natural gas minus gas production from blast furnaces.
- All derived thermal energy consumed in the “Transformation Sector — Blast Furnace”, “Industry Sector” and “Other Sectors”.
- Contribution of renewable energy from heat pumps calculated on the basis of Commission Decision 2013/114/EU (reported under document C (2013) 1082).

Considering the foregoing, the target value of the RES share in heating and cooling for Bosnia and Herzegovina in 2030, as foreseen by this plan, is:

RES share in heating and cooling in 2030	60.8 %

Projection of this share for the period 2022-2030 is shown in the following diagram:

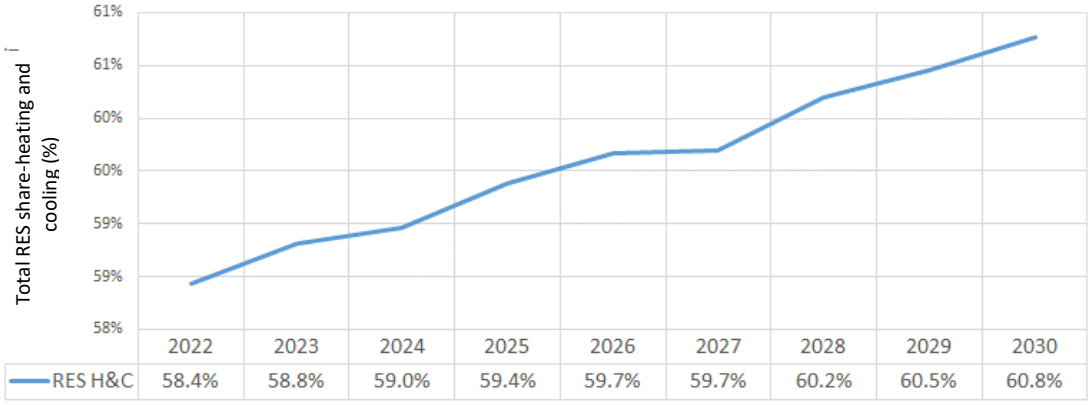


Diagram 15: The trajectory of the RES share in heating and cooling in Bosnia and Herzegovina for the period 2022-2030

The structure of the presented share is reflected in the ratio of Gross final energy consumption from renewable sources for heating and cooling, and Gross final energy consumption for heating and cooling, whose values for the period 2022-2030 are shown in the following diagram:

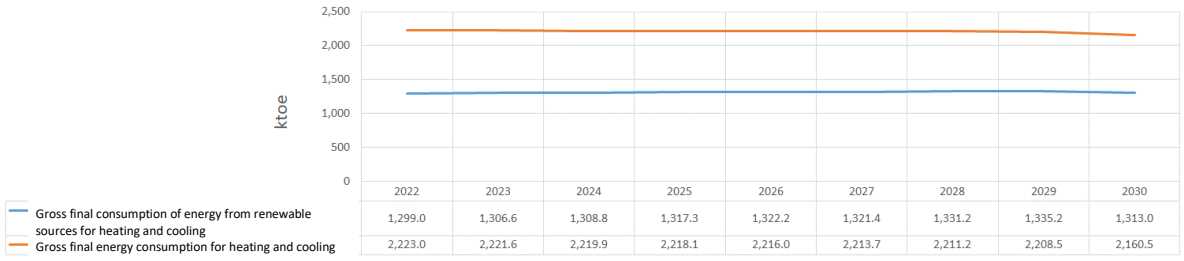


Diagram 16: Trajectory of Gross final energy consumption from renewable sources for heating and cooling and Gross final energy consumption for heating and cooling in Bosnia and Herzegovina for the period 2022-2030

2.1.2.2.3 Goals and projections in the transport sector

The target share of RES in heating and cooling is the ratio of gross final energy consumption from renewable sources for heating and cooling and gross final energy consumption for heating and cooling, and it is expressed as a percentage (%) according to the equation:

$$RES\,T = \frac{\text{Consumption of energy from renewable sources in transport}}{\text{Energy consumption in transpor}}\,[\%]$$

Energy consumption from renewable sources in transport is determined as a sum of the following elements:

- Biofuels (liquid and gaseous) in all modes of transport and, where applicable, the appropriate multiplier (2×) is used.
- Renewable electricity, by applying the RES-E share to the total consumption of electricity in transport (proportionality of electricity from renewable sources in the network) with the appropriate multiplier (5x) for road transport and for rail transport (2.5x).
- Hydrogen of renewable origin in all modes of transport.
- Synthetic fuels of renewable origin in all modes of transport.

- Other forms of renewable energy with reported consumption in the transport sectors (geothermal energy, solar heat, renewable sources of municipal waste, solid biofuels).

Energy consumption in transport is defined as the sum of the following elements:

- Gasoline in all types of transport (motor gasoline plus aviation gasoline).
- Diesel in all modes of transport (non-biogas/diesel oil).
- All biofuels in road and rail transport (including corresponding quantities with a multiplier as defined).
- Electricity in all modes of transport (including corresponding amounts with a multiplier as defined).

Considering the foregoing, the target value of the RES share in transport for Bosnia and Herzegovina in 2030, as foreseen by this plan, is:

RES share in transport in 2030	8.4 %

Projection of this share for the period 2022-2030. is shown in the following diagram:

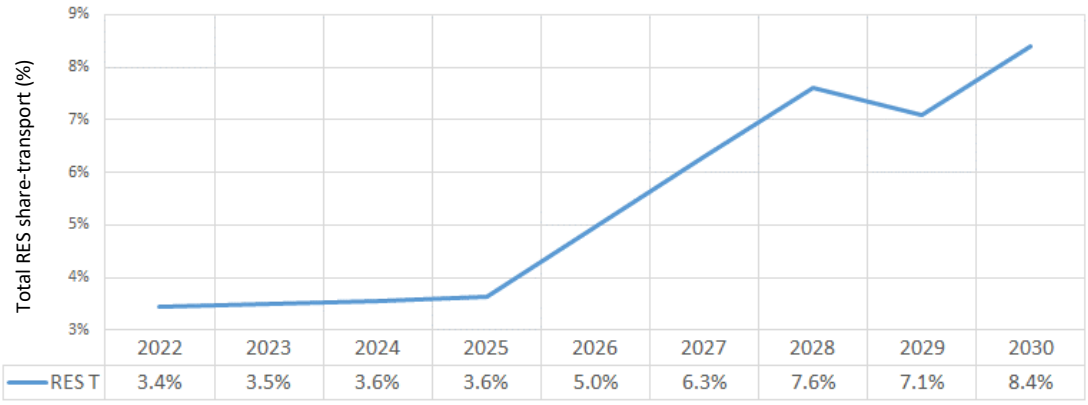


Diagram 17: Trajectory of the share of RES in transport in Bosnia and Herzegovina for the period 2022-2030

The structure of the presented share is reflected in the ratio of Gross final energy consumption from renewable sources in transport, and Gross final energy consumption in transport, whose values for the period 2022-2030 are shown in the following diagram:

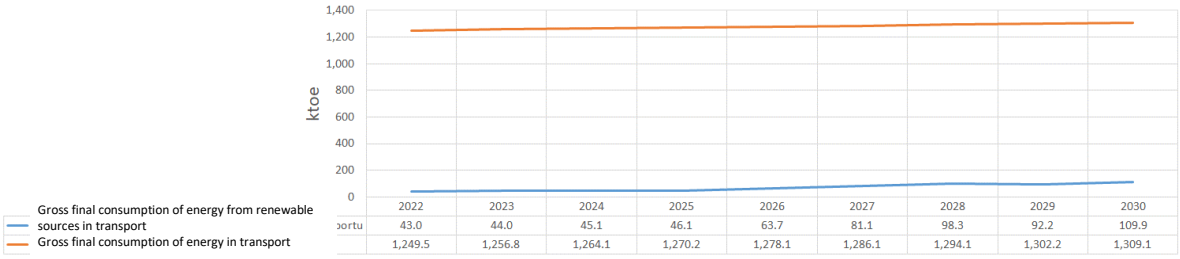


Diagram 18: Trajectory of Gross final energy consumption from renewable sources in transport and Gross final energy consumption in transport in Bosnia and Herzegovina for the period 2022-2030

2.1.2.3 Estimated trajectories of technologies for obtaining energy from renewable sources

In order to reduce greenhouse gas emissions in Bosnia and Herzegovina by 2030, by reducing energy production from fossil fuels, while preserving the overall energy balance, this plan introduces an increase in the capacity for energy production from renewable sources for the same time period. In this regard, the target values of installed capacities and produced energy from renewable sources in 2030 are determined by technologies.

2.1.2.3.1 Technologies for the production of electricity from RES

The plan envisages the development of capacities for the production of electricity from RES using different technologies, such as hydroelectric power plants, wind power plants, solar power plants, and plants for the production of electricity from biomass, including cogeneration (CHP) plants. The following table shows the target values of capacity and electricity production from RES by these technologies.

	2030	
	MW	GWh
Hydropower	2.526,8	6,563.3
< 1 MW	206.8	651.3
1 MW – 10 MW	0	0
> 1 MW	1,900.0	5,817.9
pumped hydro power plants	420	94.1
combined power plants	0	0
Geothermal energy	0	0
Solar energy	1,492.0	1,638.8
photovoltaic power plants	1,492.0	1,638.8
concentrated solar energy	0	0
Wave and tidal energy	0	0
Wind energy	600	1,261.2
onshore power plants	600.0	1,261.2
coastal power plants	0	0
Biomass	25	43.15
solid biomass	25	43.15
biogas	0	0
liquid biofuels	0	0
Total	4.643,8	9,506.5
of which CHP	25	43.15

Table 11: Total actual contribution (installed capacity, gross electricity production) of each renewable energy technology in electricity production in Bosnia and Herzegovina in 2030

In Bosnia and Herzegovina, priority for the development of capacity for the production of electricity from RES is given to certain technologies. The trajectory of capacity and production of electricity from renewable sources by priority technologies are shown in the following diagram:

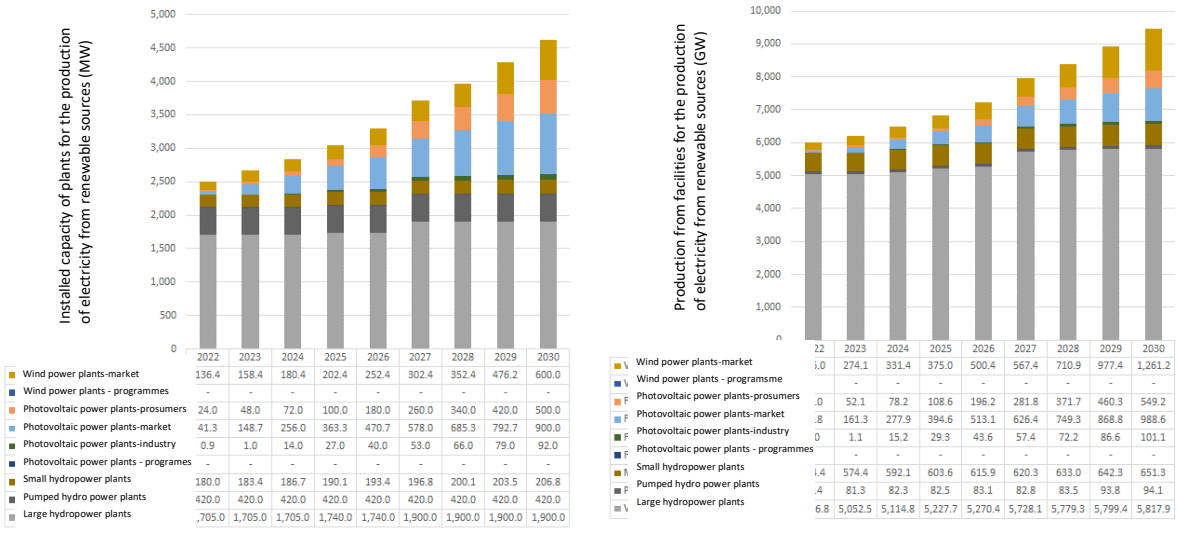


Diagram 19: The trajectory of priority capacities for the production of electricity from renewable sources by different technologies in Bosnia and Herzegovina for the period 2022-2030

The plan envisages the construction of new large hydro plants, namely the introduction of a new 35 MW into operation in 2025, and an additional 160 MW from 2027 onwards. When it comes to small hydropower plants, a steady increase in capacity is foreseen until 2030, when a total of 26.8 MW should be introduced compared to 2021.

On the other hand, a significant increase in the capacity of photovoltaic power plants is predicted. By 2030, it is planned to introduce a new 850 MW of large PVE, 92 MW of new capacity of industrial PVE exclusively for meeting own electricity consumption, and through the prosumer programme in households a new 500 MW. Also, the construction of wind power plants a total capacity of 600 MW is planned in 2030or.

The planned capacities shown are of an intermittent nature, and the volume of electricity production is variable depending on hydrology, the intensity of solar radiation and the strength of the wind in a given period of time. In order for the installed capacities to safely contribute to the fulfillment of the goals outside the domain of this plan, the production, that is, the working hours of individual groups of plants should have the minimum necessary values.

2.1.2.3.2 Technologies for the production of thermal energy in heating and cooling

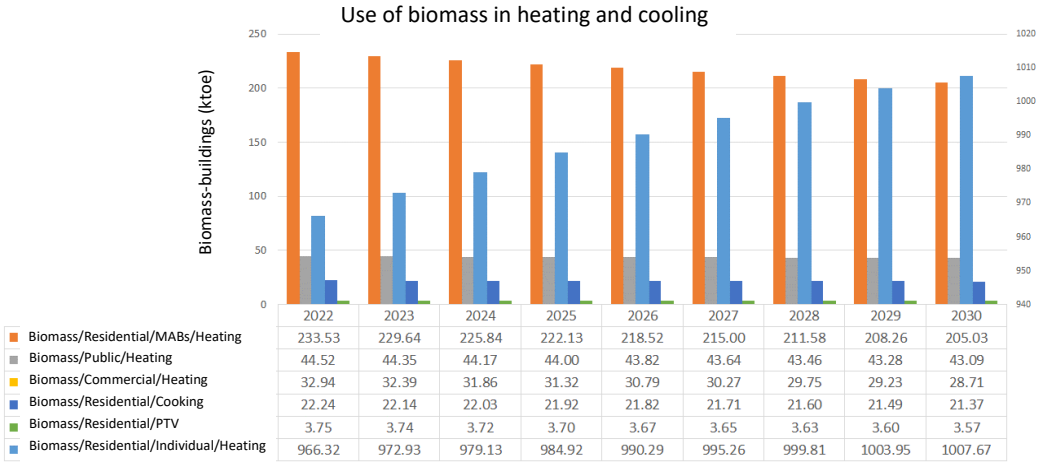
The plan envisages the development of capacity for the production of thermal energy from RES in heating and cooling using different technologies. The following table shows the target values of thermal energy production from RES in heating and cooling.

ktoe	2030
	ktoe
Geothermal energy (without low-temperature geothermal heat energy from the application of heat pumps)	-
Solar energy	-
Biomass	1,309.4
solid biomass	1,309.4
biogas	-
liquid biofuels	-
Thermal energy from the use of heat pumps	5.37
aero-heat pumps	5.37
geothermal heat pumps	
hydro-heat pumps	

Table 12: Total real contribution to the final energy consumption of each renewable energy technology in heating and cooling in Bosnia and Herzegovina in 2030

Of the technologies for the use of RES energy in heating and cooling, solid biomass is intended for use for heating, cooking and preparation of domestic hot water in buildings of the residential sector, as well as for heating in public and commercial buildings. On the other hand, thermal energy from the application of heat pumps is intended for use in heating residential and public buildings.

Trends in thermal energy production in heating and cooling according to application types are shown in the following diagrams.



	2022	2023	2024	2025	2026	2027	2028	2029	2030
Biomass/Residential/MABs/Heating	233.53	229.64	225.84	222.13	218.52	215.00	211.58	208.26	205.03
Biomass/Public/Heating	44.52	44.35	44.17	44.00	43.82	43.64	43.46	43.28	43.09
Biomass/Commercial/Heating	32.94	32.39	31.86	31.32	30.79	30.27	29.75	29.23	28.71
Biomass/Residential/Cooking	22.24	22.14	22.03	21.92	21.82	21.71	21.60	21.49	21.37
Biomass/Residential/PTV	3.75	3.74	3.72	3.70	3.67	3.65	3.63	3.60	3.57
Biomass/Residential/Individual/Heating	966.32	972.93	979.13	984.92	990.29	995.26	999.81	1003.95	1007.67

Diagram 20: The use of biomass in heating and cooling by different types of application in Bosnia and Herzegovina for the period 2022-2030

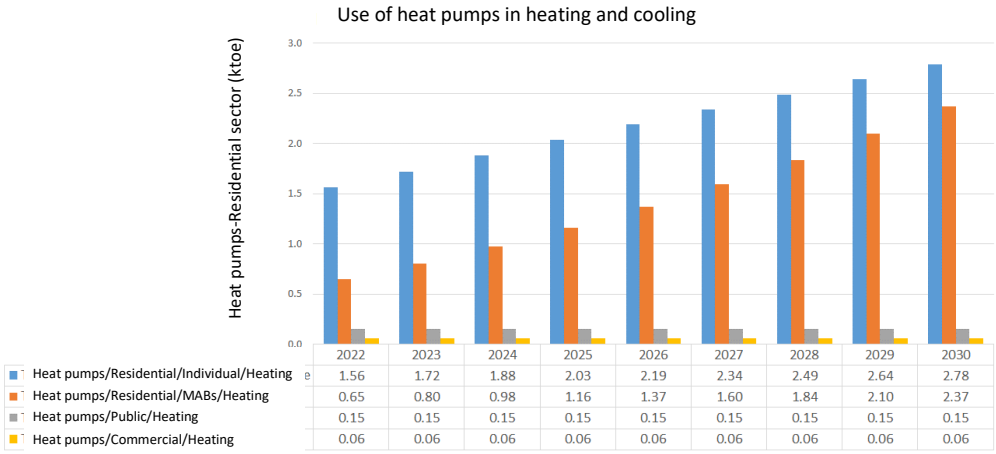


Diagram 21: The use of heat pumps in heating and cooling according to different types of application in Bosnia and Herzegovina for the period 2022-2030

The application of energy measures in the housing sector affects the reduction of final energy consumption, thus affecting the use of RES energy in that sector. On the other hand, an increase in the use of solid biomass is expected in systems for the preparation of domestic hot water (DHW) in residential buildings, individual houses and collective housing buildings.
The use of heat pumps is intended for the production of thermal energy for heating buildings in the residential sector, as well as public buildings. On the other hand, the plan does not envisage a significant increase in the use of heat pumps for heating commercial buildings.

2.1.2.3.3 Specific objectives for the use of RES in the transport sector

The use of renewable energy sources in transport in Bosnia and Herzegovina by 2030 implies the use of electricity from RES and liquid biofuels, according to the following categories of consumption:

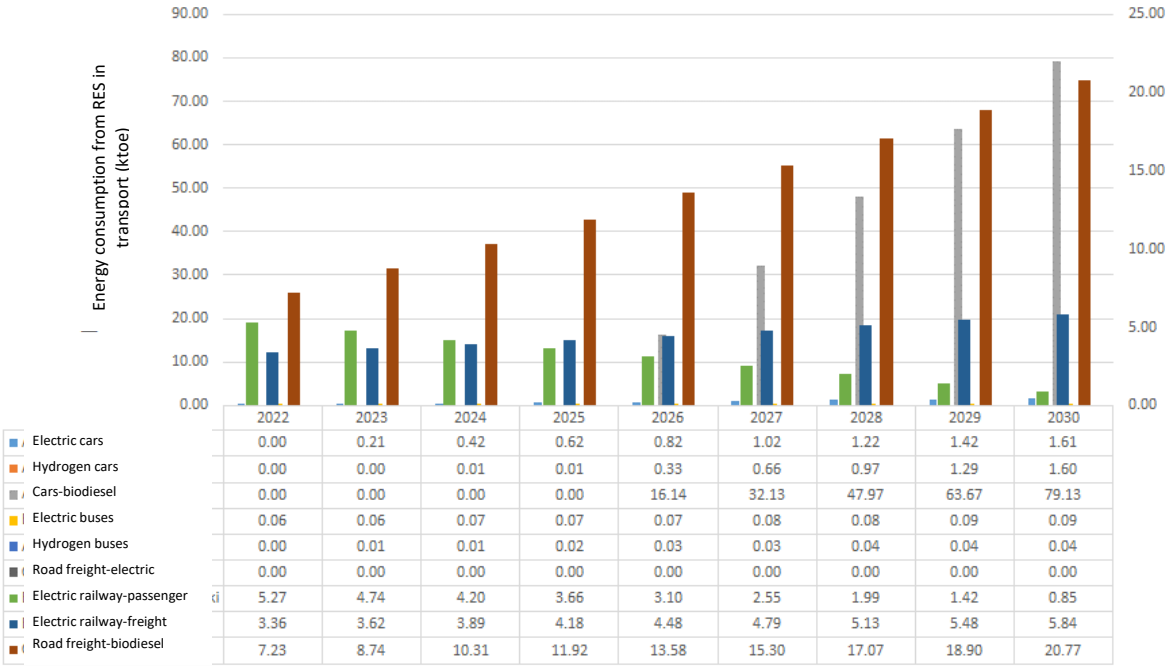
- Passenger transport
  - Road passenger transport
    - Cars
    - Buses
  - Railway passenger transport
  - Air passenger transport
- Freight transport
  - Road freight transport
  - Railway freight transport

This plan foresees the use of RES in transport in 2030 according to the values shown in the following table.

ktoe	2030		
	Renewable electricity	Liquid biofuels	Hydrogen
Passenger transport			
Road			
Cars	1.61	79.13	1.60
Buses	-	-	0.04
Railway	0.85	-	-
Air	-	-	-
Freight transport			
Road	-	20.77	-
Railway	5.84	-	-

Table 13: Use of RES in transport in Bosnia and Herzegovina in 2030

The development of capacity for the use of RES in transport in the planning period follows the scope of its use by type of transport, according to the values shown in the following diagram.



	2022	2023	2024	2025	2026	2027	2028	2029	2030
Electric cars	0.00	0.21	0.42	0.62	0.82	1.02	1.22	1.42	1.61
Hydrogen cars	0.00	0.00	0.01	0.01	0.33	0.66	0.97	1.29	1.60
Cars-biodiesel	0.00	0.00	0.00	0.00	16.14	32.13	47.97	63.67	79.13
Electric buses	0.06	0.06	0.07	0.07	0.07	0.08	0.08	0.09	0.09
Hydrogen buses	0.00	0.01	0.01	0.02	0.03	0.03	0.04	0.04	0.04
Road freight-electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electric railway-passenger	5.27	4.74	4.20	3.66	3.10	2.55	1.99	1.42	0.85
Electric railway-freight	3.36	3.62	3.89	4.18	4.48	4.79	5.13	5.48	5.84
Road freight-biodiesel	7.23	8.74	10.31	11.92	13.58	15.30	17.07	18.90	20.77

Diagram 22: The trajectory of the use of energy from renewable sources by different types of transport in Bosnia and Herzegovina for the period 2022-2030

The use of RES energy in transport is reduced to renewable electricity and the use of liquid biofuel. This plan predicts an increase in the use of renewable electricity in road transport for cars, to 1.61 ktoe in 2030, which is a significant increase. On the other hand, no growth is predicted in the use of electric buses in passenger road transport.

Rail transport is expected to use electricity from renewable sources, where passenger transport is experiencing growth due to policies and measures moving in the direction of promoting alternative passenger rail transport.

Also, this plan foresees a significant increase in the use of liquid biofuels, namely in road freight transport, starting from a value of 7.2 ktoe in 2022, up to 20.77 ktoe in 2030.

2.1.2.4 Estimated trajectories of demand for bioenergy, broken down into heat and electricity and transport, and trajectories of biomass supply by raw material and origin

Biomass consumption in the transformation and final energy consumption sectors in Bosnia and Herzegovina by 2030 includes the use of biomass, namely solid biomass, biogas and liquid biofuels, by the following categories:

- Consumption of final energy from solid biomass in the housing sector.
- Consumption of final energy from solid biomass in the public, commercial sector and services.
- Consumption of final energy from solid biomass in industry.
- Consumption of final energy from liquid biofuels in transport.
- Consumption of solid biomass and biogas in plants for cogenerative production of electricity and heat.
- Consumption of solid biomass in thermal energy production plants - district heating systems (DHS).

This plan foresees the use of biomass in the transformation and final energy consumption sectors in 2030 according to the values shown in the following table.

ktoe	2030			
	solid biomass	biogas	liquid biofuels	TOTAL
Consumption of final energy from solid biomass in the residential sector	1,237.6	-	-	1,237.6
Consumption of final energy from solid biomass in the public, commercial sector and services	71.80	-	-	71.80
Consumption of final energy from solid biomass in industry	26.50	-	-	26.50
Consumption of final energy from liquid biofuels in transport	-	-	1.64	1.64
Consumption of solid biomass and biogas in plants for cogenerative production of electricity and heat	37.08	-	-	37.08
Consumption of solid biomass in thermal energy production plants - district heating systems (DHS)	54.24	-	-	54.24

Table 14: Biomass consumption by transformation and final consumption sectors in Bosnia and Herzegovina in 2030

Electricity from biomass is obtained by burning it in cogeneration plants. It is predicted that in 2030 the amount of electricity obtained in this way will amount to 3.71 ktoe, with the accompanying production of heat cogenerative energy in the amount of 7.42 ktoe.

The development of capacity for the use of biomass in the planning period follows the volume of biomass use by transformation and final energy consumption sectors, according to the values given in the following diagram.

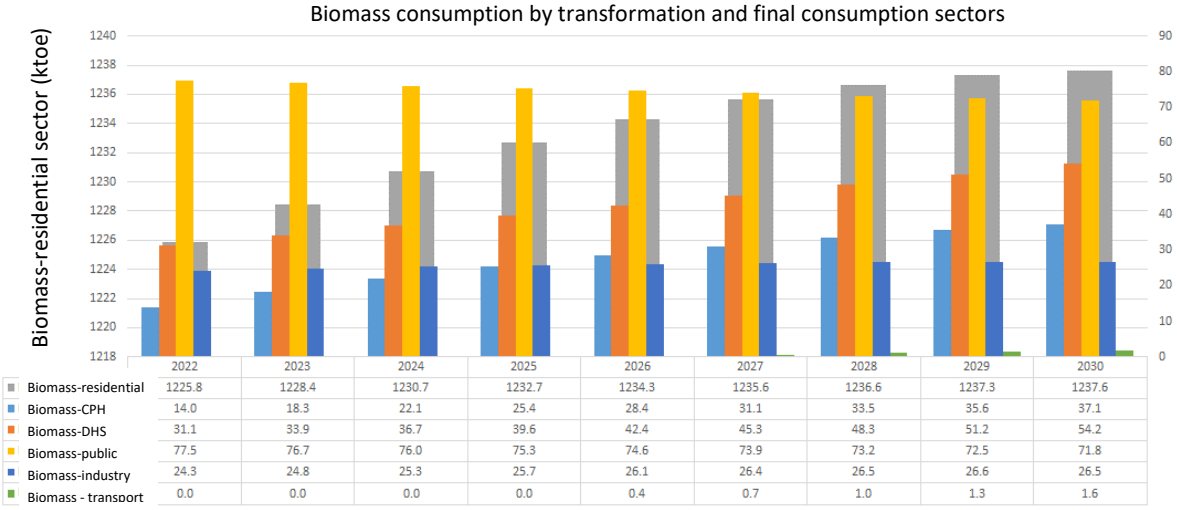


Diagram 23: Trajectory of biomass consumption by transformation and final energy consumption sectors in Bosnia and Herzegovina 2022-2030

The application of energy efficiency measures in the housing sector affects the reduction of final energy consumption, thus affecting the consumption of biomass in that sector. On the other hand, an increase in the use of solid biomass in district heating systems, i.e. heat energy production, is expected, which is a strategic alternative to reducing the use of fossil fuels in district heating systems. Also, slight growth in the use of biomass in the public, commercial and service sectors, and industry is predicted. On the other hand, a significant increase in the use of liquid biofuel in the transport sector is predicted.

2.2 Dimension: Energy efficiency

In order to ensure a strategic approach to the implementation of the energy efficiency dimension, as part of achieving the overall strategic goal of an integrated energy and climate approach to the Bosnia and Herzegovina energy sector decarbonisation, the structure of expected results in this regard is defined. This structure introduces several basic elements for which it is necessary to systematically monitor their implementation, and for the purpose of quality periodic revision of the entire process. This approach introduces the following elements, as the subject of the implementation of policies and measures and an efficient monitoring and reporting system. These elements are:

- Strategic goals, dimension goals and operational goals
- Target values of indicators (targets)
- Indicators

2.2.1 Binding goal of BiH for energy efficiency

Based on the analysis of the results obtained by modelling the movement of energy and climate indicators in Bosnia and Herzegovina, in accordance with international obligations, primarily by fulfilling the goals of the EU energy strategy, transferred by the Energy Community Treaty, energy efficiency goals for Bosnia and Herzegovina by 2030 are defined. These goals define the values of the following indicators:

- Primary energy consumption (PEC)
- Final Energy Consumption (FEC)

Also, in defining these goals, the following decisive factors were taken into account:

- Character, scope and intensity of implementation of energy efficiency measures planned for implementation within individual sectors of primary and final energy consumption; and
- Realistic organisational and financial capacity for the implementation of the energy efficiency measures required to achieve the goals.

Based on these considerations, the energy efficiency goals in Bosnia and Herzegovina for saving energy consumption by applying energy efficiency measures, by 2030, are as follows:

Primary energy consumption in 2030	6,844.0 ktoe
Final energy consumption in 2030	4,339.0 ktoe

Accordingly, this plan defines a reduction in primary energy consumption, while a slight increase in final energy consumption is expected by 2030. The trajectories of PEC and FEC indicator values are shown in the following diagram.

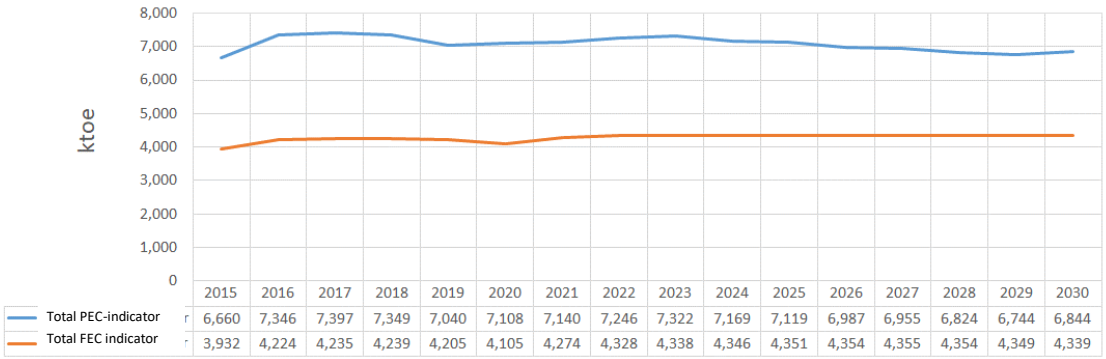


Diagram 24: Target trajectories of PEC and FEC indicators in Bosnia and Herzegovina 2022-2030

2.2.2 Indicative key stages for 2030, 2040 and 2050.

This strategic approach to reducing greenhouse gas emissions is based on changes in the energy sector, both in the domain of energy transformations, which is reflected in the value of the PEC indicator, and in the domain of the final energy consumption sector, which is seen in the value of the FEC indicator. The approximate values of these indicators, for the planning "Policy" scenario, at the transition between phases are shown in the following table:

ktoe	2022	2030	2040	2050
Primary energy consumption (PEC)	7,245.9	6,843.7	5,584.6	3,583.3
Final energy consumption (FEC)	4,327.6	4,339.0	3,825.4	3,066.5

Table 15: Values of PEC and FEC framework indicators at the transition between phases

It can be seen that the projections predict a decrease in the values of the PEC and FEC indicators, wherein the consumption of primary energy decreases more intensively (**Diagram 25**) and in 2050 these values are brought to a significantly smaller difference than it was at the beginning of the strategic-planning period. In both cases, the greater ambition of implementing decarbonisation policies and measures is foreseen for Phase 3 of the process.

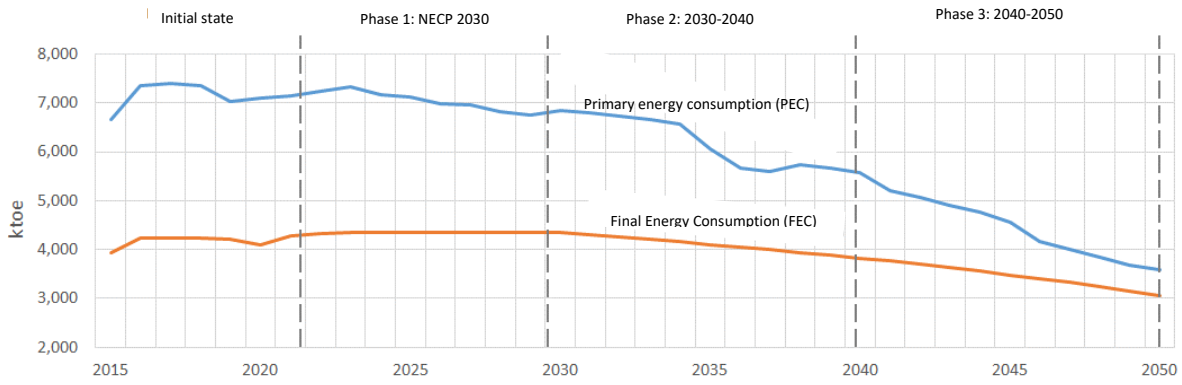


Diagram 25: Framework projections of PEC and FEC indicators with regard to the implementation of decarbonisation policies and measures by phases

The level of ambition can also be shown by the difference between the strategic intensity of the process under the assumption that the existing policies and measures will be implemented until the end of the period ("Baseline" scenario), without changes in their intensity, and the intensity of that process in the case of applying a more ambitious approach ("Policy" scenario). These differences are shown in the PEC indicator diagram (**Diagram 26**), and in the FEC indicator diagram (**Diagram 27**).

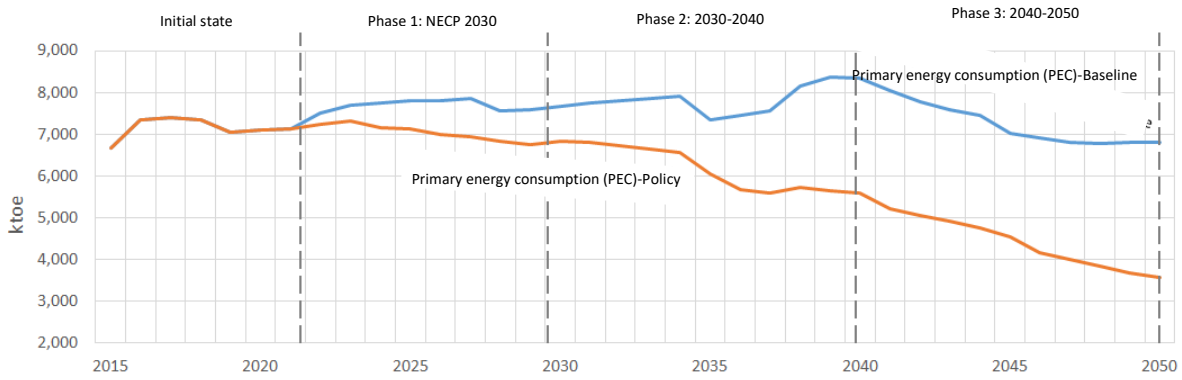


Diagram 26: Comparison of framework projections of PEC indicators by phases according to "Policy" and "Baseline" scenarios

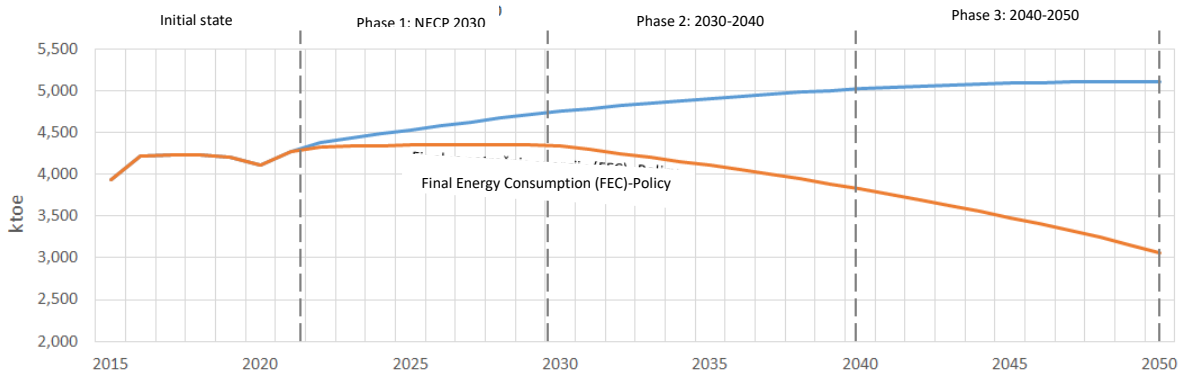


Diagram 27: Comparison of framework projections of FEC indicators by phases according to the "Policy" and "Baseline" scenarios

2.2.3 Measurable indicators of progress established at the domestic level

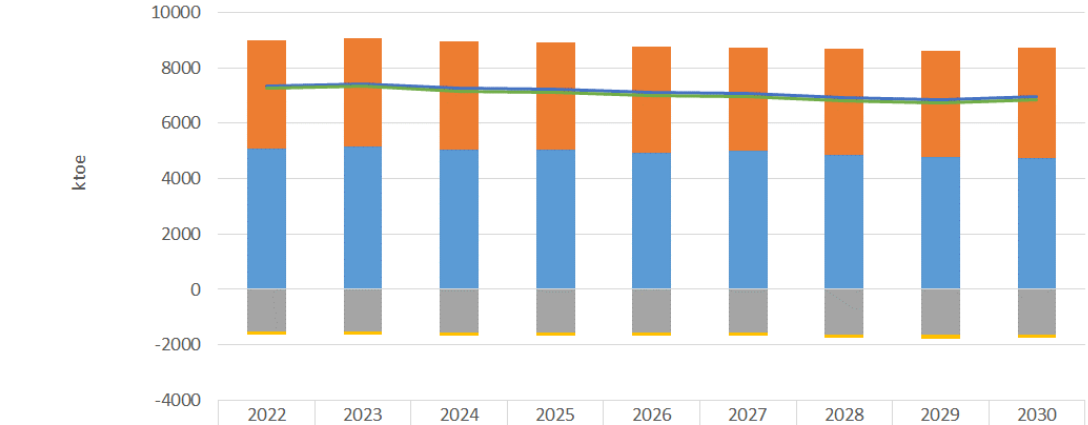
The integrated energy and climate plan in Bosnia and Herzegovina introduces basic implementation progress indicators, namely:

- Primary energy consumption (PEC)
- Reduction of losses in production, energy transmission and distribution
- Technologies for the production of electricity
- Technologies for the production of heat energy
- Final Energy Consumption (FEC)

Below are the projections of these indicators for the planning period.

2.2.3.1 Projections of primary energy consumption indicators

Primary energy consumption (PEC) is the sum of total produced, imported energy and stored energy, minus the amount of energy exported and energy consumed in the energy sector's own processes. In this regard, this plan envisages the reduction of the PEC in a manner that all of its elements are changed. The biggest change is predicted by the decrease in energy production, while no significant changes are predicted in its import and export. This ultimately results in an overall reduction in PEC, which is mainly accompanied by a reduction in energy production. The trajectories of changes in these parameters are given in the following diagram.



	2022	2023	2024	2025	2026	2027	2028	2029	2030
Total inventory	-127.8	-127.8	-127.8	-127.8	-127.8	-127.8	-127.8	-127.8	-127.8
Total exports	-1,513.5	-1,513.5	-1,536.9	-1,556.2	-1,550.1	-1,544.0	-1,623.3	-1,642.8	-1,633.2
Total import	3,907.7	3,902.2	3,901.7	3,860.4	3,842.6	3,727.6	3,841.8	3,831.9	3,979.0
Total production	5,088.9	5,170.4	5,040.9	5,051.5	4,931.4	5,008.1	4,842.7	4,791.9	4,734.7
TPES	7,355.3	7,431.2	7,277.9	7,227.9	7,096.2	7,063.8	6,933.5	6,853.2	6,952.7
Total PEC-Indicator	7,246	7,322	7,169	7,119	6,987	6,955	6,824	6,744	6,844

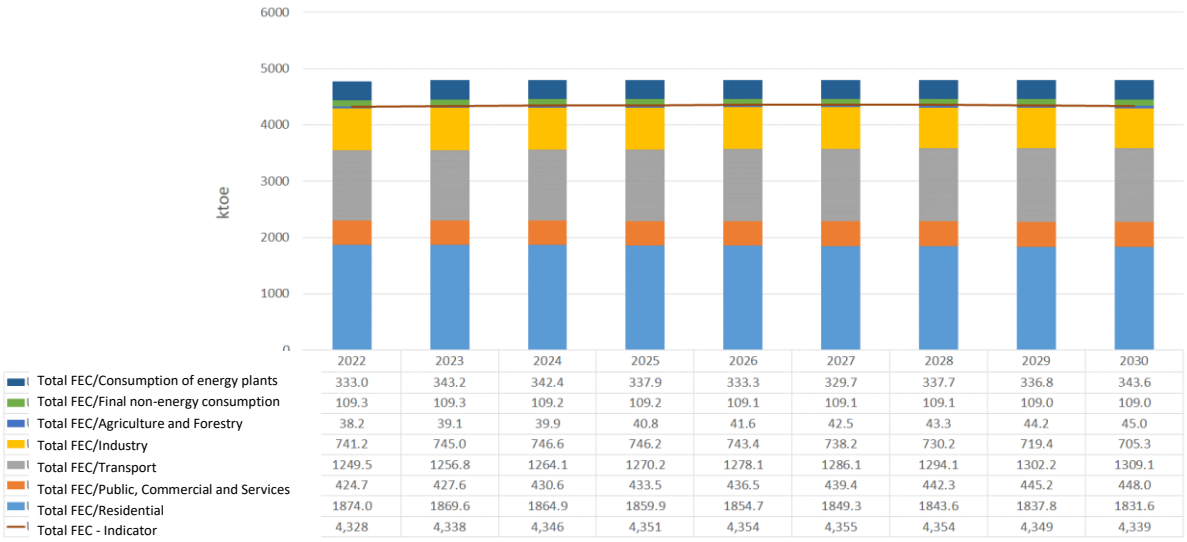
Diagram 28: Target trajectories of PEC towards production, import, export and energy stocks in Bosnia and Herzegovina 2022-2030

Energy production in Bosnia and Herzegovina is carried out using primary energy from solid fuels, wood biomass, hydropower, as well as other forms of RES (solar and wind energy). The largest decrease in energy production is foreseen for energy obtained from solid fossil fuels, which is a relative decrease of 38% compared to the value of this production at the beginning of the planning period. On the other hand, production from RES is expected to grow, while biomass production remains at a constant amount throughout the entire period.

2.2.3.2 Projections of final energy consumption indicators

In the coming period, a significant increase in the need for energy in the final consumption sectors is expected, caused primarily by the growth of consumption and the intensification of activities. This increase is compensated by the effects of energy efficiency measures in the final consumption sectors, so that ultimately the total growth of FEC is not significant.

The following diagram shows the target trajectories of final energy consumption by sector.



	2022	2023	2024	2025	2026	2027	2028	2029	2030
Total FEC/Consumption of energy plants	333.0	343.2	342.4	337.9	333.3	329.7	337.7	336.8	343.6
Total FEC/Final non-energy consumption	109.3	109.3	109.2	109.2	109.1	109.1	109.1	109.0	109.0
Total FEC/Agriculture and Forestry	38.2	39.1	39.9	40.8	41.6	42.5	43.3	44.2	45.0
Total FEC/Industry	741.2	745.0	746.6	746.2	743.4	738.2	730.2	719.4	705.3
Total FEC/Transport	1249.5	1256.8	1264.1	1270.2	1278.1	1286.1	1294.1	1302.2	1309.1
Total FEC/Public, Commercial and Services	424.7	427.6	430.6	433.5	436.5	439.4	442.3	445.2	448.0
Total FEC/Residential	1874.0	1869.6	1864.9	1859.9	1854.7	1849.3	1843.6	1837.8	1831.6
Total FEC - Indicator	4,328	4,338	4,346	4,351	4,354	4,355	4,354	4,349	4,339

Diagram 29: Trajectories of final energy consumption by sector in Bosnia and Herzegovina 2022-2030

The above values are reached by achieving savings in final energy consumption, the target values of which are presented in the next section of this plan.

The structure of the energy mix in final energy consumption in Bosnia and Herzegovina by 2030 will be aligned with the requirements of ensuring energy security in the country, while achieving decarbonization goals and reducing greenhouse gas emissions.

In this regard, the following is the ambitious scenario for the structure of the energy mix in final energy consumption in that year:

- **Petroleum Derivatives:** In the ambitious decarbonization scenario in Bosnia and Herzegovina by 2030, the goal is to reduce the use of petroleum derivatives in final energy consumption. Petroleum derivatives, as fossil fuels, have high greenhouse gas emissions and a negative impact on the environment. According to the "Policy" scenario, in 2030, the share of coal in energy exports in Bosnia and Herzegovina is set at 34.99%. In contrast to the "Baseline" scenario, which predicts projections based on existing policies and measures, where this share was 33.64%, there is a slight increase in the share of petroleum derivative usage in final energy consumption in Bosnia and Herzegovina, although the overall final energy consumption across all sources should be considered in decline.
- **Biomass:** In the ambitious decarbonization scenario in Bosnia and Herzegovina by 2030, biomass can play an important role in the energy mix in final energy consumption. Biomass is considered a renewable energy source as it originates from renewable plant or animal materials. According to the "Policy" scenario, in 2030, the share of coal in energy exports in Bosnia and Herzegovina is set at 26.76%. In contrast to the "Baseline" scenario, which predicts projections based on existing policies and measures, where this share was 26.67%, there is a constant share in the use of biomass in final energy consumption in Bosnia and Herzegovina, although the overall final energy consumption across all sources should be considered in decline.

- **Electricity**: In the ambitious decarbonization scenario in Bosnia and Herzegovina by 2030, electricity plays a crucial role in final energy consumption. Electricity is considered a clean form of energy when produced from renewable sources or used to power electric vehicles. According to the "Policy" scenario, in 2030, the share of coal in energy exports in Bosnia and Herzegovina is set at 23.26%. In contrast to the "Baseline" scenario, which predicts projections based on existing policies and measures, where this share was 23.21%, there is a constant share in the use of electricity in final energy consumption in Bosnia and Herzegovina, although the overall final energy consumption across all sources should be considered in decline.
- **Natural Gas**: In the context of the ambitious decarbonization scenario in Bosnia and Herzegovina by 2030, natural gas can have a certain role in the energy mix in final energy consumption. Although natural gas is a fossil fuel and emits greenhouse gases during combustion, it is considered less polluting than other fossil fuels such as coal and oil. Therefore, natural gas can be seen as a transitional fuel towards cleaner energy sources. According to the "Policy" scenario, in 2030, the share of coal in energy exports in Bosnia and Herzegovina is set at 3.71%. In contrast to the "Baseline" scenario, which predicts projections based on existing policies and measures, where this share was 4.10%, there is a constant share in the use of natural gas in final energy consumption in Bosnia and Herzegovina, although the overall final energy consumption across all sources should be considered in decline.
- **Thermal Energy**: In the ambitious decarbonization scenario in Bosnia and Herzegovina by 2030, thermal energy has an important role in final energy consumption. Since heat is needed for space heating and hot water preparation, it is important to shift towards cleaner sources of heat energy to reduce greenhouse gas emissions. According to the "Policy" scenario, in 2030, the share of coal in energy exports in Bosnia and Herzegovina is set at 3.01%. In contrast to the "Baseline" scenario, which predicts projections based on existing policies and measures, where this share was 3.06%, there is a constant share in the use of thermal energy in final energy consumption in Bosnia and Herzegovina, although the overall final energy consumption across all sources should be considered in decline.

The structure of the energy mix in final energy consumption in Bosnia and Herzegovina, according to the "Policy" scenario, in 2030 is shown in the following diagram.

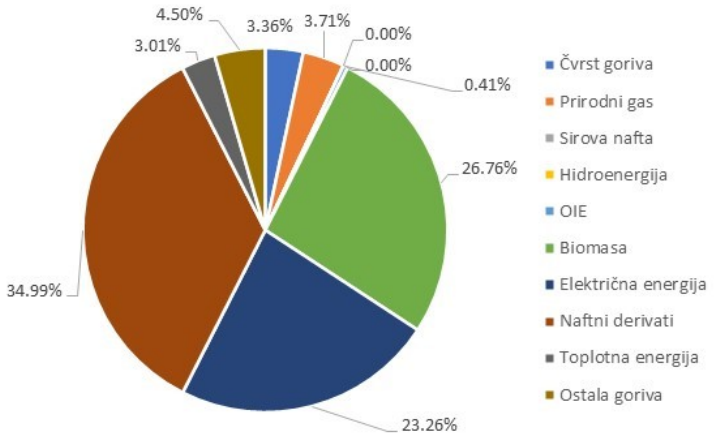


Diagram 30: The structure of the energy mix in final energy consumption in Bosnia and Herzegovina, according to the "Policy" scenario, in 2030.

2.2.3.3 Projections of loss reduction indicators in energy production, transmission and distribution

The amount of primary energy available for transformation is determined by the PEC indicator and is passed through the transformation into the final energy consumption. However, energy losses occur during the transformation process, and the total amount of primary energy available is reduced by the amount of these losses. In this regard, this plan envisages the reduction of these losses, which can occur both by reducing primary energy production itself, and also through measures to increase the energy efficiency of energy production, transmission and distribution facilities.

The main types of energy transformation processes in Bosnia and Herzegovina are as follows:

- Coke ovens
- Blast furnaces
- Oil refineries
- Biomass cogeneration plants
- Plants for the production of electricity
- Plants for the production of thermal energy
- Plants for the production of heat energy from biomass
- Plants for the production of energy for own needs of business entities
- Energy transmission and distribution facilities

This plan foresees the trajectories of reducing losses in energy transformation processes as shown in the following diagram.

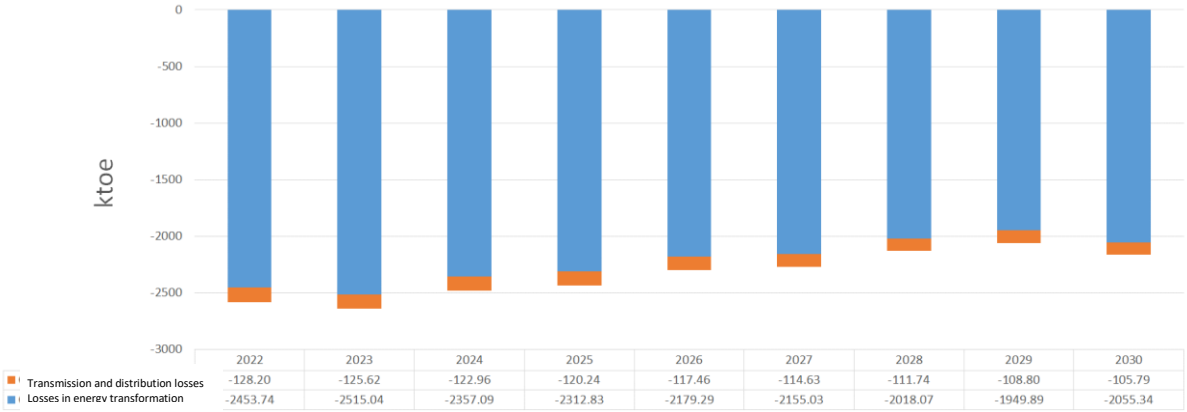


Diagram 31: Trajectories of reduction of transformation losses by types of processes in Bosnia and Herzegovina 2022-2030

2.2.3.4 Projections of technology indicators for electricity production

This plan envisages an increase in the capacity for electricity production in Bosnia and Herzegovina by 2030. A significant increase is expected in plants for the production of electricity from RES, while there are no plans to increase the capacity of plants burning fossil fuels.

Also, the plan introduces new subcategories of facilities from RES, so that capacities within the framework of incentive programmes (programmes) and association into renewable energy communities (REC) are specifically foreseen.

Therefore, for the planning period, the establishment and operation of electricity production facilities by the following types are foreseen:

- TPP Gacko
- TPP KK5
- TPP KK6
- TPP KK7
- TPP Stanari 300 MW
- TPP TZ 4
- TPP TZ3
- TPP TZ5
- TPP TZ6
- TPP TZ7 New block
- TPP Ugljevik
- Photovoltaic - programmes
- Photovoltaic - industry
- Photovoltaic - large
- Photovoltaic - prosumers
- Wind power plants
- Wind power plants - programmes
- Hydropower plants

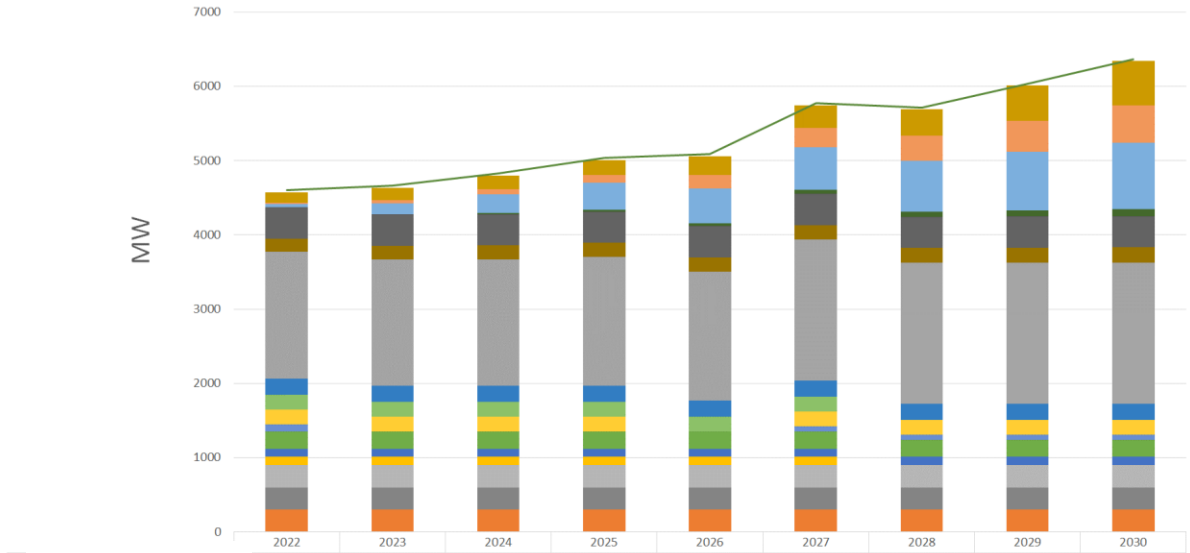
- Pumped hydro power plants
- Small hydropower plants

On the other hand, a significant increase in the capacity to produce electricity from hydropower is predicted, most of which will be obtained through the construction of new capacities of large hydropower plants. The capacities of small hydropower plants and hydropower plants of renewable energy communities are also growing, but with significantly smaller capacities.

Also, an increase in the capacity of wind farms is expected, most of which are large wind farms without support, while a smaller part is directed through support programmes and through renewable energy communities.

Finally, a significant increase in the capacity to produce electricity from photovoltaic plants is predicted, of which the dominant plants are those for the production of electricity for the market and for own consumption within the status of prosumers. Also, a part of the capacity is planned to be established through renewable energy communities.

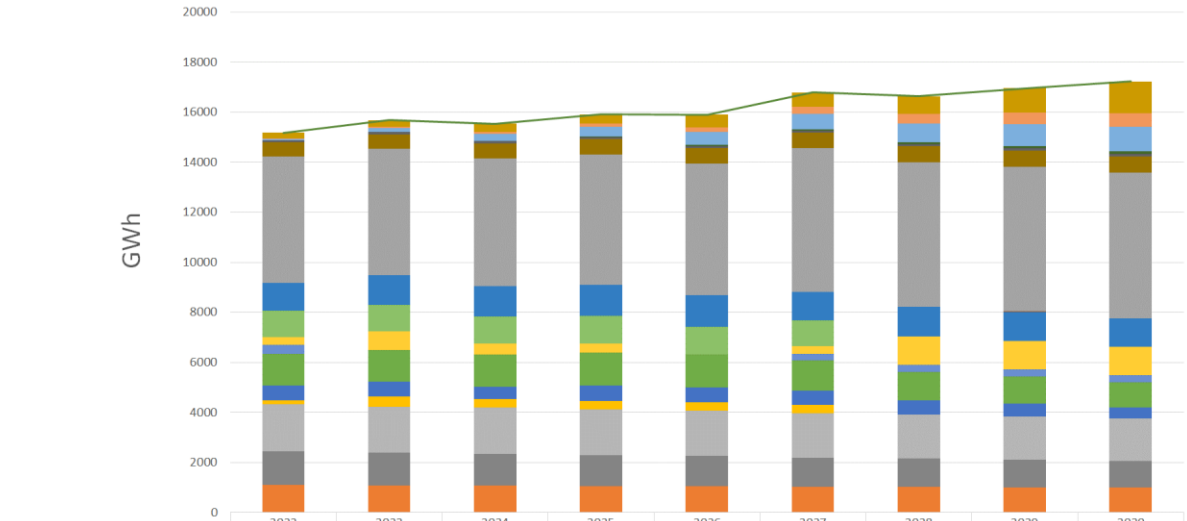
The following diagrams show the trajectories of electricity production capacity in Bosnia and Herzegovina for the period 2022-2030.



	2022	2023	2024	2025	2026	2027	2028	2029	2030
Wind power plants-market	136.40	158.40	180.40	202.40	252.40	302.40	352.40	476.20	600.00
Photovoltaic power plants-prosumers	24.00	48.00	72.00	100.00	180.00	260.00	340.00	420.00	500.00
Photovoltaic power plants-market	41.32	148.66	255.99	363.33	470.66	578.00	685.33	792.67	900.00
Photovoltaic power plants-industry	0.88	1.00	14.00	27.00	40.00	53.00	66.00	79.00	92.00
Pumped hydro power plants	420.00	420.00	420.00	420.00	420.00	420.00	420.00	420.00	420.00
Small hydropower plants	180.00	183.35	186.70	190.05	193.40	196.75	200.10	203.45	206.80
Large hydropower plants	1,705.00	1,705.00	1,705.00	1,740.00	1,740.00	1,900.00	1,900.00	1,900.00	1,900.00
TE TZ6 215 MW	215.00	215.00	215.00	215.00	215.00	215.00	215.00	215.00	215.00
TE TZ5 200 MW	200.00	200.00	200.00	200.00	200.00	200.00	-	-	-
TE TZ 4 200 MW	200.00	200.00	200.00	200.00	-	200.00	200.00	200.00	200.00
TE TZ3 100 MW	100.00	-	-	-	-	70.00	70.00	70.00	70.00
TE KK7 230 MW	230.00	230.00	230.00	230.00	230.00	230.00	230.00	230.00	230.00
TE KK6 110 MW	110.00	110.00	110.00	110.00	110.00	110.00	110.00	110.00	110.00
TE KK5 110 MW	110.00	110.00	110.00	110.00	110.00	110.00	-	-	-
TE Stanari 300 MW	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00
TE Ugljevik 300 MW	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00
TE Gacko 300 MW	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00
Gas power plant	-	-	-	-	-	-	-	-	-
Total	4,607.2	4,662.2	4,830.1	5,037.1	5,089.0	5,770.9	5,712.9	6,038.6	6,364.3

Diagram 32: Trajectories of capacity for electricity production by plant types in Bosnia and Herzegovina 2022-2030

In order to satisfy domestic needs for electricity, and on the other hand to meet climate criteria, this plan defines the trajectories of the amount of electricity produced. These trajectories are shown by different technologies in the following diagram.



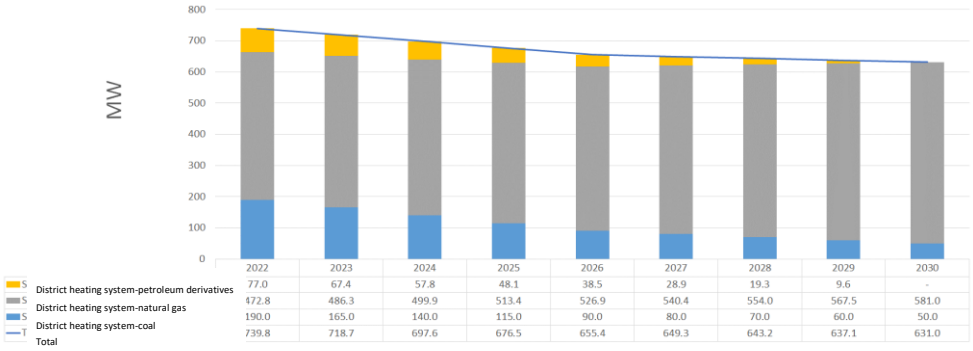
	2022	2023	2024	2025	2026	2027	2028	2029	2030
Wind power plants-market	236.0	274.1	331.4	375.0	500.4	567.4	710.9	977.4	1,261.2
Photovoltaic power plants-prosumers	26.0	52.1	78.2	108.6	196.2	281.8	371.7	460.3	549.2
Photovoltaic power plants-market	44.8	161.3	277.9	394.6	513.1	626.4	749.3	868.8	988.6
Photovoltaic power plants-industry	1.0	1.1	15.2	29.3	43.6	57.4	72.2	86.6	101.1
Pumped hydro power plants	81.4	81.3	82.3	82.5	83.1	82.8	83.5	93.8	94.1
Small hydropower plants	564.4	574.4	592.1	603.6	615.9	620.3	633.0	642.3	651.3
Large hydropower plants	5,056.8	5,052.5	5,114.8	5,227.7	5,270.4	5,728.1	5,779.3	5,799.4	5,817.9
Use of oil and oil derivatives	2.9	2.8	2.7	2.5	2.4	2.2	2.1	1.9	1.8
TE TZ6 215 MW	1,109.5	1,196.0	1,203.3	1,234.7	1,244.8	1,146.3	1,195.8	1,162.5	1,128.6
TE TZ5 200 MW	1,060.9	1,060.0	1,097.1	1,093.6	1,107.7	1,033.6	-	-	-
TE TZ 4 200 MW	294.9	734.9	445.7	372.5	-	299.8	1,136.7	1,140.7	1,144.3
TE TZ3 100 MW	366.9	-	-	-	-	273.1	275.6	276.5	277.4
TE KK7 230 MW	1,266.3	1,265.2	1,280.8	1,305.2	1,315.9	1,190.9	1,140.8	1,083.9	1,026.2
TE KK6 110 MW	588.2	587.7	493.1	629.2	605.4	586.2	578.5	535.2	433.1
TE KK5 110 MW	166.4	415.6	332.2	337.8	341.3	339.7	-	-	-
TE Stanari 300 MW	1,878.4	1,848.6	1,842.8	1,817.0	1,803.0	1,765.8	1,752.6	1,729.6	1,706.0
TE Ugljevik 300 MW	1,347.4	1,304.9	1,279.2	1,239.3	1,207.3	1,159.6	1,127.6	1,089.0	1,049.8
TE Gacko 300 MW	1,093.1	1,076.3	1,073.5	1,059.1	1,051.5	1,030.4	1,023.3	1,010.5	997.3
Gasna elektra Gas power plant	-	-	-	-	-	-	-	-	-
Total	15,185.4	15,688.7	15,542.4	15,912.1	15,902.0	16,791.8	16,632.9	16,958.5	17,227.9

Diagram 33: Trajectories of the amount of electricity produced by type of plant in Bosnia and Herzegovina 2022-2030

2.2.3.5 Projections of indicators of technologies for the production of thermal energy

Respecting the decarbonisation criteria in the transformation processes for the production of thermal energy in district heating systems (DHS), this plan envisages an increase in the capacity for the production of thermal energy from biomass, while the capacities that use fossil fuels are reduced. A significant increase is expected in plants for the production of electricity from RES, while there are no plans to increase the capacity of plants burning fossil fuels.

The following diagram shows the trajectories of capacity changes for heat energy production in district heating systems.



	2022	2023	2024	2025	2026	2027	2028	2029	2030
District heating system-petroleum derivatives	77.0	67.4	57.8	48.1	38.5	28.9	19.3	9.6	-
District heating system-natural gas	472.8	486.3	499.9	513.4	526.9	540.4	554.0	567.5	581.0
District heating system-coal	190.0	165.0	140.0	115.0	90.0	80.0	70.0	60.0	50.0
Total	739.8	718.7	697.6	676.5	655.4	649.3	643.2	637.1	631.0

Diagram 34: Target trajectories of capacity for heat energy production in district heating systems by plant types in Bosnia and Herzegovina 2022-2030

2.2.4 Assessment of expected savings and benefits

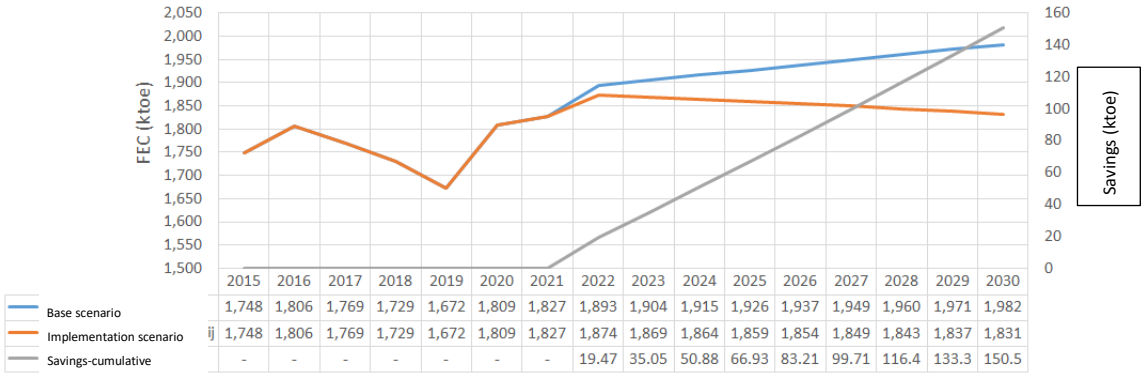
The energy efficiency goals of reducing final energy consumption (FEC), within the framework of this plan in the period 2022-2030, will be systematically achieved by realising savings in final energy consumption. The types of savings, i.e. policies and measures of energy efficiency treated by this plan are as follows:

- Energy savings in the housing sector
- Energy savings in the public sector, services and the commercial sector
- Energy savings in industry
- Energy savings in traffic
- Increasing the efficiency of plants for the production of electricity and thermal energy
- Reduction of losses in the transmission and distribution of electrical and thermal energy

The target savings by years of the planning period are seen as the difference between the value of the Base scenario and the value of the Implementation scenario, which is presented by sector of final energy consumption in the following subsections.

2.2.4.1 Energy savings in the housing sector

Energy consumption in the housing sector is determined by reduction targets in the planning period. This goal is the result of the model's projections, and as the difference between the trajectory values of the base and target scenarios.



	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Base scenario	1,748	1,806	1,769	1,729	1,672	1,809	1,827	1,893	1,904	1,915	1,926	1,937	1,949	1,960	1,971	1,982
Implementation scenario	1,748	1,806	1,769	1,729	1,672	1,809	1,827	1,874	1,869	1,864	1,859	1,854	1,849	1,843	1,837	1,831
Savings-cumulative	-	-	-	-	-	-	-	19.47	35.05	50.88	66.93	83.21	99.71	116.4	133.3	150.5

Diagram 35: Target final energy savings in the housing sector by 2030 in Bosnia and Herzegovina

Final energy savings in the residential sector	Verified savings 2010-2018	Target savings 2010-2021	Target savings 2022-2030	Target savings 2010-2030
	Cumulatively			
ktoe	110.34	225.46	150.52	375.98
PJ	4.62	9.44	6.30	15.74

Table 16. Objectives of cumulative savings in the housing sector in Bosnia and Herzegovina for the period 2010-2030

Savings in the final energy consumption of the housing sector, as well as the instruments for achieving them, are the subject of the Building Renewal Strategy in Bosnia and Herzegovina. When it comes to the buildings of the residential sector and the types of measures they implement, it is interesting to define the shares of different types of energy use. So, for example, heating buildings and increasing the energy efficiency of buildings in that segment occupies the most important place in the creation of adequate renovation programmes. Other types of use are energy consumption for sanitary hot water, cooking, and household devices that use energy. Certainly, energy efficiency policies and measures in this area should result in a reduction of final energy consumption both on the side of required energy, which depends on the thermal characteristics of the building envelope, and delivered energy, which includes the efficiency of technical systems for energy production in buildings.

2.2.4.2 Energy savings in the public sector, services and commercial sector

Energy consumption in the public sector and services includes buildings of central authorities, buildings of other public bodies, commercial buildings, and consumption in various utility services. The target savings in this sector result from the model projections, as the difference of the trajectory values of the base and implementation scenarios.

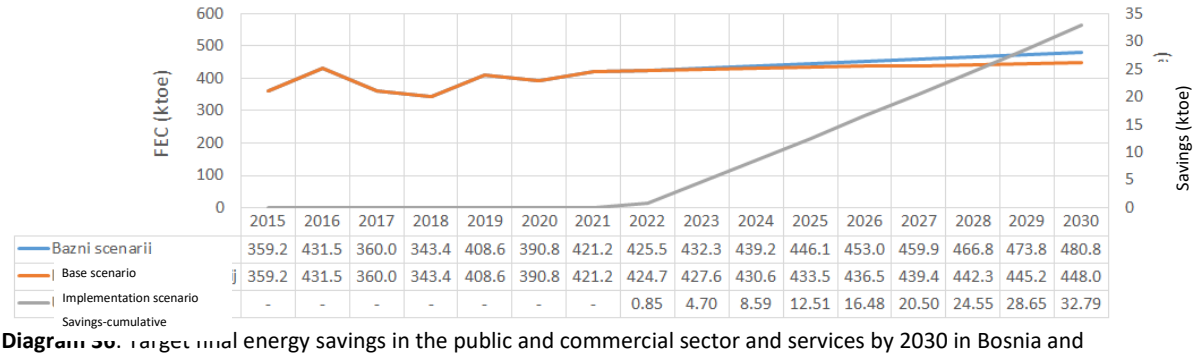


Diagram 36: Target final energy savings in the public and commercial sector and services by 2030 in Bosnia and Herzegovina

Final energy savings in the public and commercial sector and services	Verified savings 2010-2018.	Target savings 2010-2021.	Target savings 2022-2030.	Target savings 2010-2030.
	Cumulatively			
ktoe	70.46	87.65	32.79	120.44
PJ	2.95	3.67	1.37	5.04

Table 17. Objectives of cumulative savings to the public and commercial sector and services in Bosnia and Herzegovina 2010-2030

In order to programmatically separate public sector buildings (central government buildings and buildings of other public bodies) from commercial buildings and utilities, scenarios and targets for the public sector only are presented here separately, as follows:

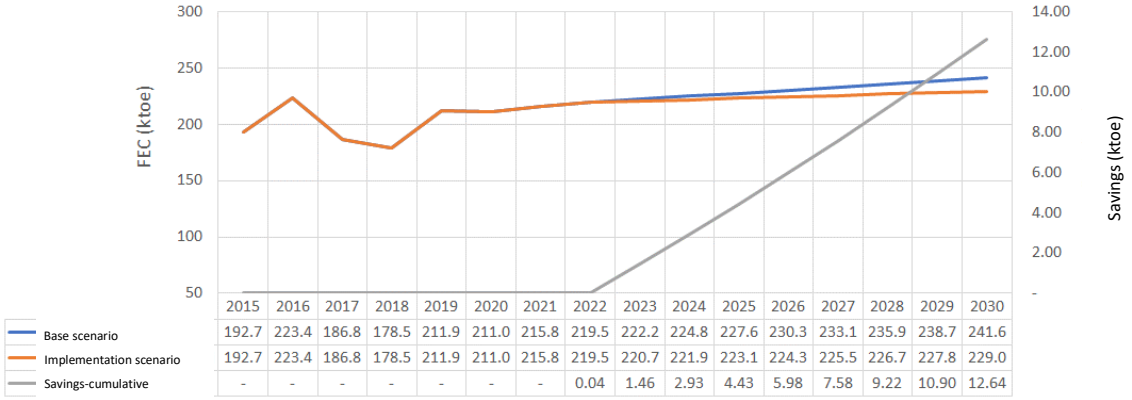


Diagram 37: Target final energy savings in the public sector by 2030 in Bosnia and Herzegovina

Looking only at the commercial sector and services, the target savings are as follows:

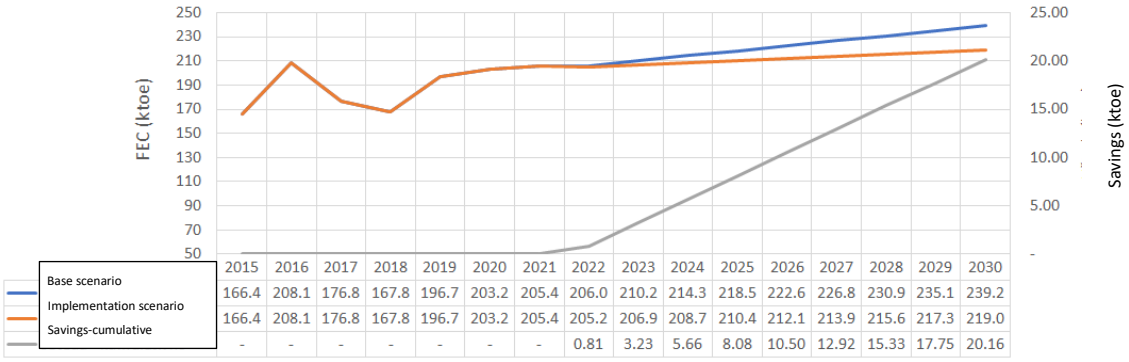
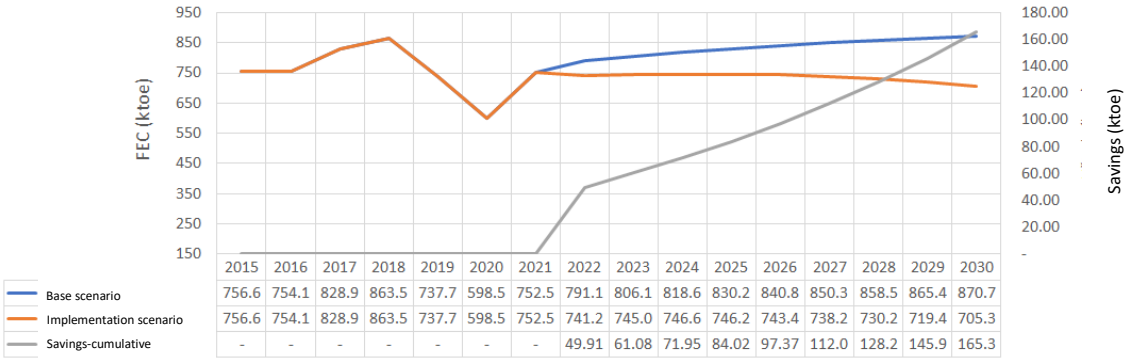


Diagram 38 Target final energy savings in the commercial sector and services by 2030 in Bosnia and Herzegovina

2.2.4.3 Energy savings in industry

The target savings of reducing the final energy consumption in the industry sector in Bosnia and Herzegovina are determined on the basis of the overall model of the energy sector, and they are correlated with the savings from other sectors, with which they make up the savings for the referenced periods.

The model provides projections of final energy consumption, according to the base and implementation scenarios, as shown in the following diagram:



	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Base scenario	756.6	754.1	828.9	863.5	737.7	598.5	752.5	791.1	806.1	818.6	830.2	840.8	850.3	858.5	865.4	870.7
Implementation scenario	756.6	754.1	828.9	863.5	737.7	598.5	752.5	741.2	745.0	746.6	746.2	743.4	738.2	730.2	719.4	705.3
Savings-cumulative	-	-	-	-	-	-	-	49.91	61.08	71.95	84.02	97.37	112.0	128.2	145.9	165.3

Diagram 39: Target final energy savings in industry by 2030 in Bosnia and Herzegovina

Final energy saving in industry	Verified savings 2010-2018.	Target savings 2010-2021.	Target savings 2022-2030.	Target savings 2010-2030.
	Cumulatively			
Ktoe	9.08	18.39	165	183.39
PJ	0.38	0.77	6.91	7.68

Table 18. Objectives of cumulative savings in industry in Bosnia and Herzegovina 2010-2030

2.2.4.4 Energy savings in transport

This plan does not envisage savings in energy consumption in transport.

2.2.5 Other goals for BiH, including long-term goals or strategies and sectoral goals

In addition to the main indicative goals for the reduction of primary and final energy consumption, as well as the established target sectoral savings of final energy and the reduction of losses in the production, transmission and distribution of electricity and heat, this plan establishes special energy efficiency goals, which directly derive from the Energy Efficiency Directive 2012 /27/EU. Additional objectives are as follows:

- Goals from the Building Renewal Strategy by 2050 (Article 4 of EED)
- Objectives from the obligation to renovate central government buildings (Article 5 of EED)
- Goals for reducing energy consumption implemented through obligation schemes for energy efficiency (Article 7 of EED)
- Targets for nearly zero energy buildings (NZEB)

2.2.5.1 Goals from the Building Renewal Strategy by 2030 (Article 4 of EED)

The strategy for the renovation of buildings in Bosnia and Herzegovina foresees the renovation of the stock of residential buildings by 2030 according to the following parameters:

- Annual renovated area, 1.32 million m^2
- Annual renewal rate, 2.2%
- Total renovated stock of residential buildings, 23.2%
- Cumulative saving of final energy until 2030, 183.35 ktoe

On the other hand, the renovation of the non-residential building stock implies the following objectives:

- Annual renovated area, 0.298 million m^2
- Annual renewal rate, 1.91-1.67 %
- Total renovated stock of non-residential buildings, 18.4%
- Cumulative saving of final energy by 2030, 35.75 ktoe

2.2.5.2 Objectives from the obligation to renovate central government buildings (Article 5 of EED)

The annual goal of renovation of the heated and/or cooled surface of central government buildings of 1%, under the jurisdiction of FBiH institutions, for the period 2022-2030 is 2,450 m^2.

2.2.5.3 Goals for reducing energy consumption implemented through EEO (Article 7 of EED)

By introducing the mechanism of Obligatory schemes for the distribution of incentives for the implementation of energy efficiency measures, primarily in the housing sector, the goals of reducing final energy consumption should be realised, according to the following target schedule and scope:

- 2023: 15.99 ktoe
- 2024: 31.98 ktoe (cumulative)
- 2025: 47.97 ktoe (cumulative)
- 2026: 63.96 ktoe (cumulative)
- 2027: 79.95 ktoe (cumulative)
- 2028: 95.94 ktoe (cumulative)
- 2029: 111.93 ktoe (cumulative)
- 2030: 127.92 ktoe (cumulative)

2.2.5.4 Targets for buildings with approximately zero energy consumption (NZEB)

The objectives for the renovation of buildings with approximately zero energy consumption are not determined by this plan, and may be subject to determination in an irregular revision of the plan.

2.3 Dimension: Energy security

In order to ensure a strategic approach to the implementation of the energy security dimension, as part of achieving the overall strategic goal of an integrated energy and climate approach to the decarbonisation of the energy sector in Bosnia and Herzegovina, the structure of expected results in this regard is defined. This structure introduces several basic elements for which it is necessary to systematically monitor their implementation, and for the purpose of quality periodic revision of the entire process. This approach introduces the following elements, as the subject of the implementation of policies and measures and an efficient monitoring and reporting system. These elements are as follows:

- Strategic goals, dimension goals and operational goals
- Indicators

2.3.1 Binding goal of BiH for energy security

The strategic goal of this Dimension is reached by achieving the following goals as defined by the Regulation:

- Strengthening the diversification of energy sources and supplies from third countries in order to increase the energy system resilience
- Reduction of dependence on energy imported from third countries, in order to increase the resilience of domestic and regional energy systems.
- Increasing the flexibility of the energy system, especially with regard to the use of domestic energy sources, consumption management and energy storage.
- Enabling the application of contracts that reduce or interrupt the supply of customers in order to improve the resilience of the energy system.

These goals relate to three key energy sources:

- Oil and petroleum products
- Natural gas
- Electricity

Here, it is important to state that Bosnia and Herzegovina's dependence on the import of energy products is significant (43.5% of energy products are imported). Most of the imports are petroleum products (43.5%), coke and coking coal, whose share in total imports is about 34%, and much less natural gas, about 3%.

The global indicator of energy security is an indicator of dependence on net imports - this indicator measures the level of total net imports as a share of total gross domestic consumption.

This global indicator is used together with sub-indicators for electricity, oil and petroleum products, and natural gas.

Herfindahl–Hirschman Index, HHI – an index that evaluates market concentration and is calculated:

HHI= $\sum_{k=0}^{n} S_k^2$

where: Sk is the market share of supplier k on the market, and n is the number of suppliers.

These are the criteria for evaluating market concentration:

- H below 0.01 indicates highly competitive supply.
- H below 0.15 (or 1,500) indicates an unconcentrated supply.
- An H between 0.15 to 0.25 indicates a moderate concentration.
- H above 0.25 indicates a high concentration.

This indicator is particularly high for petroleum products and natural gas because the largest importer of petroleum products is one company.

2.3.2 Goals for Bosnia and Herzegovina in connection with increasing the diversification of energy sources and supply from third countries in order to increase the resilience of regional and domestic energy systems

2.3.2.1 Oil and petroleum products

According to the data of the BiH Statistics Agency, in 2021, 1,679,542 petroleum products were available. According to the statistics agencies, the structure of importers is such that the HH index is greater than 0.25, which indicates a high market concentration. The Brod refinery was supplied by the JANAF oil pipeline, which ensured security of supply according to the N-1=0 criterion.

It follows from the foregoing that the market concentration of oil supply (importers) is unfavourable because it shows a high concentration. Furthermore, one direction of the pipeline supply represented a high risk for the supply of the Brod Refinery.

The reduced security of supply of oil and petroleum products is affected by non-compliance with the provisions of EU Directive 2009/119 on reserves and storage of oil and petroleum products. The problem of non-adoption of the new decision on fuel quality at the BiH level is also evident.

Based on previous goals and operational goals in the oil and petroleum products sector:

Goal 3-1-1: Oil and petroleum products - Strengthening the diversification of sources of oil and petroleum products and supplies from third countries in order to increase the resilience of the supply system in BiH

Operational objective 3-1-1-1: Diversified sources of supply of oil and petroleum products from third countries

Operational objective 3-1-1-2: Enable domestic oil sources/processing

Operational objective 3-1-1-3: Improve security with adequate reserves of oil and petroleum products

2.3.2.2 Natural gas

According to OTS Gaspromet Pale measurements, 213,379,000 m^3 of natural gas was imported into Bosnia and Herzegovina in 2021. Natural gas is supplied by the Russian company Gazprom, so HH index=1, which is the most unfavourable case.

Natural gas is delivered to Bosnia and Herzegovina via the only gas pipeline from the direction of the Republic of Serbia, so the safety indicator is N-1=0, also the most unfavourable possible.

In addition to the unfavourable indicators mentioned above, it should be noted that the existing interconnection is over 40 years old, which in itself speaks volumes about the degree of threat to security of supply.

"The natural gas sector operates outside European law and practice, without laws and regulatory bodies at the state level. Republika Srpska adopted a law regulating the natural gas sector, which is largely harmonised with the legal acquis of the Energy Community, but, in the absence of a solution at the state level, isolates this entity from the state"[268] "The natural gas market in the Federation of Bosnia and Herzegovina is governed by a decree from 2007, which practically does not adopt any principles of the legal acquis on natural gas, such as regulated access by third parties or market opening and eligibility of all buyers"[269.]

"Bosnia and Herzegovina has not one but two parallel natural gas markets. The market segment in Republika Srpska is deregulated, but virtual trading does not work. The market is prohibited in the Federation."[270] According to the Secretariat of the Energy Community, the assessment of the degree of implementation of obligations in the natural gas sector is 19% with a qualitative assessment that implementation has yet to begin.[271]

"Gas Promet Pale a.d., one of the entity operators of the transmission system, operates according to the network system rules adopted by RERS, which are not in accordance with the network codes on capacity allocation and congestion management. It signed an agreement on interoperability with the Serbian operator. The adopted rules established a virtual point of sale for Republika Srpska, which is currently non-functional. All transactions are based on bilateral contracts."[272]

The following goal and operational goals for the natural gas sector result from the above:

Goal 3-1-2:	Natural gas - Strengthening the diversification of natural gas sources and supply from third countries in order to increase the resilience of the natural gas system
Operational objective 3-1-2-1:	To achieve a satisfactory level of criterion N-1 in order to ensure the diversification of natural gas supply routes
Operational objective 3-1-2-2:	Diversified natural gas supply sources
Operational objective 3-1-2-3:	Ensure the safe functioning of the existing gas pipeline

2.3.2.3 Electricity

In 2022, ENTO-E produced an assessment of the adequacy of the electric power system by 2030 (European Resource Adequacy Assessment, 2022 edition), which showed that LOLE for BiH is within acceptable standards (about 3 h/year) with variations of this indicator during this period. Adequacy assessment was made on the basis of IPRP (ISO BiH). The submitted IPRP also includes the construction of Block 7 in Tuzla, so in the future it will be necessary to update the input data based on new input data.

When assessing the safety of the electric power system, the age of the majority of blocks in thermal power plants must be taken into account, which, for the possible extension of operation, require significant investments, that is, for their replacement, it is necessary to ensure large investments in RES. The regional connection of the organised market has not been established, while the interconnector capacities are satisfactory for the considered period by 2030.

The following goal and operational goals for the sector result from the above.

Goal 3-1-3:	Electricity - Strengthening the diversification of electricity sources and supply from third countries in order to increase the resilience of the electricity system:
Operational objective 3-1-3-1:	Enable the optimisation and transparency of trading on the domestic and regional wholesale market and encourage the construction of nRES;
Operational objective 3-1-3-2:	Ensure the adequacy of the electric power system in the estimated options for the development of production capacities;

[268] Report for 2020-Secretariat of the Energy Community, November 2020
[269] ibid
[270] Report for 2020-Secretariat of the Energy Community, November 2020
[271] ibid
[272] ibid

Operational objective 3-1-3-3: Encourage the development of new services (prosumers, energy communities, aggregators, consumption management, energy storage) in the power system in order to improve the safety (flexibility) of its operation.

2.3.3 Goals for BiH in terms of reducing dependence on energy imported from third countries, in order to increase the resilience of domestic and regional energy systems (optional)

The current situation and perspectives based on current policies are described in the previous text for all three energy sources and will not be repeated here. With regard to dependence on energy imported from third countries, in order to increase the resilience of domestic and regional energy systems, it is necessary to realiSe the following goals and operational objectives:

2.3.3.1 Oil and petroleum products

Goal 3-2-1: Oil and petroleum products - Reducing dependence on imports of oil and petroleum products from third countries, in order to increase the resilience of the domestic energy system

Operational objective 3-2-1-1: Reduce the consumption of oil and petroleum products in the transport sector through decarbonisation and electrification of the sector [273]

Operational objective 3-2-1-2: If the announced research of potential natural gas and oil reserves in the northern part of BiH shows the possibility of profitable exploitation, it is necessary to enable further investments to reduce dependence on oil imports from third countries and thereby increase the resilience of the domestic energy system.

Operational objective 3-2-1-3: Reduce the consumption of oil and petroleum products by electrifying transport and using hydrogen

Operational objective 3-2-1-4: Reduce the consumption of oil and petroleum products by applying energy efficiency measures

2.3.3.2 Natural gas:

Goal 3-2-2: Natural gas - Reducing dependence on the import of natural gas from third countries, in order to increase the resilience of the domestic energy system

Operational objective 3-2-2-1: If the announced studies of potential reserves of natural gas and oil in the northern part of BiH show the possibility of profitable exploitation, further investments will enable the reduction of dependence on the import of natural gas from third countries and thereby increase the resilience of the domestic energy system.

Operational objective 3-2-2-2: Use energy efficiency measures to reduce the consumption of natural gas where it is used and thereby reduce dependence on imports.

Operational objective 3-2-2-3: Reduce dependence on the import of natural gas by means of measures to convert fuel in industry to hydrogen and electricity.

Operational objective 3-2-2-4: By using heat pumps, reduce the need to use natural gas in the heating sector[274]

2.3.3.3 Electricity:

Goal 3-2-3: Electricity - Reducing dependence on the import of electricity from third countries, in order to increase the resilience of the domestic electricity system

All the aforementioned goals and operational objectives that apply to the goal Strengthening the diversification of sources of electricity and supply from third

[273] Processed within the dimension Decarbonisation/Renewable Energy Sources and the dimension Energy Efficiency
[274] ibid

countries in order to increase the resilience of the electric power system, also apply to the goal: Reducing dependence on the import of electricity from third countries, in order to increase the resilience of the domestic electric power system, therefore they will not be repeated here.

2.3.4 Goals for Bosnia and Herzegovina in relation to increasing the energy system flexibility, especially with regard to the use of domestic energy sources, demand management and energy storage

Quantitative indicators for monitoring the process of achieving goals are shown in the Table below. Each of these indicators is calculated according to the established calculation methodology, following the data collection and processing procedures. The collection and processing of data, as well as the accompanying reporting on the progress of the implementation of this plan, is carried out through the *system for monitoring, reporting and verification of the integrated energy and climate plan in Bosnia and Herzegovina* (MRV BiH). The complete MRV system takes into account the monitoring and reporting requirements of Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action[275].

2.4 Dimension: Internal energy market

One of the pillars of the successful decarbonisation of the energy sector is a functionally organised market for energy products, both locally and regionally, and eventually the pan-European market. A successful market enables optimisation of development and use of natural resources, integration of renewable sources, participation of prosumers and energy communities in decarbonisation, aggregation of distributed resources and management of consumption. The market with the previously described characteristics is an important factor in ensuring the security of supply, including the adequacy and flexibility of the energy system.

2.4.1 Electric power interconnection

The EU has set goals for interconnections of 10% in 2020 and 15% in 2030. These goals form the ratio of Net Transfer Capacity (NTC) and installed capacity in electricity production of each country.

In relation to this criterion, the Regulation also sets three additional sub-criteria for evaluating the degree of power interconnection, which are defined as follows:

- The difference between the wholesale prices of the local and regional markets is greater than 2 Eur/MWh because there are limitations in the transport capacities between connected markets
- The nominal capacity of the interconnecting lines should be greater than 30% of the peak load of the system
- The nominal capacity of interconnecting lines should be greater than 30% of the installed capacity of RES

Documents are important for the analysis and evaluation of the degree of interconnection:

- "Long-term transmission network development plan 2021-2030", Elektroprenos BiH, 2021
- "Indicative Production Development Plan 2022-2031", ISO BiH, 2021

According to the study[276] all criteria regarding the interconnection of BiH with neighbouring systems are met for the various options for the development of the electric power system. Therefore, the degree of interconnection, the difference in prices, the ratio of nominal capacity of connecting lines and peak power and the ratio of nominal capacity and installed capacity of renewable sources in BiH do not form obstacles for the integration of the BiH market with the markets in the region by 2030.

For the evaluation of the situation according to the value criterion of the difference in the wholesale prices of the local and regional market of 2 Eur/MWh, the important facts are:

- There is no organised market in Bosnia and Herzegovina, so it is not possible to compare domestic wholesale prices with other organised markets in order to assess whether a possible difference is due to restrictions on interconnections between two connected markets.

[275] Cyber security is not covered by the Regulation, although it is important from the aspect of system management
[276] Electricity Interconnection Targets in the Energy Community Contracting Parties, Energy Community, February 2021

- The indicators listed in the analysis of other criteria show that the capacities of interconnecting lines, in the event that an organised wholesale market is established in BiH, would not be the cause of the price difference even in 2030.
- The difference in prices will arise (eventually) after the application of the ETS mechanism in case BiH decides to use coal-fired thermal power plants while neighbouring systems (and beyond) build new capacities based on renewable energy sources. This difference, however, will not be due to the limitation of the capacity of the interconnecting lines.

Data on peak consumption (2035 MW in 2031) [277] and the structure and impact of RES capacity (World Bank study) [278]) and the nominal capacity of interconnecting lines show that the set criteria will be met by 2030.

2.4.1.1 The level of electricity interconnection that Bosnia and Herzegovina plans to achieve in 2030

Operational objectives of Goal 4-1:	Strengthening of power interconnection
Operational objective 4-1-1:	Strengthen interconnection with neighbouring systems in order to strengthen regional interconnection. Realise planned interconnection lines with neighbouring systems
Operational objective 4-1-2:	In the event that it proves necessary, and on the basis of the established potentials and planning for the eventual construction of RES in the described area, to strengthen the interconnection of the two electric power systems (BiH and the Republic of Croatia).

2.4.1.2 Nominal transmission capacity of connecting lines below 30% of peak load; - satisfied

2.4.1.3 Nominal transmission capacity of connection lines below 30% of the built production capacity from renewable sources - satisfied

2.4.2 Energy transmission infrastructure

The infrastructure for electricity transport should enable the evacuation of electricity from all production facilities, delivery to the place of consumption, while ensuring that the system safety and flexibility criteria is met. For consideration of this aspect, the key document is the abovementioned document of Elektroprenos BiH: "Long-term transmission network development plan" (Plan) and "IPRP" of ISO BiH.

The infrastructure for the transport of natural gas should enable the safe download of the energy source at the entrances to the system and delivery to the consumer centres.

Electric power infrastructure:

When creating the document "Long-term plan for the development of the transmission network", Elektroprenos starts from the criteria used to assess the condition and needs of the development of the transmission network, and based on the analysis, creates a plan for the construction of new and modernization of existing facilities.

The applied approach and criteria for including objects in the Plan are, among others:[279]

- The basis for creating the Plan is the IPRP prepared by ISO BiH,
- By analysing power flows and voltage conditions for normal operating conditions, load values of transmission network elements and voltages are checked in relation to established limit values, and a decision is made to include facilities in the Plan,
- Elements of the transmission network for which there are indications that they will reach overload are included in the Plan,
- Elements of the transmission network that do not meet the N-1 criterion are included in the Plan,
- At the border of the transmission and distribution network, in principle, criterion N-1 must be met,
- The Plan also includes facilities for which different operating conditions indicate the need for construction/addition/reconstruction

[277] Electricity Interconnection Targets in the Energy Community Contracting Parties, Energy Community, February 2021
[278] Bosnia and Herzegovina Generation Expansion Planning Study for 2023-2050 (NECP scenarios), October 2022
[279] For more information see the document "Long-term transmission network development plan 2021-2030"

An important characteristic of the current state of the transmission network is the presence of high voltages in the 220 kV and 400 kV networks in Bosnia and Herzegovina and in the region.

From the perspective of the future construction of renewable energy sources, the problem of inconsistency in the process for issuing permits for the construction and connection of new renewable energy sources and the planning and realisation of the construction of new facilities of the 110 kV network (and networks of higher voltage levels, if necessary) has been observed, which must be built in areas with the greatest potential for construction (Herzegovina and south-western Bosnia). The Elektroprenos plan does not include facilities for the connection of renewable energy sources, since renewable energy facilities are not included in the IPRP, which may cause a delay in the connection to the transmission network of the production facilities that will be built. This is especially important due to the expected increased interest in the construction of nRES facilities.

Operational objectives of Objective 4-2-1: Development of electricity transmission infrastructure

Operational objective 4-2-1-1:	Build the electric power infrastructure in accordance with the Long-Term Plan for the Development of the Transmission Network
Operational objective 4-2-1-2:	Enable the timely connection of newly built nRES facilities [280]
Operational objective 4-2-1-3:	Ensure the reduction of high voltages in the network to an acceptable level

Natural gas supply infrastructure:

Although the Framework Energy Strategy of BiH, the Energy Development Strategy of the RS and the Development Strategy of the FBiH foresee the construction of new gas pipelines until 2035, there are no corresponding plans for the development of the gas network [281], which needs to be done in the coming period.

It is evident that preparations are underway for the construction of the South Interconnection (Travnik-Posušje - the border of the Republic of Croatia), which is planned to have, in addition to the interconnection function, the function of transporting gas to several consumer centres.

According to the Framework Energy Strategy for Bosnia and Herzegovina, the construction of 17 new gas infrastructure facilities is planned, of which preparatory activities are being conducted on the Southern Interconnection, while for the gas pipeline "New Eastern Interconnection" BiH/Republika Srpska on the route of the border of the Republic of Serbia/BiH: Bijeljina-Banja Luka -Prijedor-Novi Grad, the construction agreement was signed on 16 March 2021.

Operational objectives of Objective 4-2-2: Development of infrastructure for natural gas transportation

Operational objective 4-2-2-1:	If the role of natural gas in the energy transition is defined as essential, ensure the connection of consumer centres with the transport gas system.
Operational objective 4-2-2-2:	Carry out the gasification of consumer centres, provided that the realisation of the Operational objective 4-2-2-1 is planned

2.4.2.1 Key projects for electricity transmission and natural gas transport

The key interconnection projects[282] in the electricity sector by 2030 are:

[280] Harmonisation of procedures for the construction of new facilities for the connection of new production facilities nRES and the transmission network

[281] Provided according to the Law on Gas of RS, Article 47, paragraph 4; and the Decree of the FBiH on the organisation and regulation of the gas industry sector, Article 11

[282] Long-term transmission network development plan 2021-2030, Elektroprenos 2021

No.	Facility name	Year of commissioning
1.	DV 110 kV Srebrenica - Ljubovija	2022
2.	DV 400 kV Višegrad – Bajina Bašta	2025

The main planned infrastructure and interconnection projects in the natural gas sector are:

"Southern interconnection" (Travnik-Posušje - border of the Republic of Croatia)

"New Eastern Interconnection" of BiH/Republika Srpska on the border route of the Republic of Serbia/BiH: Bijeljina-Banja Luka-Prijedor-Novi Grad.

2.4.2.2 Main infrastructure projects foreseen

Infrastructure projects are listed in the Long-Term Plan of Elektroprenos, while those for the natural gas sector are listed in the previous paragraph.

2.4.3 Market integration

2.4.3.1 Goals of BiH related to other aspects of the internal energy market - Increasing the system flexibility

There are two groups of sources of flexibility, technical sources and operational sources of flexibility. Technical sources of flexibility are production facilities, flexibility on the consumption side, warehouses as a source of flexibility and the network itself with its interconnections and internal capacities for using sources of flexibility.

Operational flexibility refers to the way assets are managed in the power system. In addition to the limitations of each technology's capabilities, operational flexibility depends on the regulatory and market environment that determines the way the physical system works and drives system operations. The functioning of the market is one of the essential elements of flexibility.

Analyses of ISO BiH (IPRP), ENTSO-E and the World Bank show that the requirements of adequacy and flexibility of the system are met for 2030 (2031) and in the variant of production facilities defined by ISO's IPRP and in the variant of the ambitious NECP plan for which the analysis was done by the World Bank. However, what should be emphasised are the following facts:

- Electricity prices do not fully reflect production costs
- An organised electricity market was not established, so there was no connection with neighbouring markets, and consequently integration into the regional market did not take place.
- Some participants take part in Pxs in the region
- The existing legislation does not allow the aggregation of distributed resources in any segment, so even if there was an organised market, they would not be able to participate in it.
- The balancing market functions in Bosnia and Herzegovina, but for now, aggregators cannot participate in it, neither in the production segment nor in the consumption of electricity.
- The issue of the contract with the possibility of interruption in supply was partially, but insufficiently, resolved.

The foregoing is the basis for defining operational objectives for increasing the flexibility of the power system:

Operational objectives of Goal 4-3-1:	Increasing system flexibility:
Operational objective 4-3-1-1:	Increase flexibility through the establishment of an organised market in the country and connection with neighbouring markets
Operational objective 4-3-1-2:	Improve flexibility by enabling the establishment and operation of aggregators, storage, connection and integration of new categories of system users (prosumers, energy communities)

Operational objective 4-3-1-3:	Improve competitiveness and the presence of independent suppliers through the elimination of subsidies and bringing wholesale and retail prices to a realistic level so that they fully reflect production costs[283].
Operational objective 4-3-1-4:	By introducing the possibility of redispatching production and redispatching consumption management based on objective, transparent and non-discriminatory criteria.

2.4.3.2 BiH objectives related to non-discriminatory participation of renewable energy sources, management of consumption and storage (optional)

Regarding the situation concerning the market development from the aspect of ensuring non-discriminatory participation of nRES, it is worth noting that:

- Due to the absence of an organised market, the position of RES is unsatisfactory, which is why it is also an obstacle for significant investments in RES.
- The existing incentive system is based on feed-in tariffs
- There are significant administrative obstacles for the construction and integration of renewable energy into the market.

The following goals are defined from these facts:

Operational objectives of Goal 4-3-2:	Non-discriminatory participation of nRES:
Operational objective 4-3-2-1:	By establishing an organised market adapted to the production of electricity from renewable sources (Regulation 2019/943), enable the non-discriminatory integration of nRES
Operational objective 4-3-2-2:	Establish a market-based incentive system for nRES
Operational objective 4-3-2-3:	Enable the connection and integration of new users who produce electricity from nRES into the market [284].
Operational objective 4-3-2-4:	Create a legal framework that will make the process of issuing permits for the construction of renewable energy sources more efficient.

2.4.3.3 Goals of BiH regarding ensuring that consumers participate in the energy system (optional)

The following facts are important for enabling the participation of consumers in the operation of the electric power system through their own production using new technologies, including smart meters:

- The legal prerequisites for the participation of consumers as producers have been partly established, but there are obstacles to realising this in practice.
- There are significant administrative obstacles to building and integrating "prosumers" into the market.
- Legislation partially recognises energy communities.
- The installation of smart meters is underway, but significant investments are needed to complete the process.

The following goals arise from the previous need:

Operational objectives of Objective 4-3-3:	Participation of consumers in the operation of the electric power system through their own production using new technologies

[283] Take into account the recommendations of the DecarboniSation dimension regarding the introduction of the ETS mechanism.
[284] See the work of the USAID-EPA project

Operational objective 4-3-3-1:	With an appropriate policy, enable and encourage the participation of consumers in the operation of the electric power system through their own production using new technologies [285],[286]

2.4.3.4 The goals of BiH in terms of ensuring the adequacy of the electric power system as well as in terms of its flexibility with regard to the production of energy from renewable sources

The text above contains the key facts regarding the flexibility of the electric power system [287] but it should be emphasised that, considering the planned large share of nRES in the future structure of the production capacity, the need for a comprehensive approach to this issue is particularly important.

The goals for this market integration segment are:

Operational objectives of Goal 4-3-4:	Ensuring the adequacy and flexibility of the electric power system considering the participation of nRES
Operational objective 4-3-4-1:	Determine an alternative policy for the development of new production capacities based on nRES and without new thermal power plants[288] and, within this framework, define the needs to ensure the adequacy and flexibility of the system.
Operational objective 4-3-4-2:	Establish an organised market that will facilitate the integration of nRES and the integration of new customers.
Operational objective 4-3-4-3:	Connect with neighbouring markets and integrate into the regional and wider European market.

Operational objective 4-3-4-4: By separating ODS from other functions within a vertically integrated company, ensure equal treatment of nRES and their contribution to the system adequacy and flexibility.

2.4.3.5 Goals of BiH for the protection of energy consumers and improvement of competitiveness on the retail market

Consumer protection in the electric power system is defined by the appropriate legal framework. The common characteristics of the BiH legislation, regardless of which Entity and BD they refer to, is that they define customer protection in a similar way. This protection is reflected in the provision of supply through the public supply system, universal service and reserve supply. In addition to the foregoing, the customer protection system includes obligations related to the existence of a standard contract, informing customers, resolving disputes and compensation for damages, informing about price changes, protecting customers in remote areas and protecting them from disconnection from the network.

This legal framework enables the participation of all customers in the electricity market, but, as stated in the text, there are certain customer protection mechanisms that ensure continuity of electricity supply.

Electricity prices, especially in the household category, do not fully reflect production costs. Significant subsidies in the production of electricity have been identified, so if they were eliminated, prices on the retail market would be higher.

At the same time, the prices on the organised wholesale market in the region and beyond are higher than the calculative prices of domestic production calculated into prices for end customers in retail, and because of this, independent suppliers can hardly compete with domestic suppliers who are part of the incumbents.

Due to the aforementioned, there is no significant participation of independent suppliers in the retail market.

Based on the foregoing, the following goals are defined:

[285] See the work of the USAID EPA project in this area
[286] See the work of GIZ in the area of incentive systems
[287] "Flexibility of the electric power system is defined as the ability of the system to reliably and cost-effectively manage variable and unpredictable behaviour of consumption and supply in all time horizons" -IEA, 2018
[288] See IPRP 2022-2031 ISO BiH 2021

Operational objectives of Goal 4-3-5:	Consumer protection and improvement of competitiveness on the retail market
Operational objective 4-3-5-1:	Establish electricity prices that fully reflect production costs[289], improve tariffs for network use, use of smart meters, defining conditions for new categories of system users and create conditions for competitive participation of independent suppliers on the retail market.
Operational objective 4-3-5-2:	Introduce market principles in supply through the mechanism of universal service and public supply.

2.4.4 Energy poverty

The transition to market-based customer supply must be accompanied by an appropriate vulnerable customer protection policy. This is especially important for the period that lies ahead for BiH, which is the construction of new production facilities that will replace the existing ones that are nearing the end of their life, and these investments will be reflected in the operating costs of the electric power system. Electricity prices will certainly be affected by the introduction of the ETS mechanism or "Carbon Border Adjustment" mechanism. Both mechanisms will result in an increase in prices. Furthermore the consequence of the elimination of subsidies in the sector will affect the increase in prices for subsidised categories of customers.

2.4.4.1 BiH goals regarding energy poverty (optional).

In the new laws and drafts of new laws on electricity, the obligation of a systematic approach to the issue of protecting consumers who cannot afford an adequate supply of energy has been overlooked. Therefore, the goals for this area are as follows:

Operational objectives of Goal 4-4:	Ensure adequate treatment of energy poverty
Operational objective 4-4-1:	Satisfy vulnerable citizens with an adequate policy.
Operational objective 4-4-2:	With the policy of protecting vulnerable citizens, provide the necessary funds for the policy implementation of the
Operational objective 4-4-3:	Support the implementation of the protection programme through a policy of combined measures from different dimensions (including fiscal policy).
Operational objective 4-4-4:	By educating socially vulnerable citizens, support the implementation of their protection policy, including the application of energy efficiency measures.

2.5 Dimension: Research, innovation and competitiveness

In order to ensure a strategic approach to the implementation of the research, innovation and competitiveness dimension, as part of achieving the overall strategic goals of the National Energy and Climate Plan (NECP) in Bosnia and Herzegovina in all dimensions, strategic goals, operational goals, indicators and expected results in this dimension were defined.

The segment of research and innovation in Bosnia and Herzegovina is not at a satisfactory level. Compared to neighbouring countries, allocations for scientific research and research and development activities are the lowest in percentage terms of GDP and amount to 0.3% of GDP. However, this segment can and should be the strength of Bosnia and Herzegovina's economy, which will additionally contribute to solving numerous problems and ensuring the overall development of the economy in the country.

[289] It is contradictory at first glance, but it is necessary to gradually adjust the prices to the new conditions that will appear after the introduction of the ETS mechanism. At the same time, the increase in competitiveness opens up the possibility of alternative supply of customers compared to supply from the incumbent.

The key document that deals with scientific research and research development activities in BiH is the Science Development Strategy in BiH for the period 2017-2022. The following are stated as some of the basic goals recognised in the Strategy:

- ensuring the leading role of science and technology as a factor in the country's long-term development;
- increase in financial allocations of the public and private sector in BiH for the field of science and technology based on short-term and long-term defined priorities and plans;
- ensuring continuous support for innovation, technology transfer, and commercialisation and application of scientific achievements and reinvestment in industrial research and development in the field of energy and climate.

For scientific-research and research-development activity to become the basis of the development of the BiH economy, it is necessary to pay special attention to this segment from the point of view of structural, organisational, and personnel and financial strengthening. A strengthened, regulated and supported area of Research and Development can additionally contribute to solving numerous problems and ensuring the overall development of the economy in the country, especially those segments whose output results are key in the process of energy transition and reaching the goals of the NECP.

In this respect, promotion of the Innovation and Competitiveness Research segment should be a priority until 2050. It is necessary to increase investments in development, research, innovation and competitiveness, whereby these investments should continuously increase, in order to reach the European Union average of 3% of GDP by 2040.

The goal is certainly to support and promote cooperation on technical and technological development and innovation at the level of industry and institutes and universities. Research and innovation should primarily be focused on applied research, up to the transfer of developed technologies and innovations to the market. The process of education, research, transfer and application of new technologies and innovation solutions are the cornerstone of the process of energy transition and implementation of NECP goals. Technologies based on renewable energy sources, implementation of measures and technologies to increase energy efficiency, and the so-called smart technologies and smart concepts of networks and systems enable the transition from a traditional energy system to a system with low carbon emissions.

Research and development of innovative energy technologies, as well as their promotion and use, rely on public funding and funding from the private sector. This cooperation should be deepened. Part of the funds to support research and innovation should be provided through European funds for development and research (Horizon Europ, Interreg Danube, Erasmus, WIBIF, Innovation Fund, IPA ...), through participation in projects, and also from the Innovation Fund from tax on emissions CO_2, entering the EU ETS system.

The revision of the ETS Directive established a financial mechanism to support the modernisation of the energy sector and industrial facilities in the period 2021-2030. The funds of the Innovation Fund are used for investments in: modernisation of industrial production, production of electricity from renewable sources, improvement of energy efficiency, energy storage and modernisation of energy networks, energy efficiency in traffic, buildings, agriculture and waste management. In the initial phase, this fund is available only to EU members and predominantly to those whose GDP is below 60% of the European average, BiH needs to meet the conditions to enter the EU ETS, so that this fund is available to research and development institutions.

Within the NECP fifth dimension, it is necessary to identify sufficient development guidelines that will enable the technical and personnel conditions to achieve the set goals of the NECP. Achieving the goals of the NECP implies a complete restructuring of the energy sector and the introduction of new technologies into the energy system (production, transmission, distribution and consumption of energy), which will ultimately lead to a new concept of energy, especially the power system, i.e. to its complete decentralisation. In this regard, the implementation of RES-based energy production technologies and the implementation of smart technologies in transmission and distribution networks will play a key role. Changing the energy concept implies a complete restructuring of the socio-economic milieu in accordance with the European strategy for energy and climate.

These are the following parallel and interactively linked framework objectives:

- Long-term assurance of a positive social environment for a just transition of the Energy Sector in an environmentally acceptable and economically sustainable manner;
- Development and implementation of new and improvement of existing low-carbon technologies, as well as technologies for increasing energy efficiency in the energy sector;

- Introducing the concept of circular economy for the inclusion of secondary organic raw materials in energy production;
- Establishment of new and strengthening of existing research and development capacities in the field of energy, economy, ecology and strategic planning and management of the energy sector;
- Continuous adaptation of legal frameworks and measures, ensuring political and economic support for the energy sector, evaluation of the effects of energy sector reform,
- Timely information and education of public opinion in order to achieve public, continuous support for the processes of energy transition and implementation of the NECP

The general goal of the research, innovation and competitiveness dimension is that through intensified research, innovation and implementation of new technologies, innovation of existing ones and restructuring, in the field of energy, prerequisites are created for the successful implementation of the energy transition and implementation of the NECP goals. Achieving the NECP goals requires the development and implementation of sophisticated technologies, especially in the field of RES and IT technologies. Bosnia and Herzegovina is a small country with a modest research and development infrastructure and modest investments in the field of research and development. The focus should be on strengthening the development infrastructure and increasing investment in this area with the aim, first of all, of implementing and successfully exploiting new technologies, licensed development of new technologies, innovation and production of components of these technologies for large global and European technical and technological companies (manufacturers of equipment for use hydro energy, wind energy and solar energy) and through the relatively more developed IT sector in BiH, participation in the development of software models, solutions and tools in the field of energy and climate. Also, space for research and development and especially innovation can be found in innovating existing technologies in the field of energy with the aim of increasing energy efficiency, introducing new primary energy sources into the process of co-combustion with coal (SRF/RDF, biomass, biogas) with the aim of suppressing coal and reducing CO_2 emission. Taking into account the available strategic documentation for the development of the energy sector in Bosnia and Herzegovina and the obligations undertaken through the transposition of EU legislation into the legislation of Bosnia and Herzegovina, the strategic and operational goals of the research, Innovation and competitiveness dimension were identified.

The integrated energy and climate plan of Bosnia and Herzegovina defines goals for research, innovation and competitiveness of energy by 2030.

The structure of goals that defines the strategic approach to the implementation of the integrated process of energy and climate in Bosnia and Herzegovina, in the domain of research, innovation and competitiveness, is schematically given below:

2.5.1 BiH goals and objectives for financing public and, if applicable, private research and innovation related to the Energy Union

- Creation of the social environment and infrastructure for the implementation and achievement of the objectives of the NECP Dimension - Research, Innovation and Competitiveness
    - Creating a political and legal framework in the context of the Research, Development and Competitiveness dimension
    - Establishment/strengthening of cooperation between institutions, scientific research and research and development centres at universities and other institutions and industry (public and private sector)
    - Establishment of mechanisms of inter-sectoral coordination, analysis, evaluation and successful implementation (achievement) of goals
    - Preparation of public changes for understanding and acceptance of the process of energy transition and implementation of goals
    - Informatisation and digitization of the energy sector

- Establishment of institutional infrastructure to support the Research, Development and Competitiveness Dimension
    - Identification and mapping of available capacities for scientific research and research and development activities
    - Establishment of new and strengthening of existing scientific research and research and development capacities in the field of energy and climate

- Simplification of the registration procedure of START-UP companies
- Encouraging patents and innovations in the real sector through special incentives

- Increasing investment in scientific research and research and development work
  - Increasing investments in science (gradually from the current 0.3% to 1.5% of GDP by 2030, with the aim of harmonizing with the EU average (3%) by 2040)
  - Intensify cooperation with international institutions with the aim of involvement in international development projects, especially those financed by the EU (Horizon Europe, Interreg Danube, Erasmus, WIBIF, etc.)

- Introducing mechanisms to encourage innovation in the field of energy and climate
  - Simplification of the patent application and acceptance mechanism
  - Introducing a mechanism to encourage patents and innovations in research and development institutions, especially in industry

2.5.2 BiH goals for 2050 related to the promotion of clean energy technologies

- Strengthening the competences of scientific and professional personnel in the field of energy and climate
  - Reform of educational programmes and alignment with new trends in the field of energy, chemistry and sustainable development
  - Organizing permanent training of employees from companies and institutions in the field of energy, technology, environmental protection, sustainable development at universities and local academies (lifelong learning)
  - Creating prerequisites for the development of strategic partnerships and involvement in international development projects related to the energy transition and NECP
  - Creating a favourable environment for attracting young people to study committees with teaching subjects in the context of the energy transition and the implementation of the NECP
  - Certification of competence and excellence for scientific research and research and development subjects in the field of energy, technology and climate

3. Policies and measures

3.1 Dimension: Decarbonisation

3.1.1 Greenhouse gas emissions and sinks

3.1.1.1 General policies and measures to reduce emissions and eliminate greenhouse gases

1A-0	Established general framework for reduced greenhouse gas emissions	
No	**Measure**	
1A-0-1	**Adoption of climate change strategy at the state, Entity, and Brčko District levels**	
	In BiH, or the RS and FBiH Entities and Brčko District, an integral climate change strategy has not yet been developed. Climate change is represented in the National Communications under the UNFCCC and Adaptation and Low Emission Development Strategy. As climate change is a very complex political, economic, scientific, and environmental issue, it is necessary to adopt a climate change strategy at the Entity and state levels.	
	Competent authorities:	Council of Ministers of BiH, governments of the Entities and Brčko District, Parliamentary Assembly of BiH, National Assembly of Republika Srpska, Parliament of Federation of BiH
	Type of measure:	Strategic framework
	Sources of funding:	International Technical Assistance
	Effect:	Adopted strategic commitment to combat climate change, which also includes decarbonisation
	Monitoring method:	Adoption in parliaments and/or by governments
	Connection with other objectives:	Dimension 1B, Dimension 2, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	2024
1A-0-2	**Drafting and adoption of law on climate change**	
	There is no law on climate change in BiH or at lower levels of government. In order to implement the measures of decarbonisation and adaptation to climate change, it is necessary to adopt the law on climate change at all levels in accordance with the competences	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Council of Ministers of BiH, Ministry of Spatial Planning, Construction and Environment in Government of RS, Ministry of Environment and Tourism of FBiH, Ministry of Energy, Mining and Industry of FBiH, Ministry of Energy of RS, Government of Brčko District, Parliament of BiH, Parliament of Federation of BiH, National Assembly of Republika Srpska
	Type of measure:	Regulatory
	Sources of funding:	Projects in implementation phase; Environmental Protection and Energy Efficiency Fund of RS, Environmental Protection Fund of FBiH, UNDP
	Effect:	Adopted legal framework to combat climate change, which also includes decarbonisation
	Monitoring method:	Adoption in parliaments
	Connection with other objectives:	Dimension 1B, Dimension 2, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	2024
1A-0-3	**Transposition of Regulation on governance of the Energy Union and climate action (EU) 2018/1999**	
	This Regulation establishes the necessary legislative basis for reliable, inclusive, cost-effective, transparent, and predictable governance of the energy union and climate action ('governance mechanism'), which ensures the achievement of objectives of the energy union for 2030 and long-term objectives in accordance with the Paris Climate Change Agreement 2015, which followed the 21st Conference of Parties to the United Nations Framework Convention on Climate Change ('Paris Agreement'), through complementary, consistent, and ambitious efforts by the Union and its member states, while at the same time limiting administrative complexity. In order to implement successfully the requirements from the Sofia Declaration with reference to energy and climate, it is necessary to establish decarbonisation committees at the state, Entity and BD levels.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Ministry of Energy and Mining of RS, Ministry of Spatial Planning, Construction and Environment RS, Ministry of

		Energy, Mining and Industry of FBiH, Ministry of Environment and Tourism of FBiH, Government of BD BiH
	Type of measure:	Regulatory
	Sources of funding:	Budgets of institutions and International Technical Assistance.
	Effect:	Adopted legal framework for the implementation of requirements from the Sofia Declaration with reference to energy and climate.
	Monitoring method:	Reporting on the progress of transposition of the EU Clean Energy Package.
	Connection with other objectives:	Dimension 1B, Dimension 2, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	2023
1A-0-4	**Implementation of Covenant of Mayors for Climate and Energy**	
	The implementation of the agreement will contribute to the enforcement of the European Union's climate and energy objectives regulations. The signatories of the agreement support a common vision for the year 2050, which includes accelerating the decarbonization of their territories, strengthening capacity to adapt to the inevitable impact of climate change, and providing citizens with access to safe, sustainable, and affordable energy. In order to translate their commitment from theory into practical measures and projects, the signatories of the agreement commit to delivering the Sustainable Energy and Climate Action Plan (SECAP). The key elements of the SECAP include: ▪ Development of Sustainable Energy and Climate Action Plans (SECAPs) for cities and municipalities that are signatories to the Covenant of Mayors Agreement, and adopting a common approach to addressing climate change mitigation and adaptation within two years of joining the agreement. ▪ Monitoring progress in achieving the goals set out in the SECAP, which include measures for mitigation, adaptation, and addressing energy poverty. Progress reports on the implementation of the plan will be submitted to the relevant governmental ministries and the Ministry of Environment and Tourism. ▪ Alignment of monitoring and implementation activities outlined in individual SECAPs with the Integrated Energy and Climate Plan. ▪ Introduction of a monitoring and reporting system at the local level, as required by the SECAP, to ensure data submission and integration with National Energy and Climate Plan (NECP) reporting. ▪ Recognition of SECAP as a relevant document at the local level through legislation in Bosnia and Herzegovina/Republika Srpska/Federation of Bosnia and Herzegovina. This will reduce the burden of numerous different local plans that are legally required. The SECAP serves as a comprehensive plan, with other plans potentially being integral parts of it.	
	Competent authorities:	Cities and municipalities
	Type of measure:	Strategic framework at the local level
	Sources of funding:	International funds and projects, budgets of cities and municipalities
	Effect:	Established a systemic approach to reduce greenhouse gas emissions by connecting all levels of government.
	Monitoring method:	Number of municipalities and cities signatories to the Covenant, number of prepared SECAPs, progress report on plan implementation at the level of municipality or city
	Connection with other objectives:	Dimension 1B, Dimension 2, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	2030
1A-0-5	**Just transition of the energy sector**	
	The implementation of NECP and implementation of the planned measures in the decarbonisation process will lead to a reduction in the number of jobs in the coal-based energy. It is necessary to implement the completed Roadmap for the transition of coal-rich regions in Bosnia and Herzegovina, which includes the method to manage the transition of coal-rich regions, method for transition, land use change, reskilling of the workforce, opening of new green jobs.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Ministry of Energy and Mining of RS, Ministry of Spatial Planning, Construction and Environment RS, Ministry of Energy, Mining and Industry of FBiH, Ministry of Environment and Tourism of FBiH

	Type of measure:	Strategic framework, Regulatory, Economic, Information, Education
	Sources of funding:	EU, International monetary organisations, Green Climate Fund, companies, Entity and state budgets
	Effect:	Fair decarbonisation
	Monitoring method:	Progress reports on Just Transition, number of new jobs in coal regions that are not associated with coal mining, number of reskilled workers who worked in the mining sector and who have now found employment in new activities.
	Connection with other objectives:	Dimension 1B, Dimension 5
	Deadlines:	2025
1A-0-6	**Reduction of emissions of short-lived climate pollutants in Bosnia and Herzegovina (SLCP)**	
	As a signatory to the Global Methane Pledge, Bosnia and Herzegovina supports a voluntary commitment to reduce global methane emissions by 30% by 2030 compared to 2020 levels. Bosnia and Herzegovina is also one of the first countries in the Western Balkans to include an emissions reduction target in its Nationally Determined Contribution (NDC) to reduce greenhouse gas emissions by 33.2% by 2030 and by 66% by 2050 compared to the levels from 1990. The country is working towards a more ambitious objective of reducing emissions by 2030 in order to achieve climate neutrality by 2050 and meet the ambition of the Energy Community member states. In order to achieve these objectives, Bosnia and Herzegovina is preparing the National Energy and Climate Plans (NECP) in which it will assess scenarios to reduce emissions from the use of coal. The national methane pathway should be consistent with the country's National short-lived climate pollutant Plan (SLCP) to improve priority climate and clean air measures and, ideally, support international commitments, including the Sofia Declaration, Energy Community Treaty, and Paris Agreement, and to inform the Council of Ministers about the potential for methane reduction. The national planning process and the resulting National short-lived climate pollutant plan (SLCP) should contribute to the implementation of the Climate Change Adaptation Strategy and Low Emission Development Strategy of Bosnia and Herzegovina, as well as the National Energy and Climate Plans (NECP). This work should also strengthen national capacities for monitoring and reporting on short-lived climate pollutants and developing an integrated framework for monitoring, reporting, and verifying emissions of greenhouse gases and short-lived pollutants. By developing policies that integrate climate and clean air objectives, countries can maximise the benefits of actions, helping to reduce the rate of short-term warming - which contributes to the long-term objectives of the Paris Agreement, at the same time realising immediate, local benefits for public health and well-being and supporting the achievement of many sustainable development goals (SDGs).	
1A-0-6.1	**Development and adoption of short-lived climate pollutant plan of Bosnia and Herzegovina (SLCP)**	
	The national short-lived climate pollutant plan (SLCP) that includes, as a minimum, the following components: ▪ **Emission inventory**: The plan should include a comprehensive assessment of current and project emissions of short-lived pollutants (SLCP) in Bosnia and Herzegovina. This inventory should cover the main sources of SLCPs, such as methane, black carbon, and hydrofluorocarbons (HFCs). ▪ **Emission reduction strategies**: The plan should identify and prioritise economically efficient strategies to reduce SLCP emissions. These strategies may include measures such as improving energy efficiency, promoting clean and renewable energy sources, implementing sustainable agricultural practices, and adopting cleaner technologies. ▪ **Policy framework**: The plan should define the policy measures and regulations that will be implemented to support emission reduction strategies. This may include setting emission reduction targets, establishing emission standards, providing incentives for the adoption of cleaner technologies, and promoting research and development in the SLCP reduction. ▪ **Monitoring, reporting and verification (MRV)**: The plan should include provisions for monitoring, reporting, and verification of progress in reducing SLCP emissions. This may include establishing a robust MRV framework, improving information collection and analysis capabilities, and ensuring transparency and accountability in reporting results. ▪ **Integration with national climate and energy plans**: The plan should be aligned with broader national climate change and energy strategies, such as the Climate Change Adaptation and Low Emission Development Strategy and National Energy and Climate Plans (NECP). This integration will ensure coherence and synergies in efforts to deal with climate change and air pollution. ▪ **International obligations**: The plan should demonstrate Bosnia and Herzegovina's commitment to international treaties and initiatives regarding the reduction of SLCP	

	emissions. This includes alignment with the goals of the Paris Agreement, Energy Community Treaty and other relevant international frameworks. By including these essential components, the National Plan for SLCP will provide a comprehensive pathway for Bosnia and Herzegovina to reduce effectively short-lived pollutants and contribute to the global climate and air quality goals.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Ministry of Spatial Planning, Construction and Environment in Government of RS, Ministry of Environment and Tourism of FBiH, Government of Brčko District
	Type of measure:	Planning
	Sources of funding:	Projects in implementation phase; Environmental Protection and Energy Efficiency Fund of RS, Environmental Protection Fund of FBiH
	Effect:	Adopted legal framework to combat climate change, which also includes decarbonisation
	Monitoring method:	Adoption
	Connection with other objectives:	Dimension 1B, Dimension 2, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	2024
1A-0-6.2	**Development and adoption of the Roadmap to reduce methane emissions in Bosnia and Herzegovina**	
	The national methane pathway developed in accordance with the modality agreed with the CCAC Secretariat. Implementers developing methane pathways should also participate in CCAC's Methane Roadmap Action Programme (M-RAP), which provides virtual workshops on where to find information, tools, and guidelines for analysis. As a minimum, the national methane pathway should include: ▪ **Emission inventory:** A comprehensive assessment of methane emissions, including major sources such as agriculture, energy, waste management, and natural gas systems. ▪ **Emission reduction strategies**: Identification and prioritisation of economically efficient strategies to reduce methane emissions, including measures such as improved waste management practices, methane capture and utilisation, agricultural management techniques, and detection and repair of leaks in energy systems. ▪ **Policy and regulatory framework:** Development of policies, regulations, and incentives that support the implementation of strategies to reduce methane emissions. This may include setting emission reduction targets, establishing regulatory standards, promoting research and development, and providing financial incentives for methane emission reduction projects. ▪ **Monitoring, Reporting and Verification (MRV):** Establishing a robust monitoring, reporting, and verification system for monitoring methane emissions, tracking progress in reducing emissions, and verifying the results achieved.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Ministry of Spatial Planning, Construction and Environment in Government of RS, Ministry of Environment and Tourism of FBiH, Government of Brčko District
	Type of measure:	Planning
	Sources of funding:	Projects in implementation phase; Environmental Protection and Energy Efficiency Fund of RS, Environmental Protection Fund of FBiH
	Effect:	Adopted legal framework to combat climate change, which also includes decarbonisation
	Monitoring method:	Adoption
	Connection with other objectives:	Dimension 1B, Dimension 2, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	2024
1A-0-6.3	**Establishment of MRV system for emissions of short-lived pollutants**	
	The essential elements for establishment of MRV systems for emissions of short-lived pollutants (SLCP) may include: ▪ **Monitoring methodology:** Defining a standardised methodology for monitoring SLCP emissions from different sectors, taking into account the specific characteristics and challenges of each sector.	

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Information collection: Identification of relevant sources of information on SLCP emissions, such as monitoring measuring stations, surveys, statistical data, emission registers, industry reports, and other relevant sources.
Reporting: Development of a system for collecting, processing, and reporting on SLCP emissions, including defining report formats and procedures for submitting reports by relevant sectors.
Verification: Establishing mechanisms for verification of collected information on SLCP emissions to ensure reliability and accuracy of reports.
Capacity building: Providing training and support to relevant institutions and experts in Bosnia and Herzegovina for the development of necessary skills and capacities for the implementation of MRV system for SLCP emissions.
Coordination and cooperation: Establishing mechanisms for coordination and cooperation between relevant institutions, sectors, and international partners for the efficient implementation of MRV system.
Continuous improvement: Establishing mechanisms for regular assessment and improvement of the MRV system to ensure its efficiency, accuracy, and compliance with international standards and practices.

These essential elements will enable the establishment of a reliable and efficient MRV system for emissions of short-lived pollutants, which will support monitoring, reporting, and verification of progress in reducing SLCP emissions in Bosnia and Herzegovina.
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<tr><td></td><td>Competent authorities:</td><td>Ministry of Foreign Trade and Economic Relations of BiH, Ministry of Spatial Planning, Construction and Environment in Government of RS, Ministry of Environment and Tourism of FBiH, Government of Brčko District</td></tr>
<tr><td></td><td>Type of measure:</td><td>Planning</td></tr>
<tr><td></td><td>Sources of funding:</td><td>Projects in implementation phase; Environmental Protection and Energy Efficiency Fund of RS, Environmental Protection Fund of FBiH</td></tr>
<tr><td></td><td>Effect:</td><td>Adopted legal framework to combat climate change, which also includes decarbonisation</td></tr>
<tr><td></td><td>Monitoring method:</td><td>Adoption</td></tr>
<tr><td></td><td>Connection with other objectives:</td><td>Dimension 1B, Dimension 2, Dimension 3, Dimension 4, Dimension 5</td></tr>
<tr><td></td><td>Deadlines:</td><td>2024</td></tr>
<tr><td>1A-0-7</td><td colspan="2">Creating a multi-level governance platform for Bosnia and Herzegovina for planning and implementing energy and climate measures.</td></tr>
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The multi-level governance platform is of crucial importance for Bosnia and Herzegovina in planning and implementing energy and climate measures for several reasons:

Coordination and integration: The platform enables coordination and integration among different levels of government, institutions, and stakeholders in the planning and implementation process. This is particularly important in the context of Bosnia and Herzegovina, which has a complex political structure with state, entity, and local levels of government. Coordination among these levels ensures coherence and synergy of measures while reducing potential conflicts and duplication of efforts.
Efficiency and synergy: The multi-level governance platform ensures more efficient implementation of energy and climate measures through better information exchange, resource sharing, and experience sharing. Establishing working groups and collaboration mechanisms enables the sharing of best practices, identification of synergies among different projects, and optimization of available resources.
Inclusiveness and participation: The platform enables inclusiveness and participation of all relevant stakeholders, including government, local authorities, expert institutions, civil society organizations, the private sector, and citizens. This ensures that different interests and perspectives are taken into account and that decisions are widely accepted and supported by all key actors.
Continuous improvement and adaptation: The platform enables continuous monitoring, evaluation, and adaptation of plans and measures. Through a monitoring and evaluation system, challenges can be identified, successes recognized, and strategies and activities timely adjusted. This ensures that plans and measures are regularly aligned with changing conditions, new technologies, and priorities.
Knowledge exchange and collaboration: The platform facilitates the exchange of knowledge, experiences, and resources among different regions, sectors, and stakeholders. Through organizing workshops, conferences, and mutual visits, it is possible to learn from

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best practices, be inspired by innovative solutions, and promote collaboration and partnerships to achieve common goals.

Overall, the multi-level governance platform provides the structure and mechanisms that are crucial for successful planning and implementation of energy and climate measures in Bosnia and Herzegovina. It supports coordination, efficiency, inclusiveness, and continuous improvement, thereby contributing to achieving sustainable energy transition and climate adaptation in the country.

Key components of the platform include:

- **Coordination body:** Establishing a coordination body responsible for leading and managing the platform. This body should consist of representatives from key sectors and stakeholders, including governments, local authorities, expert institutions, civil society organizations, and the private sector.
- **Formation of working groups**: Forming working groups that focus on specific areas of planning and implementation of energy and climate measures. These groups should include representatives from relevant sectors and stakeholders to ensure an integrated and comprehensive perspective.
- **Development of a shared vision and strategy**: Defining a shared vision and strategy for energy transition and climate adaptation in Bosnia and Herzegovina. This component involves analyzing the current situation, identifying key goals and priorities, and defining measures and activities to achieve those goals.
- **Coordination among different levels of government**: Ensuring coordination among different levels of government, including state, entity, and local levels, to ensure coherence and integration of plans and activities. This will enable better implementation of energy and climate measures on the ground.

Activities may include:

a) Identification and engagement of relevant stakeholders: Conducting activities to identify and engage key stakeholders, including representatives of government, institutions, private sector, civil society organizations, and the academic community. This will ensure inclusiveness and participation of all relevant actors in the process.

b) Development of a communication strategy: Developing a communication strategy that ensures wide-ranging information and public involvement in the planning and implementation process of energy and climate measures. The communication strategy should encompass various channels and tools, such as websites, public consultations, educational materials, and events.

c) Development of plans and programs: Creating plans and programs for implementing specific energy and climate measures, taking into account the specificities of different regions and sectors. These plans should be based on the analysis of the current situation, goals, and priorities, and should include clearly defined activities, timelines, responsible stakeholders, and funding sources.

d) Establishment of monitoring and evaluation: Establishing a monitoring and evaluation system to track the implementation of plans and measures and monitor the achievement of set goals. This will enable progress monitoring, identification of challenges and opportunities, and timely adjustment of strategies and activities.

e) Knowledge and experience exchange: Organizing workshops, conferences, and mutual visits to facilitate the exchange of knowledge and experiences among different regions, sectors, and stakeholders. This will support mutual learning, innovation, and continuous improvement in energy and climate planning and implementation approaches.

It is important to note that these are just examples of key components and activities. A detailed plan and implementation of the multi-level governance platform should be tailored to the specific needs and context of Bosnia and Herzegovina.

Competent authorities:	Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina, Ministry of Spatial Planning, Construction, and Environment in the Government of Republika Srpska, Ministry of Environment and Tourism of the Federation of Bosnia and Herzegovina, Government of the Brčko District.
Type of measure:	Planning
Sources of funding:	Projects in the implementation phase (international technical assistance); Environmental Protection and Energy Efficiency Fund of Republika Srpska, Environmental Protection Fund of the Federation of Bosnia and Herzegovina.
Effect:	Implementation of the decarbonization process in a participatory manner.

	Monitoring method:	The number of participants involved in the participatory process.
	Connection with other objectives:	Dimension 1B, Dimension 2, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	2024.

3.1.1.2 Reduced GHG greenhouse gas emissions in accordance with Regulation (EU) 2018/842

REGULATION (EU) 2018/842[290] OF THE EUROPEAN PARLIAMENT AND COUNCIL on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No 525/2013

This Regulation prescribes the obligations of the Member States regarding their minimum contributions for the period from 2021 to 2030, in order to meet the Union's objective of reducing greenhouse gas emissions by 30% below the 2005 level in the sectors covered by Article 2 of this Regulation, and contribute to achieving the goals of the Paris Agreement. This Regulation also establishes rules on the identification of annual emissions and assessment of progress of the Member States in meeting their minimum contributions.

Also, this Regulation applies to greenhouse gas emissions from the IPCC categories of energy sources, industrial processes and product use, agriculture, and waste, as defined by Regulation (EU) No 525/2013[291] on a mechanism for monitoring and reporting greenhouse gas emissions and for reporting other information at national and Union level relevant to climate change and repealing Decision No 280/2004/EC, excluding greenhouse gas emissions from activities listed in Annex I of Directive 2003/87/EC[292] establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC.

This Regulation stipulates the following:

- Annual emission levels for the period from 2021 to 2030
- Flexible options through issue, holding, and transfer
- Flexible option for some member states after the reduction of emission allowances from the EU emission trading system
- Additional use of up to 280 million tons of net removals from LULUCF
- Corrective measures
- Compliance check
- Adjustments
- Safety reserve
- Register

1A-1	**Reduced GHG greenhouse gas emissions in accordance with Regulation (EU) 2018/842**
1A-1.1	**Reduced GHG greenhouse gas emissions in transport**
No	**Measure**
1A-1.1-1	**Subsidising the purchase and promotion of the use of vehicles with low greenhouse gas emissions**
	It is necessary to encourage the reduction of energy consumption in the transport sector by replacing existing (predominantly old, environmentally unacceptable, and energy inefficient) motor vehicles and purchasing new, environmentally acceptable, and EE vehicles. The measure refers to the procurement of environmentally acceptable and energy efficient: a) motorcycles, tricycles, and quadricycles, b) passenger cars, c) buses, d) duty vehicles. Facilitating subsidisation of the purchase of electric vehicles (motorcycles, scooters, passenger cars, and buses) from the state in order to increase the share of such vehicles in traffic. In addition to direct subsidies, it is necessary to introduce indirect subsidies, such as priority and cheaper parking, access to parts of the city with limited traffic, etc. For this measure, it is necessary to make changes to the Law on Public Procurement for the purpose of introducing green public procurement.

[290] https://eur-lex.europa.eu/legal-content/HR/TXT/PDF/?uri=CELEX:32018R0842&from=HR
[291] https://eur-lex.europa.eu/legal-content/HR/TXT/PDF/?uri=CELEX:32013R0525&from=EN
[292] https://eur-lex.europa.eu/legal-content/HR/TXT/PDF/?uri=CELEX:32003L0087&from=HR

	Competent authorities:	Ministry of Communications and Transport of BiH, Entity ministries responsible for traffic, Government of BD, Cantonal ministries responsible for traffic, Entity environmental protection funds, Public Procurement Agency
	Type of measure:	Regulatory, Economic, Information,
	Sources of funding:	Income from vehicle registration
	Effect:	Reduced emissions due to reduced use of fossil fuels
	Monitoring method:	Share of alternative fuel vehicles in the total number, consumption of alternative fuels in traffic
	Connection with other objectives:	Dimension 2, Dimension 5
	Deadlines:	Continuous
No	**Measure**	
1A-1.1-2	**Prescribing the obligation to inform consumers about fuel economy and carbon dioxide emissions of new vehicles**	
	It is necessary to adopt an amendment to the Law on the Basics of Traffic Safety on Roads in Bosnia and Herzegovina, under which the Ministry of Communications and Transport of Bosnia and Herzegovina (MCT) will be authorised to prepare and publish a regulation that would ensure the availability of information on fuel economy and carbon dioxide emissions from new motor vehicles, based on the regulations of neighbouring countries. Accordingly, every supplier of new motor vehicles intended for sale will be required to provide consumers with available information on the level of fuel consumption and specific carbon dioxide emissions.	
	Competent authorities:	Ministry of Communications and Transport of BiH, Entity ministries responsible for traffic, Government of BD BiH
	Type of measure:	Regulatory, Information
	Sources of funding:	Budget
	Effect:	User awareness of energy consumption
	Monitoring method:	Report on the implementation of regulation
	Connection with other objectives:	Dimension 2
	Deadlines:	2025
No	**Measure**	
1A-1.1-3	**Introduction of a special environmental fee for motor vehicles depending on the level of specific carbon dioxide emissions**	
	It is necessary to introduce a single environmental fee paid when registering a motor vehicle, the amount of which is defined directly or indirectly on the basis of specific carbon dioxide emissions (e.g. fuel used and engine power), for vehicles with higher specific emissions the fee amount should be higher, and electric vehicles may have zero amount of this fee. Funds collected this way are used specifically to encourage vehicles with low or zero emissions.	
	Competent authorities:	Ministry of Communications and Transport of BiH, Entity ministries responsible for traffic, Government of BD BiH
	Type of measure:	Regulatory
	Sources of funding:	Budget
	Effect:	Reduction of fossil fuel consumption in transport
	Monitoring method:	Vehicle fleet structure (vehicle registration records)
	Connection with other objectives:	Dimension 1B, Dimension 2, Dimension 3
	Deadlines:	2025
1A-1.2	**Reduced GHG greenhouse gas emissions in industry**	
No	**Measure**	
1A-1.2-1	**Reduction of fugitive emissions**	

	The measure includes the implementation of investments in the modernisation and improvement of production, as well as good practices, with the aim of reducing fugitive emissions from industrial processes and operations with raw materials and fuels (storage, transfer, transshipment, etc.). It is necessary to develop and adopt programmes for the reduction of fugitive emissions.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Ministry of Energy and Mining of RS, Ministry of Spatial Planning, Construction and Environment RS, Ministry of Energy, Mining and Industry of FBiH, Ministry of Environment and Tourism of FBiH, Government of BD BiH
	Type of measure:	Regulatory, Economic, Information, Education
	Sources of funding:	International funds, public budgets
	Effect:	Reduction of greenhouse gas emissions
	Monitoring method:	Reports on greenhouse gas emissions
	Connection with other objectives:	Dimension 2, Dimension 5
	Deadlines:	Continuous

3.1.1.3 Reduced GHG greenhouse gas emissions in accordance with Regulation (EU) 2018/841

REGULATION (EU) 2018/841[293] OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry in the 2030 climate and energy framework, and amending Regulation (EU) No 525 / 2013 and Decision No 529/2013/EU

This Regulation establishes obligations of the Member States with regard to land use, land use change, and forestry (LULUCF), which contribute to the achievement of objectives of the Paris Agreement and the Union's greenhouse gas emission reduction target for the period from 2021 to 2030, as well as the rules for accounting emissions and removals from the LULUCF sector and verification of fulfilment of these obligations in the member states.

This Regulation applies to emissions and removals of greenhouse gases specified in Annex I, section A, reported in accordance with Article 7 of Regulation (EU) No 525/2013[294], which appear within any of the following accounting categories of land in the state territories of the member states:

- 'Forested land': use of land registered as cropland, grassland, wetland, settlement, or other land the use of which has been changed to forest land;
- 'Deforested land': use of land registered as forest land the use of which has been changed to cropland, grassland, wetland, settlement, or other land;
- 'Land under managed crops': land use reported as:
  - Land under crops that remains land under crops,
  - Grassland, wetland, settlement, or other land the use of which has been changed to cropland, or
  - Cropland the use of which has been changed to wetland, settlement, or other land;
- 'Managed grassland': land use reported as:
  - Grassland that remains grassland
  - Cropland, wetland, settlement, or other land the use of which has been changed to grassland, or
  - Grassland the use of which has been changed to wetland, settlement, or other land;
- 'Forest land' managed: use of land registered as forest land that remains forest land.

This Regulation stipulates the following:

- General rules for accounting
- Accounting for forested land and cleared land
- Accounting for managed cropland, managed grassland, and managed wetland
- Accounting for managed forest land
- Accounting for wood products
- Accounting for natural disasters
- Flexible options

[293] https://eur-lex.europa.eu/legal-content/HR/TXT/PDF/?uri=CELEX:32018R0841&from=HR
[294] https://eur-lex.europa.eu/legal-content/HR/TXT/PDF/?uri=CELEX:32013R0525&from=EN

1A-2	Reduced GHG greenhouse gas emissions in accordance with Regulation (EU) 2018/841
1A-2.1	Enhancing sink in the forestry sector through increased increment and sustainable forest management

No	Measure	
1A-2.1-1	**Reforestation of bare, coppiced, and degraded forests, reforestation of areas affected by erosion**	
	Reforestation of bare, coppiced and degraded forests, and reforestation of areas affected by erosion, can be considered a key step in preserving forest ecosystems and reducing negative environmental impacts. Within the reforestation action plan, the following steps may be taken into consideration: • **Identification of priorities**: The first step is the identification of bare, coppiced, and degraded forests and areas affected by erosion that require urgent restoration and reforestation. This can be achieved through field research, data analysis, and collaboration with relevant institutions and experts. • **Assessment of environmental and socioeconomic conditions**: It is important to assess the environmental and socioeconomic conditions of each area that will be reforested. This includes the analysis of climate conditions, soil, hydrological characteristics, and social aspects in order to select the most suitable trees and plants for reforestation. • **Planning types and methods of reforestation**: Based on the assessment results, suitable species of trees and plants adapted to the climate conditions and regeneration goals should be selected. It is also important to select suitable reforestation methods, such as planting saplings, sowing seeds, or natural regeneration, depending on the characteristics of the area and objectives of regeneration. • **Soil preparation and planting**: Before planting or sowing, the soil should be prepared to ensure optimal plant growth. This can include removing weeds, repairing erosion, improving soil fertility, and creating favourable conditions for plant growth and development. Then, planting or sowing is carried out according to the plan defined for each area. • **Maintenance and care of newly planted forests**: After planting, it is necessary to ensure regular maintenance of newly planted forests for their healthy growth and development. This may include watering, pest and disease control, weed control, and monitoring plant growth and development. • **Monitoring and evaluation**: Continuous monitoring of newly planted forests and their evaluation are key elements of the successful implementation of the action plan. Monitoring can be carried out through field surveys, recording of plant growth data, and assessment of environmental indicators to ensure that desired results are achieved and corrective measures are taken if necessary. • **Educating and informing the public**: It is important to inform the public about the importance of reforestation, objectives of the action plan, and achievements in the restoration of forest ecosystems. Education and awareness raising can encourage support and active participation of the public in the preservation of forests and the environment. With regular evaluation of progress, adjustments of the plan as necessary, and continuous cooperation with relevant stakeholders, the reforestation action plan can be effective in restoring and protecting forests in Bosnia and Herzegovina.	
	Competent authorities:	MFTER BIH (division for agriculture), Entity ministries responsible for forestry, Government of BD BiH
	Type of measure:	Regulatory, Economic
	Sources of funding:	Budgets, funds for mitigation and adaptation to climate change
	Effect:	Increased greenhouse gas sink and improved function of forests
	Monitoring method:	Increased area under forests, increased share of high-quality forests
	Connection with other objectives:	Dimension 1B, Dimension 3
	Deadlines:	Continuous

1A-2.1-2	**Implementation of sustainable forest management mechanisms**	
	This measure includes certification of the entire forest fund in order to improve the sustainable management of forest complexes. It is necessary to encourage the use of wood products in traditional and new products in order to increase the sink and reduce emissions of greenhouse gases stored in wood products. This will be achieved by regulating the export of unprocessed and semi-processed wood, which encourages the development of the domestic wood industry, and the regulation of export of energy wood increases the share of energy generation from renewable sources, therefore meeting the goals to reduce emissions. It is necessary to promote activities that increase sinks and ensure that wood products and wood for energy purposes are used in ways that contribute to meeting both EU goals (reducing emissions and increasing the share of renewable sources in total energy consumption) and which are beneficial for the climate and environment. It is necessary to create guidelines for further development based on the knowledge and experience gained in the implementation of this measure.	
	Competent authorities:	MFTER BIH (division for agriculture), Entity ministries responsible for forestry, Government of BD BiH
	Type of measure:	Regulatory and economic
	Sources of funding:	International funds, income from forest management
	Effect:	Increased greenhouse gas sink and improved function of forests
	Monitoring method:	Increased forest growth, reduced degraded areas due to erosion and fire, increased area under forests
	Connection with other objectives:	Dimension 1B, Dimension 3
	Deadlines:	Continuous
1A-2.1-3	**Establishing plantations of fast-growing species in order to increase carbon storage and energy utilisation**	
	This measure is focused on the cultivation of fast-growing species on degraded and neglected land. There are large areas of surface coal mines whose partial reclamation can be achieved by growing fast-growing species (trees and grass). It is necessary to introduce incentives for the cultivation of fast-growing crops aimed at the use of degraded and neglected land. This measure should also be assessed in the context of decarbonisation of the energy sector. The produced biomass is used, depending on the quality, for the production of pellets, direct use in households, and for cogeneration plants.	
	Competent authorities:	MFTER BIH (division for agriculture), Entity ministries responsible for forestry, Government of BD BiH
	Type of measure:	Economic, Information
	Sources of funding:	Funds from electricity companies and Entity funds for the environment, grant funds, research funds.
	Effect:	Increased sink and share of renewable energy sources
	Monitoring method:	Planted areas and yields of fast-growing biomass
	Connection with other objectives:	Dimension 1B, Dimension 3, Dimension 5
	Deadlines:	Continuous
1A-2.1-4	**Improvement of forest fire protection system**	
	Due to climate change, burnt areas are increasing. Improving and defining forest fire protection measures is an integral part of this strategy in order to reduce the loss of carbon sink and reduce economic damages. It is necessary to carry out activities and investments in fire protection continuously, which includes an early fire detection system and procurement of equipment and employment of firefighting personnel. It is necessary to develop and adopt a forest fire protection strategy with an action plan in accordance with the competences.	
	Competent authorities:	Ministry of Security of BiH, MFTER BiH, Entity ministries responsible for forestry and civil protection, Government of BD BiH
	Type of measure:	Economic, Information, Education
	Sources of funding:	Entity environmental protection funds, civil protection revenue
	Effect:	Increased sink
	Monitoring method:	Reduced burnt areas
	Connection with other objectives:	Dimension 1B
	Deadlines:	Continuous

1A-2.2	Increasing the sink in agriculture sector through sustainable practice	
1A-2.2-1	**Improvement of sustainable practices in livestock breeding**	
	The goal of the measure is to reduce methane emissions from intestinal fermentation and excretion of methane and nitrogen from manure management through changes in the diet and composition of animal feed, production and use of biogas, while improving the emissions reporting system. The emission of greenhouse gases from livestock production is a direct consequence of the process of intestinal fermentation and decomposition of manure or occurs indirectly during activities related to food preparation or other processes on the farm. The measures taken to reduce the emission of greenhouse gases are focused on the regulation of digestive processes and the collection of gases produced by decomposition of manure. This measure includes the following activities: ▪ Changes in the diet of cattle and pigs and the quality of fodder (information, education, economic) ▪ Improvement of livestock facilities and manure management systems (information, education) ▪ Improvement of livestock breeding system (information, education, economic measure) ▪ Anaerobic manure decomposition and biogas production (information, economic, regulatory) ▪ Improvement of breeding and selection programme, health and wellbeing of animals (information, education, economic)	
	Competent authorities:	MFTER BiH, Entity ministries responsible for agriculture, Government of BD BiH
	Type of measure:	Regulatory, Economic, Information, Education
	Sources of funding:	Budgets of Entities and local communities, international funds
	Effect:	Reduction of greenhouse gas emissions (methane), sustainability of livestock production, increase in RES share
	Monitoring method:	Inventory of greenhouse gas emissions from agriculture, number of biogas plants, monitoring energy generation from biogas
	Connection with other objectives:	Dimension 1B, Dimension 3
	Deadlines:	Continuous
1A-2.2-2	**Improvement of sustainable practices in agriculture**	
	The introduction of a system that will encourage the application of the Code of Good Agricultural Practice with the aim of applying agrotechnical measures that increase organic carbon reserves in the soil, including the application of conservation and reduced processing, increasing the content of organic matter in degraded soils, and generally measures to increase soil fertility. Measures implemented in agricultural production, such as reduced soil cultivation, have significant potential to reduce greenhouse gas emissions at minimal costs, while increasing profit. The measures that are encouraged and implemented are: ▪ Improvement and change of soil cultivation methods (information, educational measure) ▪ Expansion of crop rotation with higher share of legumes (information, educational measure) ▪ Intensification of crop rotation using intercropping (information, education, regulatory measure) ▪ Improvement of mineral fertiliser application methods (information, educational measure) ▪ Improvement of methods for application of organic fertilisers (information, educational measure) ▪ Hydro-melioration procedures and natural disaster protection systems (information, educational measure) ▪ Agroforestry incorporated into organic agriculture and the agroenvironmental principle of production ▪ Collection and processing of agricultural plantations and residues for energy purposes (information measure)	
	Competent authorities:	MFTER BiH, Entity ministries responsible for agriculture, Government of BD BiH
	Type of measure:	Regulatory, Economic, Information, Education
	Sources of funding:	International funds

	Effect:	Sustainability of agriculture, reduction of agricultural production risk, reduction of greenhouse gas emissions
	Monitoring method:	Monitoring of yield and production in agriculture
	Connection with other objectives:	Dimension 1B, Dimension 3
	Deadlines:	Continuous

1A-2.3	**Reduction of greenhouse gas emissions from waste**

1A-2.3-1	**Prevention of generation and reduction of solid waste**	
	Prevention and reduction of waste includes municipal waste, production waste, and sludge from wastewater treatment plants . This measure should be achieved through cleaner production, education, economic instruments, application of regulations on waste management, and investment in modern technologies for further waste treatment and cogeneration technology (generation of electricity and thermal energy). It is necessary to define quantitative goals and deadlines to reduce the total disposed waste and stop the use of unmanaged landfills. In accordance with Directive (EU) 2018/850 of the European Parliament and the Council of 30 May 2018 amending Directive 1999/31/EC on the landfill of waste, the member states should take the necessary measures to reduce disposed of municipal waste to 10% of the total (by mass) municipal waste generated or less by 2035. It is necessary to introduce a change in the method of billing services according to the amount of generated waste.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Ministry of Energy and Mining of RS, Ministry of Energy, Mining and Industry of FBiH, Ministry of Environment and Tourism, Ministry of Spatial Planning, Construction and Environment RS, Government of BD BiH
	Type of measure:	Regulatory, Economic, Information, Education
	Sources of funding:	Budget funds of all levels of government
	Effect:	Increased resource efficiency and reduction of greenhouse gas emissions
	Monitoring method:	Monitoring the quantities of treated solid waste
	Connection with other objectives:	Dimension 5
	Deadlines:	Continuous
1A-2.3-2	**Increasing separately collected and recycled solid waste**	
	It is necessary to ensure preparation for the reuse and recycling of the following waste materials: paper, metal, plastic, and glass from households, and preferably from other sources if these waste streams are similar to household waste. This measure includes the following activities: • Draft, adopt, and implement legislation that will ensure a significant increase of separately collected and recycled waste • Create conditions to improve sustainable waste management • Take necessary measures for reuse and recycling of municipal waste.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Ministry of Spatial Planning, Construction and Environment RS, Ministry of Environment and Tourism of FBiH, Entity environmental protection funds, municipal utility companies, local self-government units
	Type of measure:	Regulatory, Economic, Information, Education
	Sources of funding:	Budget funds of all levels of government
	Effect:	Reduced waste volume, employment, lower disposal costs, space saving, resource efficiency, emission reduction
	Monitoring method:	Monitoring solid waste streams
	Connection with other objectives:	Dimension 5
	Deadlines:	Continuous
1A-2.3-3	**Ensuring the system of processing and using gas from municipal waste landfills**	
	At the landfill where landfill gas is generated, it is necessary to provide a gas collection system, which must be treated and used. If the collected landfill gases cannot be used to obtain energy, they should be burnt in the landfill area to prevent the emission of methane into the atmosphere.	

	Competent authorities:	MFTER BiH, Ministry of Spatial Planning, Construction and Environment RS, Ministry of Environment and Tourism of FBiH, Ministry of Energy and Mining of RS, Ministry of Energy, Mining and Industry of FBiH, Government of BD BiH, Entity environmental protection funds, municipal utility companies, local self-government units
	Type of measure:	Regulatory, Economic
	Sources of funding:	Budgets of local communities, International funds
	Effect:	Reduced methane emissions from landfill gas
	Monitoring method:	Number of landfill gas collection and utilisation systems
	Connection with other objectives:	Dimension 1B, Dimension 3, Dimension 5
	Deadlines:	Continuous
1A-2.3-4	**Reduction of disposed biodegradable waste**	
	The aim of this measure is to reduce biodegradable fraction of waste disposed of in landfills, thereby reducing the emission of methane generated by anaerobic processes of waste decomposition. It is necessary to establish quantitative goals related to the reduction of share of biodegradable municipal waste disposed of in landfills and to introduce appropriate mechanisms by updating the strategic framework for sustainable waste management.	
	Competent authorities:	MFTER BiH, Ministry of Spatial Planning, Construction and Environment RS, Ministry of Environment and Tourism of FBiH, Government of BD BiH, Entity environmental protection funds, municipal utility companies, local self-government units
	Type of measure:	Regulatory, Economic, Information, Education
	Sources of funding:	Budget funds of all levels of government, Entity environmental protection funds, international funds
	Effect:	Reduced methane emissions from landfills
	Monitoring method:	Amount of biodegradable waste used
	Connection with other objectives:	Dimension 1B, Dimension 5
	Deadlines:	Continuous
1A-2.3-5	**Use of biogas for the generation of biomethane, electricity, and thermal energy**	
	Looking at the waste management sector, the greenhouse gas emission reduction potential of this measure constitutes the potential for reduction of methane emissions (generated by anaerobic decomposition of the biodegradable fraction of waste), which is used for the generation of electricity and heat. It is also planned to inject biomethane into the gas grid. This measure includes the covering of existing unregulated landfills, supplemented by the extraction and utilisation of biogas (generation of methane, electricity, and thermal energy).	
	Competent authorities:	MFTER BiH, Ministry of Energy and Mining of RS, Ministry of Energy, Mining and Industry of FBiH, Ministry of Spatial Planning, Construction and Environment RS, Ministry of Environment and Tourism of FBiH, Government of BD BiH, Entity environmental protection funds, municipal utility companies, local self-government units
	Type of measure:	Regulatory, Economic
	Sources of funding:	Budget funds of all levels of government, Entity environmental protection funds, international funds
	Effect:	Reduction of greenhouse gas emissions, increased share of renewable energy sources
	Monitoring method:	Reports on biomethane generation, reports on energy generation from biogas
	Connection with other objectives:	Dimension 1B, Dimension 3, Dimension 5
	Deadlines:	Continuous

3.1.1.4 Functional EU Emissions Trading Scheme (EU ETS)

1A-3	**Functional Emissions Trading Scheme (ETS)**
1A-3.1	**Establishment and functioning of the greenhouse gas emission trading scheme**

No	**Measure**	
1A-3.1-1		
	It is necessary to establish an institutional system for the introduction of a greenhouse gas emission trading scheme (ETS) based on the 'cap and trade' principle. The trading scheme should be based on the principles and regulatory framework of the EU ETS. It is necessary to adopt a regulatory framework for the introduction and functioning of the ETS in BiH. Emission ceilings for the country are distributed among the Entities and Brčko District in accordance with the distribution of emission reduction targets. Reduction of greenhouse gas emissions is the responsibility of the plant operators included in the scheme. Plant operators, in accordance with the rules of the ETS, obtain permits for greenhouse gas emissions and establish a system for emissions monitoring and submit verified reports to the competent authorities for the implementation of the ETS. All operators, except electricity producers, submit requests to the competent authorities for the issuance of free of charge emission permits. The competent authorities issue emission permits taking into account the operator's existing emissions, the best available techniques for the specific generation process and the overall goal to reduce emissions of the given jurisdiction. The operators, who will not have a sufficient number of units to cover their greenhouse gas emissions, have the option of buying emission permits in auctions (conducted by the competent authorities for the implementation of the ETS) or on the secondary market (from other obligors whose emissions are less than the number of emission permits). The measure includes the following activities: • Implementation of preparatory activities for the introduction of the GHG emission allowance trading scheme (2022–2026), in accordance with Directive (EU) 2018/410, amending Directive 2003/87/EC, to enhance cost-effective emission reductions and low-carbon investments. • Establishment of the register of obligors (plant operators and airline operators): updating greenhouse gas emission monitoring plans, drafting GHG reports, drafting verification report, drafting improvement reports. Develop the necessary elements for the functioning of the ETS: 1. Framework for monitoring, reporting, and verification 2. Analysis of the economic impact 3. EU ETS infrastructure and platform 4. Legal and regulatory framework	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Ministry of Energy and Mining of RS, Ministry of Energy, Mining and Industry of FBiH, Ministry of Spatial Planning, Construction and Environment RS, Ministry of Environment and Tourism of FBiH, Government of Brčko District, Entity hydrometeorological institutes
	Type of measure:	Regulatory
	Sources of funding:	Entity environmental protection funds, international funds, funds collected from payers
	Effect:	Reduction of greenhouse gas emissions from large plants (thermal power exceeding 20 MW) in accordance with the defined targets
	Monitoring method:	Drafting and verification of reports on greenhouse gas emissions
	Connection with other objectives:	Dimension 1B, Dimension 5
	Deadlines:	2026.

3.1.1.5 Improvement of low-emission mobility

1A-4	**Improvement of low-emission mobility**
1A-4.1	**Improve the system and infrastructure availability for alternative fuels for traffic**

No	Measure	
1A-4.1-1	**Improve the system and infrastructure availability for alternative fuels for traffic**	
	It is necessary to facilitate the acceptance of alternative fuels by users/consumers by strengthening the infrastructure for the distribution of alternative fuels, to enable its easier use, through the implementation of common technical specifications for this infrastructure. This infrastructural measure will not directly affect the reduction of traffic emissions, but infrastructure development is certainly a necessary prerequisite for the development of market for vehicles and vessels that use electricity, SPP/SBP (SPP/CNG – Compressed natural gas (SPP)_CNG), UPP/UBP (UPP/LNG – Liquefied natural gas (UPP)).	
	Competent authorities:	MFTER BiH, Ministry of Communications and Transport of BiH, Entity ministries responsible for traffic, Cantonal ministries responsible for traffic, Government of BD BiH
	Type of measure:	Economic, Information,
	Sources of funding:	Income from vehicle registration
	Effect:	Reduced emissions due to reduced use of fossil fuels
	Monitoring method:	Share of alternative fuel vehicles in the total number, consumption of alternative fuels in traffic
	Connection with other objectives:	Dimension 1B, Dimension 3, Dimension 5
	Deadlines:	Continuous

3.1.1.6 Functional phasing out of energy subsidies, particularly for fossil fuels

1A-5	**Functional phasing out of energy subsidies, particularly for fossil fuels**
1A-5.1	**Elimination of subsidies for electricity from fossil fuels**

No	Measure	
1A-5.1-1	**Elimination of subsidies for electricity from fossil fuels**	
	Direct subsidies for the generation of electricity from coal in the period 2015-2017 averaged around EUR 41.5 million per year, which is EUR 4.12/MWh. Subsidies are given through fiscal support to the sector, financing from the public sector (loans, guarantees, etc.), and investment by government-owned enterprises. Indirect subsidies include non-payment of carbon dioxide emissions and negative performance of some companies in the sector. In the period 2015-2017, the average cost of electricity generation in coal-fired thermal power plants was around 70 EUR/MWh, and the selling price for households is 34.2 EUR/MWh, and for industry 39.80 EUR/MWh. This measure includes the following: - Phasing out of direct subsidies for electricity from coal-fired thermal power plants, which will result in a price increase for end consumers, - Improvement of the electricity market (establishment of stock exchange), - Elimination of indirect subsidies (including the introduction of fees for emission permits) - Development of a programme to protect socially disadvantaged population from rising electricity prices. In addition to the elimination of subsidies for electricity from coal, it is necessary to phase out subsidies for heating. Many local communities subsidise district heating systems and energy prices from public budgets. The phasing out includes the introduction of a consumption-based payment system for district heating services, suppression of illegal and unregistered wood cutting, and elimination of energy product subsidies. In parallel with this, it is necessary to develop programmes for the protection of socially vulnerable population with clear criteria for subsidising heating/energy costs. The State Aid Council plays an important role in this process.	
	Competent authorities:	State Aid Council, Ministry of Foreign Trade and Economic Relations of BiH, Ministry of Energy and Mining of RS, Ministry of Energy, Mining and Industry of FBiH, Government of BD BiH
	Type of measure:	Regulatory, Economic
	Sources of funding:	Budgets

	Effect:	Reduced energy consumption through prices that reflect generation costs, strengthening of the energy market
	Monitoring method:	Monitoring the spending of funds from public budgets, state aid, and market functioning
	Connection with other objectives:	Dimension 1B, Dimension 2, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous

3.1.2 Energy from renewable sources

3.1.2.1 Policies and measures to achieve the national contribution to the binding target at the level of the Energy Community for 2030 in terms of energy from renewable sources and trajectories

No	Measure	
1B-1-1	**Provision of spatial planning prerequisites for use of renewable energy sources**	
	Work on the analysis of the existing situation with spatial capacities, preparation and adoption of spatial planning documentation for Bosnia and Herzegovina, Federation of Bosnia and Herzegovina, Republika Srpska[295], Brčko District of Bosnia and Herzegovina, local level.	
	Competent authorities:	Ministry of Civil Affairs of BiH, competent Entity ministries, Government of Brčko District of BiH
	Type of measure:	Planning
	Sources of funding:	Budgets of institutions and International Technical Assistance
	Effect:	Adopted legal framework for the implementation of requirements from the Sofia Declaration with reference to energy and climate
	Monitoring method:	Reporting on the progress of transposition of the EU Clean Energy Package
	Connection with other objectives:	Dimension 3, Dimension 4
	Deadlines:	2025
1B-1-2	**Adoption of strategic documents of sustainable development**	
	Work on the preparation and adoption of strategic documents: ▪ 'Framework for Sustainable Development Goals of Bosnia and Herzegovina', being developed as part of the implementation of the UN Agenda 2030, along with the accompanying document for monitoring and reporting on the implementation of framework for sustainable development goals until 2030; ▪ 'Development Strategy of Republika Srpska for the period 2021–2027', which is the basis for drafting sectoral strategies; ▪ 'Development Strategy of Federation of Bosnia and Herzegovina for the period 2021–2027', which is the basis for drafting sectoral strategies. ▪ 'Development Strategy of Brčko District of Bosnia and Herzegovina 2021-2027', which is the basis for drafting sectoral strategies.	
	Competent authorities:	Competent state level and Entity ministries
	Type of measure:	Strategic
	Sources of funding:	Budgets of institutions and International Technical Assistance
	Effect:	Adopted legal framework for the implementation of requirements from the Sofia Declaration with reference to energy and climate
	Monitoring method:	Reporting on the progress of transposition of the EU Clean Energy Package
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4
	Deadlines:	2024

[295] The existing spatial plan of Republika Srpska (until 2015) covers the period until 2025.

3.1.2.2 If relevant, special measures for regional cooperation, and, as a possibility, the estimated surplus of energy generation from renewable sources, which could be transferred to other Contracting Parties and/or member states of the European Union in order to achieve the national contribution and trajectories referred to in point 2.1.2

No	Measure	
1B-2-1	**Establishment of regional cooperation**	
	Establish the practice of regular exchanges of experience with neighbouring countries, by organising round tables, conferences, and scientific meetings, in the following areas: Establishment and functioning of energy community projects (renewable energy communities and civic energy communities), with a special focus on renewable energy communities and prosumers (customers-producers). Obstacles that exist in the implementation of new incentive systems and possible suggestions to overcome obstacles .	
	Competent authorities:	Entity ministries of energy, Government of Brčko District of BiH, Ministry of Foreign Trade and Economic Relations of BiH
	Type of measure:	Organisation
	Sources of funding:	International Technical Assistance
	Effect:	Established processes that enable the implementation of requirements from the Sofia Declaration with reference to energy and climate.
	Monitoring method:	Reporting on the progress of transposition of the EU Clean Energy Package
	Connection with other objectives:	Dimension 1A, Dimension 5
	Deadlines:	Continuous implementation until 2030

3.1.2.3 Special measures for financial support, if applicable, including the Union support and use of Union funds, to promote the generation and use of energy from renewable sources in electricity, heating, cooling, and transport

1B-3.1	**Functional sustainable incentive mechanisms for renewable energy sources**	
No	**Measure**	
1B-3.1-1	**Encouraging generation of electricity from renewable sources**	
	Prepare and adopt new laws on renewable energy sources and efficient cogeneration, which will lay the foundation for the reform of the incentive system for the generation of electricity from renewable sources. Within this measure, the following activities must be implemented: - Prepare a new classification system of plants according to technology and size (for renewable energy sources and efficient cogeneration, taking into account facilities for the treatment of municipal wastewater, municipal waste, and other types of waste), and based on this classification, define new incentive systems. - Dimension the elements of the new incentive system for small plants, large plants, renewable energy communities and prosumers (customers-producers). - Implement all legal prerequisites for the implementation of the new incentive system, which refer to the development of new laws on renewable sources and efficient cogeneration, regulations, procedures and practices for the implementation of the new incentive system. - Develop and adopt the Programme for Elimination of Energy Poverty and, as part of it, develop a model of incentives for households.	
	Competent authorities:	Competent Entity ministries, regulators, incentive system operators, Government of Brčko District of BiH
	Type of measure:	Regulatory, financial
	Sources of funding:	Budgets of institutions and International Technical Assistance
	Effect:	Established processes that enable the implementation of requirements from the Sofia Declaration with reference to energy and climate.
	Monitoring method:	Reporting on the progress of transposition of the EU Clean Energy Package
	Connection with other objectives:	Dimension 1B, Dimension 3, Dimension 4
	Deadlines:	2023

1B-3.1-2	Establishment of a system of guarantees on the origin of electricity	
	Establish a system of issuing, transferring, and cancelling guarantees of origin for electricity from renewable sources at the level of Entity and Brčko District of BiH, through the following activities: - Identify all competent institutions at the levels of Entities, Brčko District of BiH, and state level, as well as their tasks for the establishment and operation of the system of guarantees of origin. - Define clear and transparent procedures and conditions for issuing, transferring, and cancelling guarantees of origin, in accordance with the EECS (European Energy Certification System) rules, which will serve as the basis for the development of relevant rulebooks and protocol domain. - Ensure verification and coordination of data at the state level. - Prepare and adopt the methodology for residual mix calculation in accordance with Directive 2009/72/EC (Article 3(9)) and best EU practice. - Select the provider and the best technical solution for the national registry of guarantees of origin. - In the system of guarantees of origin, gradually include other sources and forms of energy with the aim of achieving full disclosure with guarantees of origin. - In order to ensure compliance of procedures for issuing, transferring, and cancelling guarantees of origin, access the regional system of guarantees of origin through the Secretariat of Energy Community or directly through AIB (Association of Issuing Bodies). In case of accession to AIB, it is necessary to analyse the possibilities of cross-border transfer of guarantees of origin, considering the relevant restrictions from the RED II directive.	
	Competent authorities:	Regulatory Commission for Energy of Republika Srpska, Operator for renewable energy sources and efficient cogeneration of the Federation of Bosnia and Herzegovina, Government of Brčko District of BiH, Ministry of Foreign Trade and Economic Relations of BiH, and other competent institutions
	Type of measure:	Regulatory
	Sources of funding:	Budget of institutions and International Technical Assistance
	Effect:	Established processes that enable the implementation of requirements from the Sofia Declaration with reference to energy and climate.
	Monitoring method:	Reporting on the progress of transposition of the EU Clean Energy Package
	Connection with other objectives:	Dimension 1A, Dimension 5
	Deadlines:	2024

1B-3.2	Increasing the use of renewable energy through models of energy communities (renewable energy communities and civic energy communities) and prosumers (customers-producers)

No	Measure
1B-3.2-1	**Establishment of a system of auctions for electricity from renewable energy sources, prosumers (customers-producers) and energy communities (renewable energy communities and civic energy communities)**
	Work on the preparation and adoption of laws and regulations that define the establishment of prerequisites for auctions for electricity from renewable sources, prosumers (customers-producers), and energy communities. Regulations for auctions should regulate the implementation of auction process from the aspect of: tasks of incentive operators and auction participants, preparation of auction process, method for issuing a public call for the submission of bids for auctions, bid content and method for submitting the bid, checking the regularity of bids, method for making decisions or resolutions on selection of the most favourable bidder, and other relevant areas. Regulations on prosumers (customers-producers) and energy communities should regulate the method and conditions for participation in the electricity market, application of restrictions on the installed power of power plants for own needs, conditions and procedures for acquiring the status of energy communities, rights and obligations of members of energy communities, and other relevant matters.

	Competent authorities:	Entity ministries of energy, regulators, operators for renewable energy sources, Government of Brčko District of BiH
	Type of measure:	Regulatory
	Sources of funding:	Budget of institution and International Technical Assistance
	Effect:	Established processes that enable the implementation of requirements from the Sofia Declaration with reference to energy and climate.
	Monitoring method:	Reporting on the progress of transposition of the EU Clean Energy Package
	Connection with other objectives:	Dimension 3, Dimension 4, Dimension 5
	Deadlines:	2024
1B-3.2-2	**Establishment of sustainable organisational models for energy communities (renewable energy communities and civic energy communities)**	
	Work on: - Establishment of appropriate organisational and investment models of energy communities in cooperation with local self-government units. - Identification and efficient removal of all legal and technical obstacles to the development of energy communities. Given that local self-government units are potential members of renewable energy communities, their involvement in the establishment of a sustainable system for the realisation of business opportunities is of great importance. At the same time, local self-government units could be an information *centre for organised association* of potential community members, promotion of experiences, and exchange of similar project ideas. The established centres could also be used as follows: ▪ Space for the identification of energy-poor households and collection of the main financial resources necessary for the implementation of projects based on renewable energy sources, ▪ To help and train unemployed young people to become energy consultants, whereby trained young people can provide support to low-income households in local self-government units and become their employees, ▪ Surplus energy donations.	
	Competent authorities:	Local self-government units
	Type of measure:	Regulatory, financial, organisation
	Sources of funding:	Budgets of local self-government units and International Technical Assistance
	Effect:	Established processes that enable the implementation of requirements from the Sofia Declaration with reference to energy and climate.
	Monitoring method:	Reporting on the progress of transposition of the EU Clean Energy Package
	Connection with other objectives:	Dimension 5
	Deadlines:	2028

3.1.2.4 Special measures for the introduction of one or more contact points, rationalisation of administrative procedures, provision of information and training, and easier acceptance of energy purchase contracts

Summary of policies and measures based on the incentive framework that the Contracting Parties must establish in accordance with Article 21 paragraph 6 and Article 22, Paragraph 5 of Directive (EU) 2018/2001 in order to encourage and facilitate the development of self-consumption and renewable energy communities

1B-4.1	**Rationalisation of administrative procedures, information provision, and training introduced**
No	**Measure**
1B-4.1-1	**Providing information and training**
	- Continuously inform the public through informative and promotional sessions regarding : implementation of new and innovative projects of renewable energy sources, particularly for energy communities and prosumers, economy of fuel consumption and CO_2 emissions of old and new passenger cars (for each of the models available on the market)

	- Conduct additional training for drivers (passenger cars, buses, commercial, and duty vehicles) on the elements of eco-driving when taking driving tests (for about 60-120 minutes), but also for drivers who already have a driving license. - Develop guidelines for the promotion of innovative forms of introducing solar energy. - Establish programmes for research and innovation in the field of solar energy.	
	Competent authorities:	Local self-government units, Entity ministries of energy and traffic, Government of Brčko District of BiH, Ministry of Foreign Trade and Economic Relations of BiH
	Type of measure:	Organisation
	Sources of funding:	Budgets of local self-government units and International Technical Assistance
	Effect:	Established processes that enable the implementation of requirements from the Sofia Declaration with reference to energy and climate.
	Monitoring method:	Reporting on the progress of transposition of the EU Clean Energy Package
	Connection with other objectives:	Dimension 5
	Deadlines:	Continuous implementation until 2030
1B-4.1-2	**Rationalisation of administrative procedures for prosumers (customers-producers) and energy communities (renewable energy communities and civic energy communities)**	
	In order to speed up the energy transition and ensure its positive social, economic, and environmental effects, it is necessary to work on: - Simplification of legal and administrative procedures for registration in various registers and obtaining permits for prosumers (customers-producers) and energy communities. - Establishment of a single state level or local (Entities, Brčko District of BiH, local self-government units) information centres (information hub) for networking potential members of energy communities with the aim of establishing new projects, easier insight into potential projects of energy communities, obtaining information about procedures for obtaining permits. For details, refer to 1B-3.2-2.	
	Competent authorities:	Local self-government units, Entity ministries of energy, Government of Brčko District of BiH, Ministry of Foreign Trade and Economic Relations of BiH
	Sources of funding:	Budgets of competent Entity institutions and International Technical Assistance
	Effect:	Established processes that enable the implementation of requirements from the Sofia Declaration with reference to energy and climate.
	Monitoring method:	Reporting on the progress of transposition of the EU Clean Energy Package
	Connection with other objectives:	Dimension 3, Dimension 4, Dimension 5
	Deadlines:	2026

3.1.2.5 Evaluation of the need to build new infrastructure for district heating and cooling generated from renewable sources

1B-5	**Expansion of new infrastructure for district heating and cooling generated from renewable sources**	
No	**Measure**	
1B-5.1	**Encouraging energy generation from renewable sources for heating and cooling**	
	In order to increase the share of renewable energy sources in energy generation for the heating and cooling sector, introduce: ▪ Subsidies and other incentives for domestic production and procurement of equipment used for heating and cooling purposes using renewable energy sources (solar collectors for preparing hot water, heat pumps for using aerothermal, geothermal, and hydrothermal energy, waste co-incineration, etc.), ▪ Obligations for large consumers of heat energy (industrial and city heat plants) to generate part of the heat energy from renewable energy sources, ▪ Consider the aspects of using large-capacity heat pumps as generation plants for district heating and cooling systems.	
	Competent authorities:	Competent Entity funds for the environment, Ministry of Foreign Trade and Economic Relations of BiH
	Type of measure:	Financial

	Sources of funding:	Funds collected from the incentive system and sale of guarantees of origin
	Effect:	Established processes that enable the implementation of requirements from the Sofia Declaration with reference to energy and climate.
	Monitoring method:	Reporting on the progress of transposition of the EU Clean Energy Package
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4
	Deadlines:	2030
1B-5.2	**Incentive measures for local self-government units**	
	Introduce incentive measures for centralised producers of thermal energy from renewable sources.	
	Competent authorities:	Local self-government units
	Type of measure:	Financial
	Sources of funding:	Local self-government units
	Effect:	Established processes that enable the implementation of requirements from the Sofia Declaration with reference to energy and climate.
	Monitoring method:	Reporting on the progress of transposition of the EU Clean Energy Package
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4
	Deadlines:	2030

3.1.2.6 Special measures to encourage the use of energy from biomass, particularly for obtaining new biomass while taking into account: Availability of biomass, including sustainable biomass: domestic potential, and imports from third countries. Other uses of biomass in other sectors (agriculture and forestry sectors); as well as measures for sustainability of biomass production and use

1B-6	**Availability of biomass, including sustainable biomass: domestic potential and imports from third countries**	
No	**Measure**	
1B-6.1	**Ensuring the availability of biomass, including sustainable biomass: domestic potential and imports from third countries**	
	Ensure the sustainable use of biomass through the development of biomass market and establishment of collection centres for biomass from agricultural plantations and other residues for energy purposes. Biomass centres can be implemented as part of existing or new infrastructures (utility companies, business zones). Collection centres can be a link between farmers who own biomass, processing biomass into new products with higher added value, and placing these new products on the market. The following options will be considered: - Termination of support for forest biomass in plants intended only electricity generation, - Prohibition of incentives for the use of saw logs and veneer logs, and stumps and roots for energy generation.	
	Competent authorities:	Entity ministries of agriculture and forestry, energy, Ministry of Foreign Trade and Economic Relations of BiH.
	Type of measure:	Financial
	Sources of funding:	Budgets of competent institutions and International Technical Assistance
	Effect:	Adopted legal framework for the implementation of requirements from the Sofia Declaration with reference to energy and climate
	Monitoring method:	Reporting on the progress of transposition of the EU Clean Energy Package
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	2030
1B-6.2	**Other uses of biomass in other sectors (agriculture and forestry sectors); as well as measures for sustainability of biomass production and use**	

1B-6	Availability of biomass, including sustainable biomass: domestic potential and imports from third countries	
No	**Measure**	
	Create models and work on their implementation: ▪ Models for agricultural land owners who would be motivated to put that land into use, either through lease or otherwise, with the goal of biomass production. ▪ Models of using innovative business chains for biomass supply (different types) with the evaluation of by-products and bio-waste generated during the production process. ▪ Repurposing and using surfaces degraded by mining operations.	
	Competent authorities:	Entity ministries of agriculture and forestry, energy, electricity companies, Ministry of Foreign Trade and Economic Relations of BiH
	Type of measure:	Organisation
	Sources of funding:	Budgets of competent institutions and International Technical Assistance
	Effect:	Adopted legal framework for the implementation of requirements from the Sofia Declaration with reference to energy and climate
	Monitoring method:	Reporting on the progress of transposition of the EU Clean Energy Package
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	2030

3.1.2.7 Other dimension elements

1B-7	Policies and measures to achieve low-emission mobility	
No	**Measure**	
1B-7.1	**Sustainable use of renewable resources in transport sector**	
	In order to fulfil the obligations regarding the participation of renewable energy sources in transport, it is necessary to pass decrees regulating the use of renewable sources and other alternative fuels, which prescribe: ▪ Types of fuel from renewable sources in transport, ▪ Share of bio-fuels, electricity from renewable sources, and other alternative fuels in the total fuel consumption for transport, ▪ Measures that can encourage the installation of infrastructure for alternative fuels as part of public transport services, ▪ Supervision of the application of the decree and other measures necessary to meet the objectives.	
	Competent authorities:	Entity governments, Government of Brčko District of BiH, Council of Ministers of BiH
	Type of measure	Regulatory
	Sources of funding:	Budget of institutions
	Effect:	Adopted legal framework for the implementation of requirements from the Sofia Declaration with reference to energy and climate
	Monitoring method:	Reporting on the progress of transposition of the EU Clean Energy Package
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	2026
1B-7.2	**Incentives and subsidies for transport sector**	
	Work on the development of fuel market from renewable energy sources in the transport sector and for the development of suitable infrastructure, with reference to: ▪ Encouraging the development of production of bio-fuels and other alternative fuels (hydrogen and electricity), ▪ Development of the market for bio-fuels and other alternative fuels, ▪ Sustainable use of bio-fuels and other alternative fuels within public transport services, ▪ Development of infrastructure for the use of electricity and other alternative fuels, ▪ Defining the area in which it is mandatory to provide the infrastructure for charging electric cars. In order to develop this market, it is necessary to:	

	- Develop and adopt plans and programmes for the production and use of bio-fuels and other alternative fuels in transport, - Establish models to promote the use of bio-fuels and other alternative fuels, - Provide financial resources for the implementation of plans and programmes.	
	Competent authorities:	Entity governments, Entity environmental protection funds, Government of Brčko District of BiH, Council of Ministers of BiH
	Type of measure:	Financial
	Sources of funding:	Funds for environmental protection and energy efficiency funds
	Effect:	Adopted legal framework for the implementation of requirements from the Sofia Declaration with reference to energy and climate
	Monitoring method:	Reporting on the progress of transposition of the EU Clean Energy Package
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	2026
1B-7.3	**Development of transport infrastructure at the local level**	
	To work at the local level on the preparation and implementation of Sustainable Urban Mobility Plans (SUMPs) in municipalities and cities, taking into account the mobility needs of urban residents and thereby ensuring a better quality of life. It is necessary to promote and work on the introduction of sustainable urban transport systems with low or zero emissions (electric buses, trams, trolleybuses), car sharing, the introduction of city bike systems and the construction of corresponding cycling infrastructure, the closure of central city zones for traffic with the establishment of "Park and Ride" systems; the establishment of quality and efficient city logistics systems, preceded by the creation of a City Logistics Plan; pedestrian zones and pedestrian infrastructure; the implementation of SMART solutions for stationary traffic in peripheral areas of the city, the upgrade and replacement of outdated traffic signals and equipment, as well as other measures included in local sustainable urban mobility plans.	
	Competent authorities:	Local self-government units
	Type of measure:	Infrastructure
	Sources of funding:	Budgets of local self-government units, international funds, state and entity incentives.
	Effect:	Adopted legal framework for the implementation of requirements from the Sofia Declaration with reference to energy and climate
	Monitoring method:	Reporting on the progress of transposition of the EU Clean Energy Package
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	2030

3.2 Dimension: Energy efficiency

Energy efficiency policy instruments, within the framework of the Integrated energy and climate plan in Bosnia and Herzegovina, serve to achieve the structure of targets in this area. The policy instruments are classified according to the requirements of Directive EU 2012/27/EU of the European Parliament and Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC and classified into the following categories:

- EEO energy efficiency obligation schemes
- Alternative energy efficiency programmes
- Energy audits and energy management systems
- Measurement of consumption and billing
- Consumer information and training
- Qualification, accreditation, and certification systems
- Energy services
- Meeting EPBD requirements
- Renovation of buildings
- Eco-labelling and energy labelling of devices
- Public authorities

- Industry
- Transport
- Efficient heating and cooling
- Generation, transmission, distribution, and response to energy demand

3.2.1 General framework for increasing energy efficiency

2-0	**Established general framework for increasing energy efficiency**
2-0.1	**Established incentive mechanism of the energy efficiency programme**

Article 7 of the EED stipulates the obligation to establish a system of energy efficiency obligation schemes, which will ensure that energy distributors and/or energy suppliers who are appointed as obligated parties achieve the set cumulative target of saving energy in final consumption. On an annual level, the value of this target for new savings every year from 01 January 2017 to 31 December 2020 must amount to not less than 0.7% of the annual energy delivered by all distributors and/or suppliers to end customers, and according to the average for the previous three years before 01 January 2016. However, the signatory countries of the Energy Community Treaty can apply 0.5% for the years 2017 and 2018 and then 0.7% for the years 2019 and 2020 when calculating these targets. Article 7 of the EED also gives the possibility that, as an alternative to the obligation schemes, other policy measures to achieve energy savings for end customers should be established, provided that these measures meet the criteria set for the obligation schemes, including equal energy saving targets set.

- Amendments to the existing Entity laws on energy efficiency, which include the EEO mechanism.
- Drafting and adoption of the Decree/Regulation on the implementation of EEO
- Drafting and adoption of secondary legislation for the implementation of EEO

Unlike obligation schemes, alternative programmes are aimed at all sectors of final consumption. For example, programmes focused on energy efficiency measures in public buildings and utilities are exclusively financed from alternative programmes. Programmes in the industry, commercial sector, and transport for financing use some combination of alternative programmes and own financing. On the other hand, programmes in the residential sector use a combination of all three financing mechanisms. Action plans for energy efficiency in Bosnia and Herzegovina provide the architecture of alternative programmes in terms of providing different sources and methods of financing that provide this mechanism with the necessary financial resources. In this regard, the main measures of the energy efficiency policy for the establishment and operation of alternative financing programmes were defined.

Possible sources and methods of financing are as follows:

- Sources of funding
  - Energy fees
  - CO_2 fees
  - Air protection fees
  - Environmental fees
  - Public budgets
  - Funds of international financial institutions (IFI)
  - EU funds
  - Private financing.
- Methods of financing
  - Preferential loans from local sources
  - Subsidies and grants
  - International (preferential) credit lines
  - Public budgets / regular budget lines / multi-year budget
  - Tax incentives for income tax (incentives for investment)
  - ESCO market and PPP.

The energy efficiency policy instruments for the use of funding sources for alternative programmes are as follows:

- Use of energy fees to finance energy efficiency programmes
- Use of CO_2 fees to finance energy efficiency programmes
- Use of air protection fees to finance energy efficiency programmes
- Use of environmental protection fees to finance energy efficiency programmes
- Mechanisms for the use of public budgets to finance energy efficiency programmes
- Use of funds from international financial institutions (IFI) and establishment of international (preferential) credit lines to finance energy efficiency programmes
- Use of funds from domestic financial institutions and establishment of loans from domestic sources to finance energy efficiency programmes
- Use of energy service market (ESCO) and public-private partnership (PPP) to finance energy efficiency programmes
- Use of UN funds and bilateral cooperation funds to finance energy efficiency programmes

▪ Use of EU funds to finance energy efficiency programmes		
No	**Measure**	
2-0.1-1	**Amendments to existing laws on energy efficiency, which include the EEO mechanism**	
	It is necessary to amend the existing laws on energy efficiency in which the EEO mechanism is included .	
	Competent authorities:	MFTER BiH, Entity ministries for energy and Government of BD BiH
	Type of measure:	Regulatory
	Sources of funding:	Budget, International Technical Assistance
	Effect:	Sustainable financing of energy efficiency programmes
	Monitoring method:	Number of adopted legislative acts, Number of promotional events, announcements in the media.
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	2023
2-0.1-2	**Establishment of secondary legislation for the implementation of EEO**	
	It is necessary to establish secondary legislation for the implementation of EEO.	
	Competent authorities:	Entity ministries for energy, Government of BD BiH
	Type of measure:	Regulatory
	Sources of funding:	Budget, International Technical Assistance
	Effect:	Sustainable financing of energy efficiency programmes
	Monitoring method:	Number of adopted legislative acts, Number of promotional events, announcements in the media.
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	2024
2-0.1-3	**Introduction of energy fees to finance energy efficiency programmes**	
	It is necessary to introduce energy fees to finance energy efficiency programmes. Activities are focused on the following: ▪ Introduction of fees for electricity consumption in households, but in combination with support for socially vulnerable categories - included in EEO ▪ Introduction of fees for electricity consumption for small and medium-size enterprises and industry, as long as this does not affect the competitiveness of exports Introduction of fees for the generation of electricity from oil products (particularly "dirty" products such as heavy fuel oil or bunker fuel) and coal	
	Competent authorities:	Entity ministries for energy, Government of BD BiH
	Type of measure:	Financial
	Sources of funding:	Budget, International Technical Assistance
	Effect:	Sustainable financing of energy efficiency programmes
	Monitoring method:	Number of adopted legislative acts, Number of promotional events, announcements in the media.
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	2024
2-0.1-4	**Introduction of CO_2 fees to finance energy efficiency programmes**	
	Introduce CO_2 fees to finance energy efficiency programmes. The activities are focused on the following: ▪ Introduction of CO_2 fee to large industrial energy consumers, according to prescribed CO_2. emission criteria. It is possible to reach voluntary agreements with industrial entities to reduce fees by investing in energy efficiency measures ▪ Introduction of CO_2 fee tax when registering motor vehicles according to CO_2 emission level	
	Competent authorities:	MFTER BiH, Entity ministries for environment and Entity funds for environment and energy efficiency, MPK BiH, Government of BD BiH
	Type of measure:	Regulatory, financial
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Sustainable financing of energy efficiency programmes
	Monitoring method:	Final energy savings(MWh/god), Number of promotional events, announcements in the media.
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	2024
2-0.1-5	**Reprogramming air protection fees and their use to finance energy efficiency programmes**	
	Reprogram environmental protection fees and their use to finance energy efficiency programmes.	

	Competent authorities:	Entity ministries for environment and Entity funds for environment and energy efficiency, Government of BD BiH
	Type of measure:	Regulatory, financial
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Sustainable financing of energy efficiency programmes
	Monitoring method:	Final energy savings(MWh/god), Number of promotional events, announcements in the media.
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	2024
2-0.1-6	**Establishment of mechanisms for the use of public budgets to finance energy efficiency programmes**	
	Establish mechanisms to finance energy efficiency programmes. The activities are focused on the following: ▪ Introduction of multi-year budget planning to ensure the implementation of multi-year energy effect contracts ▪ Introduction of the Budget capturing mechanism, which defines the carrying amount of energy savings and ensures clear financing from savings	
	Competent authorities:	Council of Ministers of BiH, Entity governments, Entity ministries of finance, Entity ministries for energy, Government of BD BiH
	Type of measure:	Regulatory, financial
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Sustainable financing of energy efficiency programmes
	Monitoring method:	Final energy savings(MWh/god),
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	2024
2-0.1-7	**Providing funds from international financial institutions (IFIs) and establishing international (preferential) credit lines to finance energy efficiency programmes**	
	Provide funds from the international financial institutions (IFIs) and contribute to the establishment of international (preferential) credit lines to finance energy efficiency programmes. The activities are focused on the following: ▪ Improvement of conditions for investors, given that the currently offered conditions are still unacceptable for a large number of potential investors ▪ Favourable financial modalities for credit borrowing in order to achieve goals within a specific sector or sub-sector; low interest rate and favourable grace period	
	Competent authorities:	Council of Ministers of BiH, Ministry of Foreign Trade and Economic Relations of BiH, Entity governments, Entity ministries of finance, Entity ministries for energy, Government of BD BiH
	Type of measure:	Financial
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Sustainable financing of energy efficiency programmes
	Monitoring method:	Final energy savings(MWh/god),
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-0.1-8	**Providing funds from domestic financial institutions and establishing preferential loans from domestic sources to finance energy efficiency programmes**	
	Provide funds from domestic financial institutions and contribute to the establishment of preferential loans from domestic sources to finance energy efficiency programmes. The activities are focused on the following: ▪ Generating a higher inflow of currently limited funds into the energy efficiency funds • Possibility of allocating income through CO_2 fees, energy or environmental fees, and obligation schemes for energy efficiency for energy suppliers or distributors (EEO) in the mechanism with the aim of further allocation of funds according to the sectors of final consumption, • Possibility of expanding the financial scope of the fund by investing in association with the commercial financial sector. ▪ Facilitating access to funds for all categories of consumers	
	Competent authorities:	Council of Ministers of BiH, Ministry of Foreign Trade and Economic Relations of BiH, Entity governments, Entity ministries of finance, Entity ministries for energy, Government of BD BiH

	Type of measure:	Financial
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Sustainable financing of energy efficiency programmes
	Monitoring method:	Final energy savings(MWh/god),
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-0.1-9	**Establishment of energy services market (ESCO) and public-private partnership (PPP) to finance energy efficiency programmes**	
	Establish energy services market (ESCO) and a public-private partnership (PPP) to finance energy efficiency programmes to finance energy efficiency programmes. The activities are focused on the following: ▪ Introduction of a multi-year budget and forfeiting into the relevant legal framework ▪ Amendments to the Law on PPP ensuring practical implementation (contracting energy savings through the legal framework of the Law on PPP).	
	Competent authorities:	Council of Ministers of BiH, Ministry of Foreign Trade and Economic Relations of BiH, Entity governments, Entity ministries of finance, Entity ministries for energy, Government of BD BiH
	Type of measure:	Financial
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Sustainable financing of energy efficiency programmes
	Monitoring method:	Final energy savings(MWh/god),
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-0.1-10	**Ensuring the use of UN funds and bilateral cooperation funds to finance energy efficiency programmes**	
	Different implementation agencies operate in Bosnia and Herzegovina, which implement funds from developed countries, intended for the development of third countries. In the energy efficiency segment, the most active are the United Nations Development Programme (UNDP), implementing agencies operating in BiH based on bilateral agreements, such as GIZ (German technical cooperation), USAID (USA cooperation), DEZA (Swiss cooperation), etc. These funds are mainly intended for technical assistance in the segment of energy efficiency and provision of grant assistance in the implementation of energy efficiency projects, etc.	
	Competent authorities:	Council of Ministers of BiH, Ministry of Foreign Trade and Economic Relations of BiH, Entity governments, Entity ministries of finance, Entity ministries for energy, Government of BD BiH
	Type of measure:	Financial
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Sustainable financing of energy efficiency programmes
	Monitoring method:	Final energy savings(MWh/god),
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-0.1-11	**Ensuring the use of EU funds to finance energy efficiency programmes**	
	Participation of the Western Balkans countries in the European Union programmes is regulated by framework agreements on the general principles of participation of individual countries in EU programmes. With the entry into force of the Framework Agreement on general principles of Bosnia and Herzegovina's participation in the Community programmes, since January 2007, Bosnia and Herzegovina has had the opportunity to join individual programmes. For the period 2014–2020, the Federation of Bosnia and Herzegovina is granted access to the following EU programmes: ▪ Framework programme for research and innovation - Horizon 2020, Science and innovation, EUR 77 billion; ▪ Programme for the Competitiveness of Enterprises and Small and Medium-sized Enterprises – COSME, Competitiveness and entrepreneurship, EUR 2.2 billion; ▪ Programme for the environment and climate activities – LIFE, Environmental protection, EUR 3.4 billion currently (no access). On the other hand, the European Commission introduced a revision of the previous IPA pre-accession aid instrument, a new IPA II pre-accession aid instrument for the period 2014-2020. The policy areas according to the new Regulation are divided as follows: ▪ Reforms during the preparation for the Union membership and the associated building of institutions and capacities; ▪ Socio-economic and regional development;	

	▪ Employment, social policies, education, promotion of gender equality, and development of human resources; ▪ Agricultural and rural development; ▪ Regional and territorial cooperation. It was particularly emphasised that IPA II will assess the progress in achieving specific goals using indicators and, depending on the achieved progress, financial support will be reallocated between programmes and between beneficiary countries.	
	Competent authorities:	Council of Ministers of BiH, Ministry of Foreign Trade and Economic Relations of BiH, Entity governments, Entity ministries of finance, Entity ministries for energy, Government of BD BiH
	Type of measure:	Financial
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Sustainable financing of energy efficiency programmes
	Monitoring method:	Final energy savings(MWh/god),
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous

2-0.2	**Establishment and implementation of energy audits and energy management systems**

Article 8 of the EED stipulates the obligation to implement the following main policy measures for the implementation of the EED:

- Establishment of transparent and non-discriminatory minimum criteria for energy audits, in accordance with Annex 6 of the EED;
- Development and implementation of a training program for the qualification of experts for energy audits;
- Adoption of the regulatory framework for those performing energy audits and for quality control of their work, and the development and implementation of a training program for the qualification of experts for energy audits;
- Promotion of the accessibility of high-quality energy audits that meet the criteria set in Annex 6 of the EDD, among all categories of final energy consumers;
- Establishment of an obligation for large enterprises (which are not classified as SMEs) to perform regular energy audits aligned with the criteria from Annex 6 of the EDD, and the development of a list of enterprises to which this obligation applies;
- Development and implementation of programmes to encourage SMEs to perform energy audits, implementation of energy efficiency measures recommended on the basis of these audits, and introduction of energy management; Presenting specific examples to SMEs, which illustrate the benefits that the introduction of an energy management system would bring to their business;

The plan of priority measures that will be implemented in Bosnia and Herzegovina in the coming period, bearing in mind the relevant obligations under Directive 2012/27/EU and the current situation in this area, includes the following:

- Implementation of the energy management system and energy efficiency information system in government institutions
- Implementation of the system of energy inspections in residential and non-residential buildings
- Implementation of energy management in the public sector
- Implementation of energy management in utilities
- Encouraging SMEs to apply energy management and introduce the ISO 50001 standard

2-0.2-1	**Establishment of energy management system and energy efficiency information system**
	Establish energy management system in the public sector and introduce energy efficiency information system. In the planning period, it is necessary to implement the following : ▪ Establish Component 1 - Legal and strategic framework and action plans and programmes ▪ Establish Component 2 - Energy savings ▪ Establish Component 3 - Energy consumption ▪ Establish Component 5 - Energy certificates of buildings ▪ Establish Component 5 - Technical heating and air conditioning systems ▪ Establish IOPISEE Application - Integral processing and analysis of energy efficiency information system data ▪ Establish the structure of ISEE holders - Data holders for components 1, 2 and 3 who have the obligation to enter data and deliver information to the Fund for the purpose of the ISEE Rulebook are: a. Authorities and bodies of governments, LSGUs, public administration bodies, organisations, regulatory bodies, public institutions, agencies, public enterprises, b. Large energy consumers, c. Distribution system operators, energy distributors, and energy suppliers

	▪ Appointment of persons in charge of entering data into the information system from the ranks of employees or persons engaged otherwise, including : a. Energy associate; b. Energy manager; c. Energy manager coordinator.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for energy and Entity funds for environment and energy efficiency, Government of BD BiH
	Type of measure:	Regulatory, organisation
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Sustainable financing of energy efficiency programmes
	Monitoring method:	Information system development and implementation of energy management
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-0.2-2	**Establishment and implementation of energy audit systems in residential and non-residential buildings**	
	Establish and implement an energy audit system in residential and non-residential buildings. Energy audits of residential buildings are an integral part of the process of issuing occupancy permits for new buildings, and issuing energy certificates for existing buildings. On the other hand, energy audits of non-residential buildings are an integral part of the tasks of energy management in the public sector.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries of spatial planning and Entity funds for environment and energy efficiency, Government of BD BiH
	Type of measure:	Regulatory, organisation
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Increased energy performance of buildings
	Monitoring method:	Number of energy audits in residential and non-residential buildings, Number of promotional events, announcements in the media.
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-0.2-3	**Establishment of energy management in utilities**	
	Establish a legal framework for the implementation of energy management in utilities. This means not less than the following: ▪ Introduction of regular energy audits of energy systems of utilities, ▪ Establishment of reporting obligations ▪ Establishment of mechanisms to strengthen the capacity of persons and organisations that conduct energy audits ▪ Establishment of financing mechanisms for measures to increase the energy efficiency of energy systems of utilities.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for energy, Government of BD BiH
	Type of measure:	Regulatory
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in utilities
	Monitoring method:	Number of energy audits in the utility sector, Number of promotional events, announcements in the media.
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-0.2-4	**Establishment of obligations for large enterprises (which not classified into SMEs) to introduce energy management**	
	Establish obligations for large enterprises (which not classified into SMEs) to perform regular energy audits aligned with the criteria from Annex 6 of the EDD. This implies the following: ▪ Establishment of dynamic consumption thresholds that define a large consumer, ▪ Developing a list of companies to which this obligation applies, ▪ Establishment of forms for reports on the energy audit of large consumers, ▪ Establishment of mechanisms to strengthen the capacity of persons and organisations that conduct energy audits ▪ Defining possible financial instruments to support the increase in energy efficiency of large consumers.	

	This measure is directly associated with the main policy measures in the industry.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for energy, Government of BD BiH
	Type of measure:	Regulatory
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in the commercial sector and industry
	Monitoring method:	Number of energy audits in the commercial sector and industry, Number of promotional events, announcements in the media.
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-0.2-5	**Support for the development and implementation of programmes to encourage SMEs to apply energy management**	
	Provide promotional and technical support to the Entities in the development and implementation of programmes to encourage SMEs to perform energy audits, implement energy efficiency measures recommended on the basis of these audits, and introduce energy management; Presenting specific examples to SMEs, which illustrate the benefits that the introduction of an energy management system would bring to their business. This measure is directly related to the main policy measures in the industry.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for energy, Government of BD BiH
	Type of measure:	Regulatory
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in the commercial sector and industry
	Monitoring method:	Number of energy audits in the commercial sector and industry, Number of promotional events, announcements in the media.
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous

2-0.3 Establishment and implementation of the energy measurement and billing system

The aim of these measures is to motivate consumers of electricity, gas, and energy for heating to use energy rationally and to take appropriate energy efficiency measures. The key obligations stipulated in Article 9 ('*Measurement of energy consumption*') are as follows:

- To the extent that it is technically possible, financially justified, and proportional to the potential scope of savings - provide end customers of electricity, natural gas, district heating and cooling and hot water for households with individual meters purchased at competitive prices, which accurately reflect actual energy consumption of end customers and provide information on the real time of energy use. The installation of such meters is mandatory in case of replacement of the existing meter to the extent that it is technically possible and financially justified, when connecting new buildings and at a significant level of renovation of existing buildings in accordance with the provisions of Directive 2010/31/EU (EPBD).
- For buildings connected to a district heating, cooling and hot water supply system or to a central system that supplies several buildings, it is mandatory to install an energy or hot water meter at the heat exchanger or the point of delivery, or to introduce a consumption measurement and billing system based on actual consumption.

Article 10 ('information on the energy billing') stipulates that, if end customers do not have smart meters, the information on their energy consumption billing must be accurate and based on actual consumption and comply with the requirements from Annex VII of Directive 2012/27/EU. It is also stipulated that end customers must have the possibility of easy access to information about their energy consumption in the past period of at least 3 years (for cumulative data) or two years (for detailed data), or from the date of signing the energy supply contract if it is a shorter period.

Article 11 ('Costs of access to information on energy measurement and billing') stipulates that end customers must receive all their bills and billing information for energy consumption free of charge, and that they must have access to data on their consumption free of charge and in an appropriate manner.

The plan of priority measures that will be implemented in Bosnia and Herzegovina in the coming period, taking into account the relevant obligations under Directive 2012/27/EU and the current situation in this domain, includes the following:

- Development of technical and economic justification for the introduction of energy consumption measurement systems for end-users
- Metering and billing according to actual consumption in district heating, cooling, and hot water supply systems

▪ Use of intelligent systems for measuring electricity and gas supply		
2-0.3-1	**Introduction of metering and billing according to actual consumption in district heating, cooling, and hot water supply systems**	
	Establish a system of individual devices for measuring energy consumption. This implies the following: • Promote the obligation of distribution system operators, energy suppliers, small distribution system operators, and small suppliers to install individual devices at end consumers for energy consumption, • Provide technical assistance to legal entities under obligation to establish the billing methodology and technical solutions in this matter.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for spatial planning, Government of BD BiH
	Type of measure:	Regulatory
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in the residential sector
	Monitoring method:	Number of adopted legislative acts, Number of promotional events, announcements in the media, training
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-0.3-2	**Introduction of intelligent systems for measuring electricity and gas supply**	
	Introduce an intelligent system for measuring the delivery of electricity and gas. This implies the following: • Promote the introduction of intelligent systems for measuring the delivery of electricity and gas, • Provide technical assistance to legal entities for the introduction of intelligent systems for measuring the supply of electricity and gas.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for energy, Government of BD BiH
	Type of measure:	Regulatory, organisation
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in the residential sector
	Monitoring method:	Number of adopted legislative acts at the Entity level, Number of promotional events, announcements in the media, training
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous

2-0.4	**Establishment and implementation of consumer information and training programmes**

Article 12 of the EED stipulates the obligation to take appropriate measures to encourage efficient use of energy by small energy consumers, including households, and measures that ensure and facilitate the efficient use of energy by small consumers. These measures may include:

- Series of instruments and policies to promote behavioural change regarding energy consumption (fiscal measures, access to funding sources such as grants and incentives, provision of information, implementation of demo projects, workplace activities); or
- Various ways and means to involve consumers and consumer associations in the processes of possible introduction of smart meters, to inform them about (i) cost-effective and easily achievable changes in the way energy is used and (ii) measures to increase energy efficiency.

Article 17 of the EED stipulates the obligation to ensure transparency and availability of information on mechanisms for increasing energy efficiency available to consumers, construction and installation companies, banks, and all other participants in the energy market, and the obligation to implement appropriate initiatives for information, raising awareness and training aimed at informing citizens about the benefits and ways of implementing energy efficiency measures.

The plan of priority measures that will be implemented in Bosnia and Herzegovina in the coming period, taking into account the relevant obligations under Directive 2012/27/EU and the current situation in this domain, includes the following:

- Drafting and adoption of the Information, Professional Development and Education Strategy on EE (in the segments that refer to the provisions of Article 12 and Article 17 of the EDD);
- Organising promotional and educational gatherings

2-0.4-1	**Implementation of the Program of Information, Professional Development and Education on energy efficiency**

	Implementation of the Program of Information, Professional Development and Education on energy efficiency in Bosnia and Herzegovina with an emphasis on the implementation of the following activities within the individual measures: ▪ Drafting and adoption of the Information, Professional Development and Education Strategy on EE (in the segments that refer to the provisions of Article 12 and Article 17 of the EDD); ▪ Organising promotional and educational gatherings	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for energy, Government of BD BiH
	Type of measure:	Education, organisation
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Increased professional capacities
	Monitoring method:	Number of promotional events, announcements in the media, training
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous

2-0.5	**Establishment and implementation of qualification, accreditation and certification systems**

Article 16 of the EED stipulates the obligation to establish certification or accreditation programmes and/or equivalent educational programmes for energy service providers, energy inspectors, energy managers and installers of parts of buildings related to energy (elements of the building envelope and technical systems of the building, in accordance with Article 2(9) of Directive 2010/31/EU). These programmes must be reliable, must contribute to the achievement of energy efficiency goals, and must be publicly available.

The plan of priority measures that will be implemented in Bosnia and Herzegovina in the coming period, taking into account the relevant obligations under Directive 2012/27/EU and the current situation in this matter, includes the following:

- Implementation of qualification, accreditation and certification systems

2-0.5-1	**Implementation of qualification, accreditation and certification systems**	
	Implement qualification, accreditation and certification systems, which includes the implementation of information, professional training and education programmes on energy efficiency, with an emphasis on the implementation of the following activities within the individual measures: ▪ Establishment and implementation: o Training programme for persons to perform energy audits of buildings. heating and air conditioning system, industrial plants and utility service systems; and ▪ Training programme for energy managers in public buildings, commercial sector and industry, and utility service systems	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for energy, Entity ministries for energy, Government of BD BiH
	Type of measure:	Regulatory, education, organisation
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Increased professional capacities
	Monitoring method:	Number of promotional events, announcements in the media, training
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous

2-0.6	**Establishment and implementation of energy services implementation mechanisms**

Article 18 of the EED prescribes the obligation to promote the market of energy services and provide access to that market for small and medium-size enterprises, primarily as follows:

- By disseminating clear and accessible information about: (a) contracts on energy services and clauses that should be included in such contracts, in order to guarantee energy savings and rights of end clients; and (b) available financial instruments, incentives, grants, and loans to support projects related to energy efficiency services.
- By making available to the public an updated list of qualified energy service providers, or by establishing communication platforms through which energy service providers can inform interested parties; and
- By encouraging the public sector to accept offers for energy services, particularly those for the energy renovation of buildings, by: (a) providing a publicly available model contract on energy services, drafted in accordance with the requirements of Annex XIII of the EDD; and (b) providing information on best practices in energy efficiency contracting, including cost-benefit analyses over the lifetime of buildings.

Article 18 also stipulates the obligation to provide support for the proper functioning of the energy services market, including: (a) establishing publicly accessible contact points where end clients can obtain all necessary information; (b)

if necessary, by removing regulatory and non-regulatory barriers that prevent the introduction of energy service contracts and other energy efficiency service models for the implementation of energy saving measures; (c) considering the possibility of establishing an independent mechanism, such as an ombudsman institution, to ensure efficient resolution of complaints and out-of-court settlement of disputes arising from energy service contracts, and (d) enabling independent market intermediaries to play a role in supply-side market development and demand.
Countries signatory to the Energy Community Treaty must also prevent the activities of energy distributors, distribution system operators, and energy retail companies which could hinder or prevent the demand for energy services or other measures to improve energy efficiency, or which could hinder or prevent market development for these services and measures. Such measures include, for example, abuse of their dominant position or obstructing their competitors' access to the market.
The existing Entity laws on energy efficiency recognise the ESCO model and contracts on energy services that guarantee energy savings by increasing energy efficiency. However, the energy services market in Bosnia and Herzegovina has not yet been established, due to numerous regulatory and non-regulatory barriers.
The plan of priority measures to be implemented in Bosnia and Herzegovina in the coming period, taking into account the relevant obligations under Directive 2012/27/EU and the current situation in this matter, includes the following:

- Establishment of the legal and regulatory framework necessary for the establishment and development of the energy services market

2-0.6-1	**Establishment of the legal and regulatory framework necessary for the establishment and development of energy services market**	
	Establish the legal and regulatory framework necessary for the definition and development of the energy services market in accordance with the provisions of Article 8 of the EDD, which primarily includes: ▪ Amendments to the legislation on the budget, in order to ensure government institutions and public institutions enter into long-term / multi-year contracts on the energy effect; ▪ Amendments to the existing legislation on public-private partnership, in order to ensure the contracting of energy savings through this legal framework; ▪ Establishment of an online info-platform in accordance with the requirements of Article 18 of the EED	
	Competent authorities:	Ministry of Finance of BiH, Entity ministries for finance, Government of BD BiH
	Type of measure:	Regulatory
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in the public commercial sectors and industry
	Monitoring method:	Number of adopted laws and regulations
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous

3.2.2 Reduction of energy intensity of the residential sector

2-1	**Reduction of energy intensity of the residential sector**
2-1.1	**Implementation of measures and instruments to meet the requirements of EPBD**

State ministries should provide appropriate financial and other instruments to improve the energy efficiency of buildings and the transition to nearly zero-energy buildings. The building renovation strategy, when providing incentives for the construction or significant renovation of buildings, takes into account cost-optimal levels of energy efficiency by fulfilling the minimum requirements that are in accordance with the cost-optimal analysis. It also provides a list of existing and planned measures for savings in both required and final energy in the building sector. Currently, a number of programmes for non-residential buildings are being implemented at the Entity level, financed by international financial institutions (EBRD), but opportunities are also being opened for support from these institutions for the non-residential sector (WB, EIB).
The plan of priority measures to be implemented in Bosnia and Herzegovina in the coming period, taking into account the relevant obligations under Directive 2012/27/EU and the current situation in this matter, includes the following:

- Establishment of methodology to calculate the energy performance of buildings
- Establishment of minimum requirements for the energy performance of buildings
- Establishment of a system of energy certification of buildings
- Establishment of a system of regular inspections of heating and ventilation systems

No	**Measure**
2-1.1-1	**Establishment of methodology to calculate the energy performance of buildings**
	Establish and use the methodology to calculate the energy performance of buildings, which includes: ▪ Adopted methodology to calculate the energy performance of buildings, according to the general framework as defined in the EPBD, to be included in the corresponding legislative

	framework, and to provide the necessary funds and instruments for its development and application – completed; ▪ Development of national supplements as an annex to the budget methodology - completed; ▪ Adoption of relevant CEN standards that support the application of methodology; ▪ Development and application of the climate database - completed; ▪ Development and application of software for calculation of energy performance of buildings - completed; ▪ Expert training on budgeting methodology and software application - ongoing; ▪ Establishment of centres to support the use of software.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for spatial planning, Government of BD BiH
	Type of measure:	Regulatory
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in the residential, public, and commercial sectors
	Monitoring method:	Number of regulatory solutions
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-1.1-2	**Establishment of minimum requirements for energy performance of buildings**	
	Establish and implement minimum requirements for energy performance of buildings, which includes: ▪ Adopted defined minimum requirements for energy performance of buildings, and providing the necessary funds; ▪ Selection and definition of the approach to be used to establish the minimum requirements for energy performance of buildings - completed; ▪ Defining input values for cost-optimal calculations - completed; ▪ Implementation of energy cost calculation; ▪ Establishment of cost-optimal levels for energy performance of buildings - completed; ▪ Alignment of regulations with the minimum requirements for energy performance of buildings; ▪ Dissemination of information and training of key actors in the construction sector; ▪ Coordination of routines and specifications for documenting and verifying the energy performance of buildings; ▪ Training on energy audits	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for spatial planning, Government of BD BiH
	Type of measure:	Regulatory
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in the residential, public, and commercial sectors
	Monitoring method:	Number of regulatory solutions
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-1.1-3	**Establishment of an energy certification system for buildings**	
	Establish and implement an energy certification system for buildings, which includes: ▪ Energy certification of buildings, as required by EPBD, and its inclusion in the relevant legislative framework, and ensure the necessary resources and funds for its development; ▪ Drafted and adopted regulation for energy certification of buildings, which is in the process of being adopted at the cantonal level; ▪ Established organisational model for the implementation of the energy certification system for buildings (EPC development, certificate issuance, quality control, information assurance, training and accreditation of experts, reporting, etc.); ▪ Website with explanations and status for implementation of energy certification of buildings at FMPU; ▪ Created certification tool; ▪ Training and accreditation of experts takes place regularly; ▪ Established an independent control system and certificate registry.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for spatial planning, Government of BD BiH
	Type of measure:	Regulatory

	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in the residential, public, and commercial sectors
	Monitoring method:	Number of energy certificates
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-1.1-4	**Establishment of a system of regular inspections of heating and ventilation systems**	
	It is necessary to establish a system of regular inspections of the heating and ventilation system, which includes: ▪ Request to define the necessary measures to establish a system of regular inspections of the heating and ventilation system, as required by the EPBD, and its inclusion in the relevant legislative framework, and ensure the necessary resources and funds for its development; ▪ Development and adoption of regulations for regular inspections of heating and ventilation systems; ▪ Establishment of an organisational model for the implementation of system of regular inspections of heating and ventilation systems (quality control, information assurance, training and accreditation of experts, reporting, etc.);	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for spatial planning, Government of BD BiH
	Type of measure:	Regulatory
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in the residential, public, and commercial sectors
	Monitoring method:	Number of energy audits
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-1.1-5	**Implementation of EPBD requirements**	
	Establish a framework to implement EPBD requirements. It includes of a series of tasks: ▪ Defining rules and sanctions for non-implementation of legal provisions and their inclusion in the legal framework. The sanctions may be imposed for non-fulfilment of obligations for: o Minimum requirements for energy performance of buildings, o Certification, o Regular inspections. ▪ Establishment of a system for monitoring the implementation of requests and sanctioning; ▪ Information campaigns for building owners or tenants on various methods and practices to improve the energy performance of buildings.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for spatial planning, Government of BD BiH
	Type of measure:	Regulatory
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in the residential, public, and commercial sectors
	Monitoring method:	Number of legal and regulatory solutions
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous

2-1.2	**Implementation of Building Renovation Strategy**

No	**Measure**	
2-1.2-1	**Adoption of Building Renovation Strategy**	
	Adopt the Building Renovation Strategy in Bosnia and Herzegovina, and the Entity Building Renovation Strategy and Building Renovation Strategy of the Brčko District of BiH. The process of adopting the Renovation Strategy includes the following steps: (1) Confirmation of key participants and information sources; (2) Adoption of technical and economic assessments specified in the strategy; (3) Establishment of policy for the implementation of the strategy or programme of renovation of both residential and non-residential buildings; (4) Publication of the Strategy and its delivery to all participants in the process.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for spatial planning, Government of BD BiH

	Type of measure:	Strategic
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in the residential, public, and commercial sectors
	Monitoring method:	Adopted strategy
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	2023
2-1.2-2	**Establishment of policy for the implementation of Strategy**	
	The purpose of establishing the policy for the implementation of strategy is to primarily assess the current political environment affecting the building renovation, and to identify changes in policy and additional policies that will need to be enacted in order to initiate the building renovation market. The following is necessary in the building renovation programme: ▪ Establish the support of the entire political spectrum for the in-depth renovation of buildings in the renovation programme; ▪ Establish an independent commission to monitor and report on the strategy progress on a long-term basis, including making recommendations for its improvement and periodic supplements; ▪ Undertake a systematic assessment of barriers to renewal in each market segment; ▪ Establish a goal to reduce poverty by improving energy efficiency in the housing stock; ▪ Holistically develop inter-policy goals and achieve them in the relevant areas, including sustainable development and urbanisation, resource efficiency, sustainable construction, etc.; ▪ Establish a broad group of participants as a forum for consultation, policy formulation, and feedback on practical matters and marriers to renovation; ▪ Demonstrate a leadership role by accelerating the in-depth renovation of public buildings, thereby developing supply chain capabilities and providing a knowledge base for commercial activities included in the renovation process.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for spatial planning, Government of BD BiH
	Type of measure:	Regulatory
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in the residential, public, and commercial sectors
	Monitoring method:	Number of established policy instruments
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	2023
2-1.2-3	**Establishment of sustainable legislative framework for the implementation of Strategy**	
	Establish a legislative framework for the implementation of Strategy. It includes a series of tasks: ▪ Recognise breaking points and develop appropriate regulations that can be used to encourage energy efficiency measures or require their introduction; ▪ Introduce mandatory energy efficiency schemes as an incentive to initiate the building renovation process; ▪ Provide incentives for social categories to improve the energy performance of residential buildings; ▪ Address limiting practices in the implementation of low-carbon technologies in order to ensure the establishment of a favourable environment for buildings with integrated renewable energy sources; ▪ Implement measures to overcome the restrictive policy in the residential sector, which prevents activities to improve the energy performance of buildings; ▪ Impose the improvement of the most energy efficient buildings to a higher level of energy efficiency, for example through restrictions on the sale or lease of buildings in the lowest energy efficiency categories.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for spatial planning, Government of BD BiH
	Type of measure:	Regulatory
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in the residential, public, and commercial sectors
	Monitoring method:	Number of legal and regulatory solutions
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	2023
2-1.2-4	**Establishment of a sustainable technical framework for the implementation of Strategy**	

	Establish technical framework for the implementation of Strategy. It includes a series of tasks: ▪ Develop appropriate standards that will effectively respond to new challenges, using experience and new technological solutions; ▪ Analyse the potential for district heating systems in order to produce efficient low-carbon energy; ▪ Ensure appropriate monitoring and implementation in accordance with building regulations; ▪ Develop packages of measures that can be easily replicated in similar types of buildings; ▪ Introduce quality standards, certification systems for installers and products.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for spatial planning, Government of BD BiH
	Type of measure:	Regulatory
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in the residential, public, and commercial sectors
	Monitoring method:	Results of analytical activities
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	2024
2-1.2-5	**Establishment of a sustainable fiscal/financial framework for the implementation of Strategy**	
	Establish a financial framework for the implementation of Strategy. It includes a series of tasks: ▪ Establish safe sources of financing, including those specified in Article 20 of the EED, and financing from the European Union and other international sources, and develop mechanisms that efficiently use private capital; ▪ Establish factors by which savings of public funds affect indirect benefits (e.g. health, employment); ▪ Develop financing models adapted to specific market segments, which provide simple ("one-stop-shop") and commercially attractive sources of financing for building renovation; ▪ Develop mechanisms to encourage building renovation through third-party financing, e.g. ESCO and EPC; ▪ Eliminate incentives for the use of fossil fuels in order to eliminate unwanted effects that discourage investment;	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for spatial planning, Entity ministries for finance, Government of BD BiH
	Type of measure:	Financial
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in the residential, public, and commercial sectors
	Monitoring method:	Number of established instruments
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	2024
2-1.2-6	**Communication and capacity building for the implementation of Strategy**	
	Build capacities for the implementation of Strategy. It includes a series of tasks: ▪ Establish publicly available databases that show the energy efficiency of renovated buildings and information on how to undertake renovation; ▪ Develop skills and training programmes covering key occupations and disciplines; ▪ Establish networks for the exchange of experience and knowledge with neighbouring regions and countries; ▪ Encourage the development of local industry and supply chain in order to achieve macroeconomic advantages and reduce CO2 emissions; ▪ Develop promotional activities that provide building owners with better quality and meaningful information about the effects of building renovation; ▪ Establish regular communication with the public about the progress of the renovation strategy.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for spatial planning, Entity ministries for finance, Government of BD BiH
	Type of measure:	Financial
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in the residential, public, and commercial sectors

	Monitoring method:	Quantified capacity increase
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-1.2-7	**Promotion and support of the development and scientific research framework for the implementation of Strategy**	
	Provide promotional and technical support to the development and scientific research framework for the implementation of Strategy. ▪ Support scientific research work, development, and demonstration projects with reference to the development of new and improvement of existing technologies and techniques that can be used in building renovation, including best practices.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for spatial planning, Entity ministries for finance, Government of BD BiH
	Type of measure:	Education
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in the residential, public, and commercial sectors
	Monitoring method:	Number of implemented promotional instruments
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous

2-1.3	**Implementation of eco-labelling and energy labelling of devices**

No	**Measure**	
2-1.3-1	**Market assessment and selection of priority product groups**	
	Conduct a comprehensive market assessment and select priority product groups for the implementation of Eco-Design Directive (2009/125/EC) and Energy Labelling Regulation (2017/1369). The implementation should be gradual and therefore it is necessary to focus on the group of products with the widest scope for economical energy savings. The first step in this task will therefore be to determine which of the product category regulations should be taken into account for transposition. This is carried out as follows: ▪ Review of existing regulations and protocols on market surveillance; ▪ Assessment of product types for transposition in phase one, taking into account the indicative annual energy use, ▪ Market mapping of the main players in the market and their current activities, including importers, manufacturers, suppliers, distributors, and inspectors; ▪ Assessment of the current level of market penetration of technologies and efficient/inefficient products, or as a substitute for this, dominant sources of import; ▪ Framework analysis of costs and benefits of the application of eco-design regulations - both at the household level and at the level of market impact. This impact assessment will also include an impact analysis in low-income households; ▪ Qualitative assessment of all additional market, regulatory, and technological barriers that must be eliminated for the application of regulations. ▪ Preliminary recommendations on which products are considered to have an acceptable readiness on the market for the full transposition of regulations on eco-design and product energy class labelling.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for energy, Government of BD BiH
	Type of measure:	Regulatory
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in the residential, public, and commercial sectors and industry
	Monitoring method:	Results of analytical activities
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-1.3-2	**Establishment of a sustainable legislative framework for the implementation of Eco-Design Directive (2009/125/EC) and Energy Labelling Regulation (2017/1369)**	
	Establish a legislative framework for the implementation of Eco-design Directive (2009/125/EC) and Energy Labelling Regulation (2017/1369), which implies the following: ▪ Establishment of technical specifications for each of the technologies according to priority regulations;	

	▪ Establishment of priority regulations, including conformity assessment procedures, and necessary information to facilitate compliance verification, time frame to harmonise importers and producers, and the period for review of regulations; ▪ Adoption of appropriate testing methodology for priority technologies; ▪ Drafting proposals for priority regulations and their adoption;	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for energy, Government of BD BiH
	Type of measure:	Regulatory
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in the residential, public, and commercial sectors and industry
	Monitoring method:	Number of legal and regulatory solutions
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-1.3-3	**Establishment of a system for monitoring, verification, and implementation of on eco-labelling and energy labelling of devices**	
	Establish of a system for monitoring, verification, and implementation of on eco-labelling and energy labelling of devices . Full implementation of the regulations will require ongoing efforts by numerous government and market organisations in many areas of activity, including: ▪ Raising awareness of suppliers and customers; ▪ Market surveillance and enforcement, including sanctions to address non-compliance; ▪ Availability of product evaluations and service testing; ▪ Other supporting policies that help market transformation (e.g. financial and technical assistance; approval and procurement).	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for energy, Government of BD BiH
	Type of measure:	Regulatory
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in the residential, public, and commercial sectors and industry
	Monitoring method:	Number of legal and regulatory solutions
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous

3.2.3 Public and commercial sectors are leading in the implementation of energy efficiency mechanisms

2-2	**Public and commercial sectors are leading in the implementation of energy efficiency mechanisms**	
No	**Measure**	
2-2-1	**Operational plan for the renovation of central government buildings**	
	Holders of obligations from Article 5 of the EED will prepare operational plans for the renovation of this category of buildings for a period of five years, taking into account the achievement of the goals defined in the previous activity. In order to reach operational plans, it is necessary to: 1) Identify the potential for savings in the use of energy in institution buildings; 2) Conduct a CBA analysis of energy efficiency programmes in institutional buildings; 3) Identify financial instruments to finance the implementation of measures; 4) Establish programmes of priority measures.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for spatial planning, Government of BD BiH
	Type of measure:	Planning
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduction of final energy consumption in the public sector
	Monitoring method:	Monitoring plan implementation
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	2023
2-2-2	**Establishment of a framework that would ensure the establishment of energy management in institutions**	
	stablish a framework to implement energy management in buildings of public authorities. This activity includes the following: ▪ Passing regulations for the establishment of an energy management system, ▪ Development of training and development programmes for energy managers and other personnel involved in energy management	

	▪ Training and continuous improvement of energy managers and other personnel involved in energy management.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for spatial planning, Government of BD BiH
	Type of measure:	Regulatory, organisation
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in the public sector
	Monitoring method:	Number of legal and regulatory solutions and capacity development monitoring
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-2-3	**Establishing a sustainable system of financial mechanisms to improve energy efficiency of the public sector**	
	Public budgets are adopted according to the relevant laws of individual levels of government for a period of one fiscal year. A part of the funds from public budgets has already been invested in various direct and indirect programmes and measures to increase the energy efficiency of all levels of government in the Federation of Bosnia and Herzegovina. An increase in investments through public budgets is necessary to ensure the implementation of programmes foreseen in this action plan. It is also necessary to create the necessary preconditions for budget financing with repayment of investments by reducing future budget expenditures (Budget capturing), and providing funds for reinvestment in energy efficiency measures through the existing budget lines	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for spatial planning, Government of BD BiH
	Type of measure:	Regulatory, organisation
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in the public sector
	Monitoring method:	Number of instruments
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-2-4	**Establishment and promotion of the system of energy services for energy saving in public authorities**	
	Energy service for the purpose of this law includes activities and actions that lead to a measurable or estimable improvement in the energy efficiency of buildings and other facilities, technical systems and production processes, or to energy savings that can be expressed in money, which are achieved by applying energy-efficient technology or procedures which achieve energy savings. The energy service is provided by an energy service company (ESCO) or another legal entity, i.e. an energy service provider, based on an energy service contract. Energy services may include energy audit, design, construction, reconstruction, energy rehabilitation, maintenance, consulting or management, and supervision of energy use. It is necessary to implement measures to establish a system of energy services in public authorities, which includes: ▪ Introduction of multi-year budgets that would enable users (institutions) of the public budget to implement measures to increase energy efficiency with a shorter return on investment period, without major investments and efforts in the procurement, delivery, and maintenance of heating systems, and which would be the basis for the development and establishment of the ESCO market, ▪ Development of legislative solutions that would enable the operation of ESCO companies when providing services to public authorities, ▪ Promotion of framework for the provision of energy services in institutions.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for spatial planning, Government of BD BiH
	Type of measure:	Regulatory, organisation
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in the public sector
	Monitoring method:	Number of instruments
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-2-5	**Establishment and implementation of a system for monitoring the implementation of main energy efficiency policy measures in public authorities**	
	Establish and implement a system for monitoring the implementation the main policy measures of activities in the public sector and services, planned within the existing strategic and planning documents.	

	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for spatial planning, Government of BD BiH
	Type of measure:	Regulatory, organisation
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in the public sector
	Monitoring method:	Number of instruments
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-2-6	**Further improvement of the information system and reporting on energy efficiency in public authorities**	
	Establish and implement an information system and reporting on energy efficiency in public authorities. This activity includes the following: ▪ Establishment of register of public buildings ▪ Collection and processing of information on energy consumption of public buildings ▪ Reporting on energy consumption in public buildings	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for spatial planning, Government of BD BiH
	Type of measure:	Regulatory, organisation
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in the public sector
	Monitoring method:	Monitoring the operation of information system
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous

3.2.4 Reduced energy intensity of industry

2-3	**Reduced energy intensity of industry**	
No	**Measure**	
2-3-1	**Improvement of legislative framework that would provide the establishment of regular energy audits of industrial facilities and energy management in industry and small and medium-size enterprises**	
	Improve of legislative framework that would provide the establishment of regular energy audits of industrial facilities. Regular audit of energy efficiency can reveal energy saving potentials that would not otherwise be identified. Although mandatory for IPPC installations, the energy audit should be extended beyond these installations and subsidised for small and medium-size enterprises. Initial energy audits can reveal significant potential for energy savings, and in the long term will essentially be used to ensure that energy is used efficiently. Plant energy audits are comprehensive evaluations of the current performance of systems and equipment that use energy in the plant, which are compared to assigned performance levels or industry best practice. The difference between recorded performance and 'best practice' is the potential for energy and cost savings.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for energy, Government of BD BiH
	Type of measure:	Regulatory
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in industry
	Monitoring method:	Number of legal solutions
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-3-2	**Establishment of a sustainable system of financial incentives to improve the energy efficiency of industrial processes**	
	Improve the legislative framework of a sustainable system of financial incentives to improve the energy efficiency of industrial processes. The legislative framework on energy efficiency will bring the following: ▪ Review and proposal of financial instruments for energy saving; ▪ Contract models for financial instruments;	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for energy, Government of BD BiH
	Type of measure:	Regulatory
	Sources of funding:	Public budget, International Technical Assistance

	Effect:	Reduced final energy consumption in industry
	Monitoring method:	Number of instruments
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-3-3	**Establishment of a system of energy services to save energy in industrial processes**	
	Improve the legislative framework of a sustainable system of energy services to save energy in industrial processes. The measure reflects the implementation of ESCO concept of energy saving in the operation of energy-efficient industrial processes. FBiH should make available the contract model for such financial instruments for the public and private sector; they may be issued by the government/agency; these contracts may include, without limitation, energy performance contracts and third party financing contracts.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for energy, Government of BD BiH
	Type of measure:	Regulatory
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in industry
	Monitoring method:	Number of instruments
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-3-4	**Establishment of an information system and reporting on energy efficiency in industry**	
	Establish an information system and reporting on energy efficiency in industry, and on achieved final energy savings.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for energy, Government of BD BiH
	Type of measure:	Regulatory
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in industry
	Monitoring method:	Number of instruments
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous

3.2.5 Reduced energy intensity of transport

2-4	**Reduced energy intensity of transport**	
No	**Measure**	
2-4-1	**Promotion of electrification of traffic and transport, particularly in urban areas**	
	Electromobility is one of the most important strategic lines in all developed countries of the world. The main goal is to introduce electrically powered means of transport, which will result in reduced pollutant emissions, greater use of public transport, noise reduction, etc. It should be particularly noted that the electromobility model represents an important contribution to meeting the ambitious climate and energy goals of the European Union and Bosnia and Herzegovina as members of the Energy Community. BiH aimed to have a 10% share of energy from renewable sources in the transport sector by 2020. This goal was not even close to being achieved. The goal for 2030 is being defined. Electrification of the transport sector in this context is a significant measure that can have a number of positive effects in Republika Srpska. There are very few large urban agglomerations that are particularly demanding in the segment of public transport, particularly in the segment of high capacity mass transport (tram, light rail, or metro systems).	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Ministry of Communications and Transport of BiH, Entity ministries of transport and communications, Government of BD BiH
	Type of measure:	Regulatory
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in transport
	Monitoring method:	Number of instruments
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-4-2	**Coordination in the improvement of legislative framework that would provide the use of environmentally clean vehicles to increase energy efficiency**	
	Through amendments to the law (ZOOBS BiH, Law on International and Inter-Entity Traffic and Transport of BiH) and regulations, it is necessary to ensure the development of infrastructure for	

	alternative fuels, increase the share of renewable sources in direct energy consumption in traffic, and promote clean and more energy efficient vehicles in road transport. The objectives of the measure are to increase the share of EE in traffic by 2035, 37% of the share of motor vehicles that meet the set requirements in the total public procurement of motor vehicles at the state level by 2035, 13% of the share of trucks that meet the set requirements in the total public procurement of freight vehicles at the state level by 2030, and 65% of the share of buses that meet the set requirements in the total public procurement of buses at the state level by 2035. As part of the measure, the following activities should be carried out: ▪ It is necessary to pass laws and subordinate legislation which will regulate the establishment of conditions for the construction of charging stations for electric vehicles, conditions of distribution, collection and unit price of alternative energy sources used in traffic, establishment of the conditions of charging stations for UPP and SPP/SBM. ▪ It is necessary to envisage the adoption of regulations for the establishment of infrastructure for alternative fuels for entities managing traffic infrastructure (at the state and Entity levels), ▪ Make amendments to the laws regulating conditions for the construction of parking spaces in order to introduce the obligation to have filling stations with alternative fuels. Fulfilling this obligation is a prerequisite for the further development of infrastructure of alternative fuels. ▪ In the upcoming period, Bosnia and Herzegovina should transpose the obligations from the Directive on promoting the use of energy from renewable sources, which was adopted in December 2018. It will be necessary to achieve an ambitious goal in the context of renewable energy sources in the transport sector in 2030 and particularly to stimulate the use of renewable electricity in transport. In order to ensure that the expected increase in demand for electricity above the current starting value in the transport sector is provided by means of additional renewable energy generation capacities. ▪ It is necessary to transpose the revised obligations from the Directive on the promotion of clean vehicles in road transport (EU 2019/1161) in order to support mobility with a low level of emissions, in the context of purchase, leasing, hiring, or rental with the right to purchase vehicles for road transport contracted by public contracting authorities or contracting authorities if they are required to apply public procurement procedures and operators to fulfil obligations to perform public services based on public service contracts. This can be done by adopting a legal framework that should define that all clients and carriers that perform public scheduled passenger transport on the basis of public service contracts must take into account the energy and environmental effects during the exploitation period when purchasing vehicles for road transport.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Ministry of Communications and Transport of BiH, Entity ministries of transport and communications, Government of BD BiH
	Type of measure:	Regulatory
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in transport
	Monitoring method:	Number of legal solutions
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-4-3	**Initiation of the development of the National Urban Mobility Plan/Policy (NUMP) for sustainable urban mobility.**	
	National plans/policies for sustainable urban mobility (NUMPs) are action-oriented strategic frameworks for urban mobility developed by national governments to enhance cities' capacities for planning, financing, and implementing projects and measures designed to meet the mobility needs of people and businesses in cities and their surroundings in a sustainable manner. The role of cities and mobility in addressing climate change is crucial in the context of increasing global urbanization, which requires concerted efforts to guide mobility activities involving local and national levels as well as other sectors. One way to achieve this is through national plans/policies for sustainable urban mobility (NUMPs). Local self-government units increasingly recognize the importance and obligations of reducing GHG emissions from transportation and turn to the development of local sustainable urban mobility plans (SUMPs). SUMPs are crucial in addressing urban traffic issues and achieving local and higher ecological, social, and economic goals. Sustainable urban mobility plans are defined as "strategic plans designed to meet the mobility needs of people and businesses in cities and their surroundings for a better quality of life." They build upon existing planning practices and consider principles of integration, participation, and evaluation.	

	In Bosnia and Herzegovina, SUMP documents have been adopted by the Ministry of Transport of Sarajevo Canton, the City of Sarajevo, the City of Bijeljina, the City of Gradiška, and the City of Zavidovići, while the City of Banja Luka is in the process of developing the document. NUMPs and SUMPs should correspond since both documents should provide key solutions for urban and inter-entity regional traffic, connecting them in a broader context with the EU's Trans-European Transport Network (TEN-T) Policy, which is a crucial instrument for developing a coherent, efficient, multimodal, and high-quality transportation infrastructure throughout the EU. The formal basis for the development of NUMP and SUMP documents in the Western Balkans is the Sofia Declaration. In addition, the Transport Community has adopted the Sustainable and Smart Mobility Strategy for the Western Balkans, which also includes strengthening cross-border connectivity within the region and with the EU. It was formally accepted at a meeting in the Republic of Slovenia attended by ministers from the 6 partner countries of the Western Balkans. Alongside initiating the development of the NUMP document, it is necessary to initiate a new Integrated Transport Planning Law that will define the areas concerning the development of the NUMP document and the obligations of local self-government units in terms of SUMP document development, according to their size. Furthermore, it is proposed to revise the Framework Transport Strategy of Bosnia and Herzegovina and, where applicable, the Law on International and Inter-entity Road Transport.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina, Ministry of Communications and Transport of Bosnia and Herzegovina, entity ministries of spatial planning, entity ministries of transport and communications, entity funds for environment protection and energy efficiency, Government of the Brčko District of Bosnia and Herzegovina, Associations of Municipalities and Cities (AMCs, AMCGoBiH).
	Type of measure:	Promotion
	Sources of funding:	Public budget, international technical assistance.
	Effect:	Reduction of GHG (Greenhouse Gas) emissions, reduction of final energy consumption in transport.
	Monitoring method:	Number of legislative and strategic solutions (number of sustainable urban mobility plans; initiation of the process of developing NUMP; initiation of the drafting of the Integrated Traffic Planning Act).
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5.
	Deadlines:	2024.
2-4-4	**Coordination in the establishment of a sustainable system of financial incentives for the purchase of energy-efficient vehicles**	
	In the context of co-financing of cleaner traffic projects, it is necessary to define special co-financing lines for specific purposes, including the purchase of vehicles of all categories powered by electricity, SPP/SBP, UPP/UBP and hydrogen. Incentive measures for co-financing the purchase of vehicles should be implemented consistently, transparently and continuously, and should be primarily focused on alternative fuels for which the assessment of the current situation would show an insignificant representation of vehicles in the total number of vehicles, and they should be time-limited until the situation monitoring shows the minimum representation of vehicles. The minimum degree of market activation will be considered a share of 1% of vehicles on an alternative fuel in the total number of vehicles registered in the country. As part of the measure, activities will be carried out to: co-finance energy-efficient vehicles through public calls from the Entity Environmental Protection Funds.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Ministry of Communications and Transport of BiH, Entity ministries of transport and communications, Entity funds for environmental protection and energy efficiency, Government of BD BiH
	Type of measure:	Financial
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in transport
	Monitoring method:	Number of projects
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-4-5	**Promotion of refurbishing (modernisation) of road vehicles**	

	The average age of vehicles in Bosnia and Herzegovina is 17 years, and more than 50% of motor vehicles are below the eco-standard of the European Union (EU). In May 2019, the import of used vehicles was limited to the Euro 5 standard, and of new ones to Euro 6. Provide funds in cooperation with vehicle manufacturers to subsidise the purchase of new vehicles with the obligation to return the old vehicle that would be recycled (destroyed). As part of this measure, the following is needed: ▪ Develop special programmes for the modernisation of vehicle fleets of companies in the domain of transport, under the jurisdiction of Republika Srpska, with clear support programmes for these activities. ▪ Develop programmes for the modernisation of passenger cars with a clear incentive for the purchase of new vehicles	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Ministry of Communications and Transport of BiH, Entity ministries of transport and communications, Government of BD BiH
	Type of measure:	Promotion
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in transport
	Monitoring method:	Number of projects
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-4-6	**Promotion of use of intercity busing services and urban public transport to reduce the need to use individual road vehicles**	
	The current situation (2018) in the demand for urban transport (Sarajevo) is such that about 55% is made up of transport by individual vehicles, and about 45% is made by public transport, with the continuation of downward trend in the share of public transport in the demand for transport. In cities in Republika Srpska which offer urban public transport, the ratio of the number of passengers in city traffic who use individual vehicles and urban public transport is quite unfavourable for the urban public transport. As a result of the increase in meeting transport demand with individual vehicles, there are negative phenomena in the urban traffic system, primarily congestion and transport inefficiency, particularly in peak loads, and deterioration of the environment due to noise and exhaust gases. The negative impact of individual vehicles on urban traffic congestion can best be illustrated by the required road surface per passenger in a bus compared to a passenger in a passenger car. If the average occupancy of a passenger car is 1.5 people and the average occupancy of a bus is 40% for the speed of 15 km/h and more, one passenger in a bus and/or tram occupies 17 to 30 times less space than a passenger in an individual vehicle. This ratio is even more favourable for the bus during peak times, where the bus occupancy is 70-90%. The basis for defining such measure is the Stabilisation and Association Agreement between Bosnia and Herzegovina and the EU (Protocol III on land transport).	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Ministry of Communications and Transport of BiH, Entity ministries of transport and communications, Government of BD BiH
	Type of measure:	Promotion
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in transport
	Monitoring method:	Number of projects
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-4-7	**Promotion of the development and application of integrated multimodal freight transport**	
	Adoption of clear strategies and plans, as well as legislation regulating and promoting the use of combined transport, or incentives for the use of combined transport by rail, river, and sea waterways, and incentives for combined transport of cargo on road sections. As part of this measure, the following is needed: ▪ Prepare laws and regulations that would define this domain. ▪ Develop an analysis to identify the need for changes and improvement of the existing system based on solutions from the neighbouring countries. In doing so, the possibility of including other means of road transport (except trucks) in the incentive system should be analysed	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Ministry of Communications and Transport of BiH, Entity ministries of transport and communications, Government of BD BiH

	Type of measure:	Promotion
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in transport
	Monitoring method:	Number of projects
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-4-8	**Promotion of development of sustainable integrated traffic and transport**	
	The measure follows the general and specific goals defined in the Framework Traffic Strategy of Bosnia and Herzegovina (2016 - 2030) The ultimate goal: "work on the expected process of local economic and social development with the aim of ensuring sustainable development of the transport system, and develop a system that will meet the requirements for the improvement of mobility of goods and people and physical access to markets, jobs, and education, and all other social and economic needs", which should be developed in accordance with the achievement of the defined goals. Investments in rail and multimodal infrastructure lag behind in development compared to investments in motorway infrastructure. It is necessary to plan investments in order to develop a sustainable, integrated trans-European transport network, resistant to climate change. In air traffic, it is necessary to define a plan and develop detailed guidelines to achieve a significant reduction in GHG emissions. All activities related to defining the plan and guidelines will be developed in accordance with the EU principles, taking into account the positions that will be taken at the level of the International Civil Aviation Organisation (ICAO).	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Ministry of Communications and Transport of BiH, Entity ministries of transport and communications, Government of BD BiH
	Type of measure:	Promotion
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in transport
	Monitoring method:	Number of projects
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-4-9	**Promotion of integrated and intelligent traffic systems and development of infrastructure for non-motorised movement at the local level**	
	It is necessary to promote sustainable development of urban transport systems by optimising the logistics of freight transport and intelligent management of public parking areas, introducing integrated passenger transport, introducing a car-sharing scheme in cities, introducing low-emission zones in cities, introducing a system of public city bicycles (with and without electric drive) and the construction of the associated bicycle infrastructure, including secured spaces for parking bicycles owned by the citizens, intelligent traffic management (upgrading, adapting, and replacing outdated signalling devices and equipment, installing advanced traffic equipment and intelligent traffic lights equipped with an autonomous power supply system from renewable sources, building and equipping central operational centres for monitoring and managing intersections with installed traffic lights). At local levels, it is necessary to create and implement continuously the Sustainable Mobility Plans in cities, and strategic plans that build on the existing planning practices and take into account integration, participation, and evaluation principles in order to meet the mobility needs of city residents, now and in the future, and ensure a better quality of life in cities and their surroundings. The activities will be accompanied by appropriate informative and educational campaigns. The aim of these measures is to cover both Entities, cantons, and large cities (with more than 35,000 inhabitants) and municipalities and cities that together form a geographical entity with more than 35,000 inhabitants.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Ministry of Communications and Transport of BiH, Entity ministries of transport and communications, Government of BD BiH
	Type of emasure:	Promotion
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in transport
	Monitoring method:	Number of projects
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-4-10	**Promotion of the use of energy-efficient vehicles and modes of transport in freight traffic**	
	A good part of the freight and a part of the passenger transport should be allocated with adequate activities to more energy efficient vehicles and modes of transport with low or zero emissions. This	

	policy would reduce energy consumption in the transport sector, increase the use of alternative modes of transport, and, above all, the use of rail or combined transport and redirection of freight transport from road to other modes of transport. This way, the recommendation from the White Book on Transport from 2011 would be complied with, according to which the goal is to divert 50% of journeys exceeding 300 km from road transport to rail. As part of this measure, the establishment of a higher-quality railway service would ensure a more competitive position of the railway sector of traffic and transport compared to road freight transport.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Ministry of Communications and Transport of BiH, Entity ministries of transport and communications, Government of BD BiH
	Type of measure:	Promotion
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in transport
	Monitoring method:	Number of projects
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous

3.2.6 Increasing efficiency of heating and cooling systems

2-5	**Increasing efficiency of heating and cooling systems**	
No	**Measure**	
2-5-1	**Development of a cost-benefit analysis for measures to increase energy efficiency in heating and cooling**	
	Perform a cost-benefit analysis (CBA), based on climatic conditions, economic possibilities, and technical parameters to identify the most cost-effective solutions to cover heating and cooling needs in the territory of the entire BiH. The cost analysis will be performed in accordance with the requirements of Annex IX of Directive 2012/27/EU and Section C of *EC Guidance for the implementation of Article 14 of Directive 2012/27/EU* (document no. SWD/2013/449 final).	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for energy, Government of BD BiH
	Type of measure:	Promotion
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in transport
	Monitoring method:	Analytical activities
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-5-2	**Developing a potential assessment for the application of highly efficient cogeneration and district heating and cooling systems**	
	It is necessary to carry out a comprehensive assessment of potential for the application of highly efficient cogeneration and efficient district heating and cooling, in accordance with the requirements of Annex VIII of Directive 2012/27/EU and Section B of the *EC Guidance for the implementation of Article 14 of Directive 2012/27/EU* (document no. SWD/2013/449 final), on the basis of results of the cost and benefit analysis carried out within measure GH.1	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for energy
	Type of measure:	Promotion
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in transport
	Monitoring method:	Analytical activities
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-5-3	**Promotion and support for the implementation of measures for development of energy efficient infrastructure of district heating and cooling, highly efficient cogeneration and heating using waste, waste heat, and RES**	
	Carry out promotion and support in the adoption and implementation of appropriate measures for the development of energy-efficient district heating and cooling infrastructure, highly efficient cogeneration and heating using waste and waste heat and RES (in case of obtaining positive results of a comprehensive assessment of potential), for the purpose of exploiting the estimated potential.	

	These measures must include policy measures that will encourage the use of this potential at the local level, taking into account the potential for development of local and regional heat energy markets.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for energy, Government of BD BiH
	Type of measure:	Promotion
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in transport
	Monitoring method:	Analytical activities
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-5-4	**Establishing legal obligation to perform a cost-benefit analysis.**	
	Establish legal obligations to perform a cost-benefit analysis, for the following: ▪ Building a new thermal power plant with an installed capacity of more than 20 MW to assess the costs and benefits of establishing its operation as a high-efficiency cogeneration plant; ▪ Substantial reconstruction of the existing thermal power plant with an installed capacity of more than 20 MW to assess the costs and benefits of its transformation into highly efficient cogeneration; ▪ Building a new or substantial reconstruction of an existing industrial plant with a total installed capacity of more than 20 MW, producing waste heat at a useful temperature level, to assess the costs and benefits of using waste heat to satisfy economically justified demand, including through cogeneration, and connecting the plant to the district heating and cooling network; ▪ Building a new or significant reconstruction of an existing district heating or cooling system with a total installed capacity of more than 20 MW to assess the costs and benefits of using waste heat from nearby industrial plants. The cost and benefit analysis for all the cases above will be carried out in accordance with the requirements of Annex IX (part 2) of Directive 2012/27/EU and Section D of the *EC Guidance for the implementation of Article 14 of Directive 2012/27/EU* (document no. SWD/2013/449 final)	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for energy, Government of BD BiH
	Type of measure:	Regulatory
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in transport
	Monitoring method:	Analytical activities
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-5-5	**Including current procedure to approve construction of new power plants with the following criteria for issuing permits for the performance of electricity generation activities**	
	~~The Federation of~~ Bosnia and Herzegovina is harmonising laws and regulations in the electricity sector, with the provisions of Articles 14 (7) and 14 (8) of Directive 2012/27/EU, by introducing the obligation to include in the applicable procedure for the approval to build new power plants the following criteria for the issuance of licenses to perform electricity generation activities: ▪ That a cost-benefit analysis was performed for the plant (in the case of generation capacity to which this measure applies) and that the analysis results were taken into account when determining the required technical, operational, and other plant parameters ▪ That the results of comprehensive assessment of potential for the application of highly efficient cogeneration and efficient district heating and cooling were taken into account for the plant. ▪ Harmonisation of the procedure and criteria will necessarily be carried out in accordance with the requirements of Section E of the EC Guidance for the implementation of Article 14 of Directive 2012/27/EU (document no. SWD/2013/449 final)	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for energy, Government of BD BiH
	Type of measure:	Regulatory
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in transport
	Monitoring method:	Analytical activities
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous

2-5-6	**Harmonisation of provisions on guarantees on the origin of electricity from highly efficient cogeneration, and conditions for providing support to cogeneration and district heating systems**	
	Carry out further improvement of the information system and reporting on energy efficiency in the sectors of electricity generation and heating and cooling energy, including efficient cogeneration, and on achieved primary energy savings, all in order to guarantee the origin of electricity from highly efficient cogeneration.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for energy, Government of BD BiH
	Type of measure:	Regulatory
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in transport
	Monitoring method:	Analytical activities
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-5-7	**Establishment and implementation of a system for monitoring the implementation of main policy measures in heating and cooling.**	
	Establish and implement a monitoring system for the implementation of main policy measures of activity in the electricity and heat generation sector, including the district heating and efficient cogeneration sector, planned within the framework of existing strategic and planning documents and relevant energy companies.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for energy, Government of BD BiH
	Type of measure:	Regulatory
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in transport
	Monitoring method:	Analytical activities
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-5-8	**Further improvement of the information system and reporting on energy efficiency in the sectors of electricity generation and heating and cooling energy, including efficient cogeneration**	
	Carry out further improvement of the information system and reporting on energy efficiency in the sectors of electricity generation and heating and cooling energy, including efficient cogeneration, and on achieved primary energy savings.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for energy, Government of BD BiH
	Type of measure:	Regulatory
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Reduced final energy consumption in transport
	Monitoring method:	Analytical activities
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous

3.2.7 Reduction of losses in generation, transmission, and distribution of energy

2-6	**Reduction of losses in generation, transmission, and distribution of energy**
2-6.1	**Reduction of losses in generation, transmission, and distribution of energy – electricity**
No	**Measure**
2-6.1-1	**Conducting an assessment of potential to increase energy efficiency of the electricity infrastructure**
	Conduct an assessment of potential to increase energy efficiency of the electricity infrastructure, particularly with reference to energy transformations, transmission, distribution, load management and interoperability, and connection of power generation facilities, including access possibilities for micro energy generators. The assessment will focus on the consideration of the following measures that can result in reducing the need to invest in new infrastructure: ▪ Optimal use of the existing power infrastructure; ▪ Possible measures of energy efficiency, including the participation of demand response; Modernisation of infrastructure in order to reduce technical and operational losses *Guidelines for quality assessment are given in the document 'Identifying energy efficiency improvements and saving potential in energy networks, including analysis of the value of demand response, 18 December 2015.', drafted for the needs and by order of the European Commission*

	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for energy, Government of BD BiH
	Type of measure:	Planning
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Increased energy efficiency of the electricity infrastructure
	Monitoring method:	Analytical activities
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-6.1-2	**Development of the plan of priority measures and introduction of cost-effective improvements in energy efficiency of network infrastructure in the electricity sector**	
	Establishment of specific measures and investments for the introduction of cost-effective improvements in the energy efficiency of network infrastructure in the electricity sector, with deadlines for their introduction, based on the results of potential assessment carried out as part of the EPD.1 measure.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for energy
	Type of measure:	Planning
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Increased energy efficiency of the electricity infrastructure, Government of BD BiH
	Monitoring method:	Analytical activities
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-6.1-3	**Harmonisation of legislation in the electricity sector with the provisions of Article 15 of Directive 2012/27/EU to promote and ensure the participation of demand response in efficient grid management**	
	Carry out harmonisation within its competence in the electricity sector when harmonizing existing laws and regulations with the provisions of Directive 2009/72/EC taking into account the provisions of Article 15 of Directive 2012/27/EU, including the criteria from Annex XI, which refer to the grid tariffs and regulation.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for energy, Government of BD BiH
	Type of measure:	Regulatory
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Increased energy efficiency of the electricity infrastructure
	Monitoring method:	Analytical activities
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-6.1-4	**Harmonisation of legislation in the electricity sector with the provisions of Article 15 of Directive 2012/27/EU in grid tariffs and regulations**	
	Carry out harmonisation within its competence in the electricity sector when harmonizing existing laws and regulations with the provisions of Directive 2009/72/EC taking into account the provisions of Article 15 of Directive 2012/27/EU, including the criteria from Annex XII, which refer to promotion and ensuring the participation of demand response in efficient grid management.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for energy, Government of BD BiH
	Type of measure:	Regulatory
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Increased energy efficiency of the electricity infrastructure
	Monitoring method:	Analytical activities
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-6.1-5	**Harmonisation of legislation in the electricity sector with the provisions of Article 15 of Directive 2012/27/EU in the grid design and operation**	
	Carry out harmonisation within its competence in the electricity sector when harmonizing existing laws and regulations with the provisions of Directive 2009/72/EC taking into account the provisions of Article 15 of Directive 2012/27/EU, which refer to grid design and operation.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for energy, Government of BD BiH
	Type of measure:	Regulatory
	Sources of funding:	Public budget, International Technical Assistance

	Effect:	Increased energy efficiency of the electricity infrastructure
	Monitoring method:	Analytical activities
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-6.1-6	**Further improvement of the information system and reporting on energy efficiency in the sectors of electricity generation, transmission, distribution, and demand response**	
	Perform further improvement of the information system and reporting on energy efficiency in the sectors of electricity transformation, transmission, and distribution and on achieved primary energy savings.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for energy, Government of BD BiH
	Type of measure:	Promotion
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Increased energy efficiency of the electricity infrastructure
	Monitoring method:	Analytical activities
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-6.1-7	**Implementation of programmes, priority measures, and activities in the sector of energy transformation, transmission and distribution of electricity**	
	Promote the implementation of programmes, priority measures, and activities in the sector of energy transformation, transmission and distribution of electricity, planned within the existing strategic and planning documents and relevant energy companies.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for energy, Government of BD BiH
	Type of measure:	Financial
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Increased energy efficiency of the electricity infrastructure
	Monitoring method:	Analytical activities
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-6.2	**Reduction of losses in energy generation, transmission, and distribution – natural gas**	
2-6.2-1	**Conducting an assessment of potential to increase the energy efficiency of gas infrastructure**	
	Carrying out an assessment of potential to increase the energy efficiency of the infrastructure, particularly with reference to transport, distribution, load management and interoperability, and the connection of energy generation facilities, including access possibilities for micro energy generators. *Guidelines for quality execution of this assessment are given in the document 'Identifying energy efficiency improvements and saving potential in energy networks, including analysis of the value of demand response, 18 December 2015', drafted for the needs and by order of the European Commission*	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for energy, Government of BD BiH
	Type of measure:	Planning
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Increased energy efficiency of natural gas infrastructure
	Monitoring method:	Analytical activities
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-6.2-2	**Development of plan of priority measures for the introduction of cost-effective improvements in the energy efficiency of gas infrastructure**	
	Establish specific measures and investments for the introduction of cost-effective improvements in the energy efficiency of network infrastructure in the gas sector, with deadlines for their introduction, based on the results of potential assessment	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for energy
	Type of measure:	Planning
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Increased energy efficiency of natural gas infrastructure
	Monitoring method:	Analytical activities
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5

	Deadlines:	Continuous
2-6.2-3	**Further improvements of the information system and reporting on energy efficiency in the sectors of generation, transmission, distribution, and demand response**	
	Harmonise existing laws and regulations with the provisions of Directive 2009/73/EC taking into account provisions of Article 15 of Directive 2012/27/EU-	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for energy, Government of BD BiH
	Type of measure:	Promotion
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Increased energy efficiency of natural gas infrastructure
	Monitoring method:	Analytical activities
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous
2-6.2-4	**Implementation of programmes, priority measures, and activities in the sector of energy transformation, transmission and distribution of natural gas**	
	Promote the implementation of programmes, priority measures, and activities in the sector of energy transformation, transmission, and distribution of natural gas, planned within the existing strategic and planning documents and relevant energy companies.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of BiH, Entity ministries for energy
	Type of measure:	Promotion
	Sources of funding:	Public budget, International Technical Assistance
	Effect:	Increased energy efficiency of natural gas infrastructure
	Monitoring method:	Analytical activities
	Connection with other objectives:	Dimension 1A, Dimension 3, Dimension 4, Dimension 5
	Deadlines:	Continuous

3.2.8 Overview of energy efficiency programmes in the competence of all levels

No	Code	EE programme	Competent authority	Sources of funding	Methods of funding
01	PRG.01 BiH	Programme for increase of energy efficiency of buildings in the public services sector under the competence of authorities at the state level of Bosnia and Herzegovina	MFTER	CO_2 fees; air protection fees; public budgets; funds of international financial institutions (IFI); UN funds; EU funds	Preferential loans; foreign loans; commercial loans; subsidies; ESCO; PPP; regular budget lines; budget financing with repayment of investments by reducing future budget expenditures (*Budget capturing*)
02	PRG.02 BiH	Coordination programme in energy efficiency in Bosnia and Herzegovina	MFTER	Public budgets Technical assistance	Regular budget lines Grants
Total programmes at the level of competence of BiH					
03	PRG.01 BD	Programme to increase energy efficiency in Brčko District	Government of BD	Public budgets; technical assistance; energy fees; CO_2 fees; air protection fees; Public budgets; funds	Regular budget lines; grants; obligation schemes for energy efficiency / alternative measures; preferential loans; foreign loans; commercial

No	Code	EE programme	Competent authority	Sources of funding	Methods of funding
		of Bosnia and Herzegovina		of international financial institutions (IFI); UN funds; EU funds	loans; subsidies; ESCO; PPP; regular budget lines; tax incentives for profit tax (relief for investments); budget financing with repayment of investments by reducing future budget expenditures (*Budget capturing*)
Total in programmes at BD level					
04	PRG.01 FBiH	Programme of information, professional development, and training on energy efficiency in FBiH	FMERI FMPU FMOIT FMPIK Cantons	Public budgets Technical assistance	Regular budget lines Grants
05	PRG.02 FBiH	Programme to increase energy efficiency of buildings in the public services sector in FBiH	FMPU FMERI	CO_2 fees; air protection fees; Public budgets; funds of international financial institutions (IFI); UN funds; EU funds	Preferential loans; foreign loans; commercial loans; subsidies; ESCO; PPP; regular budget lines; budget financing with repayment of investments by reducing future budget expenditures (*Budget capturing*)
06	PRG.03 FBiH	Cantonal programmes to increase energy efficiency of buildings in the public services sector	Cantons	Energy fees; CO_2 fees; air protection fees; Public budgets; funds of international financial institutions (IFI); UN funds; EU funds	Preferential loans; foreign loans; commercial loans; subsidies; ESCO; PPP; regular budget lines; tax incentives for profit tax (relief for investments); budget financing with repayment of investments by reducing future budget expenditures (*Budget capturing*)
07	PRG.04 FBiH	Cantonal programmes to increase energy efficiency of buildings in the residential sector	Cantons	Energy fees; CO_2 fees; air protection fees	Obligation schemes EE (electricity, district heating systems); fees from other sources, Preferential loans
08	PRG.05 FBiH	Programme to increase energy efficiency in utility systems	Cantons	CO_2 fees; air protection fees; funds of international financial institutions (IFI); UN funds; EU funds	Preferential loans; foreign loans; commercial loans; subsidies; ESCO; PPP; tax incentives for profit tax (relief for investments)
09	PRG.06 FBiH	Programme to increase energy efficiency in the sectors of industry and	FMERI	CO_2 fees; air protection fees; funds of international financial institutions (IFI); UN funds; EU funds	Preferential loans; foreign loans; commercial loans; subsidies; ESCO; PPP; tax incentives for profit tax (relief for investments)

No	Code	EE programme	Competent authority	Sources of funding	Methods of funding
		commercial services			
10	PRG.07 FBiH	Sustainable road and urban traffic promotion programme in FBiH	FMERI FMPIK	CO_2 fees; air protection fees; Public budgets; technical assistance	Preferential loans; regular budget lines; grants
Total programmes in FBiH					
11	PRG.01 RS	Programme for information, professional training and education on energy efficiency in RS	MIER Fond RS	Public budgets Technical assistance	Regular budget lines Grants
12	PRG.02 RS	Republic programme to increase energy efficiency of buildings in the public services sector	MPUGE	CO_2 fees; air protection fees; Public budgets; funds of international financial institutions (IFI); UN funds; EU funds	Preferential loans; foreign loans; commercial loans; subsidies; ESCO; PPP; regular budget lines; budget financing with repayment of investments by reducing future budget expenditures (*Budget capturing*)
13	PRG.03 RS	Programme to increase energy efficiency of buildings in the residential sector	MPUGE	Energy fees; CO_2 fees; air protection fees	Obligation schemes EE (electricity, district heating systems); fees from other sources, Preferential loans
14	PRG.04 RS	Programme to increase energy efficiency in utility systems	MIER MPUGE	CO_2 fees; air protection fees; Public budgets; funds of international financial institutions (IFI); UN funds; EU funds	Preferential loans; foreign loans; commercial loans; subsidies; ESCO; PPP; regular budget lines; budget financing with repayment of investments by reducing future budget expenditures (*Budget capturing*)
15	PRG.05 RS	Programme to increase energy efficiency in the sectors of industry and commercial services	MIER	CO_2 fees; air protection fees; funds of international financial institutions (IFI); UN funds; EU funds	Preferential loans; foreign loans; commercial loans; subsidies; ESCO; PPP
16	PRG.06 RS	Programme to promote sustainable road and urban traffic in RS	MIER MSV	CO_2 fees; air protection fees; funds of international financial institutions (IFI); UN funds; EU funds	Preferential loans; foreign loans; commercial loans; subsidies; ESCO; PPP

3.5 Dimension: Energy security

3.5.1 Policies and measures to achieve energy security

3.3.1.1 Strengthening the diversification of energy sources and supply from third countries in order to increase the resilience of the energy system

3-1	**Strengthening the diversification of energy sources and supplies from third countries in order to increase the resilience of the energy system**
3-1.1	**Strengthening the diversification of sources and supply from third countries in order to increase the resilience of the supply system - oil and oil derivatives**
3-1.1.1	**Diversify sources of supply of oil and oil derivatives from third countries**

No.	**Name of the measure**	
3-1.1.1-1	**Determine and implement policies and measures that can reduce the level of concentration of imports of oil and oil derivatives**	
	In 2021, Bosnia and Herzegovina imported practically all quantities of oil derivatives. According to the statistics agencies, the structure of importers is such that the HH index is higher than 0.25, which indicates a high market concentration. From the above, it is clear that the market concentration of oil supply (importers) is unfavorable because it shows a high concentration.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina
	Type of measure:	Regulatory
	Sources of funding:	Loans
	Effect:	Increasing security of supply
	Tracking method:	Concentration indicator
	Connection with other goals:	N/A
	Deadlines:	2022-2025

3-1.1.2	**Train domestic sources/capacity for oil exploitation/processing**

3-1.1.2-1	**Determine the profitability of exploitation of domestic oil sources**	
	Competent authorities:	Entity Ministries for Energy
	Type of measure:	Technical, financial
	Sources of funding:	Strategic partner
	Effect:	Increasing security of supply
	Tracking method:	Exploitation justification study
	Connection with other goals:	N/A
	Deadlines:	2022-2025
3-1.1.2-2	**In case of profitability, activate the exploitation of domestic oil sources.**	
	Competent authorities:	Entity Ministries for Energy
	Type of measure:	Technical, financial
	Sources of funding:	Strategic partner
	Effect:	Increasing security of supply
	Tracking method:	Reduction of dependence on imports
	Connection with other goals:	N/A
	Deadlines:	2025-2030
3-1.1.2-3	**Develop capacities for oil processing in the refinery Brod**	
	The refinery Brod is supplied by the JANAF oil pipeline, which ensures security of supply according to the N-1=0 criterion. The refinery worked in 2021. Furthermore, one pipeline supply direction represents a high risk for the supply of oil to the refinery Brod.	
	Competent authorities:	Ministry of Energy and Mining of the Republic of Srpska
	Type of measure:	Technical, financial
	Sources of funding:	Refinery
	Effect:	Increasing security of supply
	Tracking method:	Production

	Connection with other goals:	N/A
	Deadlines:	2022-2023
3-1.1.3	**Improve security with adequate reserves of oil and oil derivatives**	
3-1.1.2-1	**Adopt legislation in accordance with Directive 2009/119 on maintaining minimum stocks of crude oil and/or oil derivatives**	
	The reduced security of supply of oil and oil derivatives is affected by the lack of adequate warehouses, i.e. non-compliance with the provisions of EU Directive 2009/119. It is necessary to pass the appropriate legislation.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina
	Type of measure:	Regulatory
	Sources of funding:	N/A
	Effect:	Creation of preconditions for improvement of security of supply
	Tracking method:	Monitoring the procedure of adopting legislation
	Connection with other goals:	N/A
	Deadlines:	2022-2023
3-1.1.2-2	**In accordance with the Directive, ensure adequate storage capacities for the region and their use**	
	Build and/or lease capacities for stocks of oil and oil derivatives	
	Competent authorities:	The Council of Ministers of Bosnia and Herzegovina, entity governments and Brcko district governments; commodity reserves
	Type of measure:	Regulatory
	Sources of funding:	Budgets
	Effect:	Improving security of supply
	Tracking method:	Increasing the storage capacity
	Connection with other goals:	N/A
	Deadlines:	2023-2026
3-1.2	**Strengthening the diversification of sources and supplies from third countries in order to increase the resilience of the supply system - natural gas**	
3-1.2.1	**To achieve a satisfactory level of criterion N-1 in order to ensure the diversification of natural gas supply routes**	
No.	**Name of the measure**	
3-1.2.1-1	**Support for the construction of at least one new interconnection**	
	Natural gas is delivered to Bosnia and Herzegovina via the only gas pipeline from the direction of the Republic of Serbia, so the safety indicator is N-1=0, the most unfavorable possible. In addition to the unfavorable indicators mentioned above, the existing interconnection is over 40 years old, which in itself speaks volumes about the degree of threat to security of supply.	
	Competent authorities:	OTS
	Type of measure:	Technical, financial
	Sources of funding:	Loans
	Effect:	Improving security of supply
	Tracking method:	Monitoring the realization of investments
	Connection with other goals:	N/A
	Deadlines:	2022-2025
3-1.2.2	**Diversify sources of natural gas supply**	
3-1.2.2-1	**Establish an organized natural gas market and join the regional organized market**	
	Bosnia and Herzegovina has not established an organized natural gas market and is not integrated into regional markets, which reduces the efficiency of the system, increases costs, and also reduces the level of security of supply. Establishing a market and linking it to regional markets will improve the efficiency and security of the system	
	Competent authorities:	Regulatory commissions
	Type of measure:	Regulatory
	Sources of funding:	OTS's

	Effect:	Improving security of supply
	Tracking method:	Monitoring the procedure of passing laws, creating regulations and establishing markets
	Connection with other goals:	N/A
	Deadlines:	2022-2025

3-1.2.3	**Ensure the safe functioning of the existing gas pipeline**

3-1.2.3-1	**Transmission system operators to adopt and implement continuously harmonized standards for gas pipeline maintenance**	
	The existing transport pipeline is over 40 years old. Special attention is needed for its maintenance. The maintenance standards of the competent OTS should be harmonized and implemented continuously.	
	Competent authorities:	OTS's
	Type of measure:	Financial
	Sources of funding:	OTS's
	Effect:	Improving security of supply
	Tracking method:	Supervision of regulatory commissions
	Connection with other goals:	N/A
	Deadlines:	2022-2023

3-1.3	**Strengthening the diversification of sources and supply from third countries in order to increase the resilience of the supply system – electricity**

3-1.3.1	**Enable the optimization and transparency of trading on the domestic and regional wholesale market and encourage the construction of nOIE**

No.	**Name of the measure**	
3-1.3.1-1	**Establish an organized electricity market and join the regional organized market**	
	An organized DA and ID market has not been established in Bosnia and Herzegovina. The organized market in the process of transition contributes to the integration of RES, transparency, trading efficiency, reduction of trading risks, reduction of system operating costs.	
	Competent authorities:	Regulatory commissions
	Type of measure:	Technical/administrative
	Sources of funding:	TSO Bosnia and Herzegovina
	Effect:	Improving system security
	Tracking method:	Monitoring the market establishment process
	Connection with other goals:	Adoption of the Law
	Deadlines:	2022-2025

3-1.3.2	**Ensure the adequacy of the electric power system in terms of options for the development of production capacities that will meet the goals of decarbonization**

No.	**Name of the measure**	
3-1.3.2-1	**Develop an Integrated Plan(s), which will cover both the portfolio of electricity production and consumption so as to satisfy the aspects of security of supply and the achievement of decarbonization goals. The integrated plan will include energy efficiency measures, the integration of non-manageable renewable energy sources (nOIE) into the power system, and all consumption management measures in function of system flexibility.**	
	It is necessary to create an Integrated Energy and Climate Plan as a key document that will define plans for the construction of new production capacities, as well as the policies and measures that should support this.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina
	Type of measure:	Strategic
	Sources of funding:	Donors
	Effect:	Creation of planning prerequisites for improving security of supply while meeting the needs of decarbonization
	Tracking method:	NRCP development status
	Connection with other goals:	Related to dimension 1, 2, 4 and 5 goals
	Deadlines:	2022-2023

3-1.3.2-2	Adopt public policies that will ensure the implementation of the Integrated Plan(s)	
	In order to be implemented, the policies and measures of the Integrated Energy and Climate Plan will require the adoption of public policies that will ensure their implementation.	
	Competent authorities:	Governments, parliaments/assemblies
	Type of measure:	Strategic
	Sources of funding:	Donors
	Effect:	Creation of planning prerequisites for improving security of supply while meeting the needs of decarbonization
	Tracking method:	NRCP development status
	Connection with other goals:	Related to dimension 1, 2, 4 and 5 goals
	Deadlines:	2022-2023

3-1.3.3	Encourage the development of new services (prosumers, energy communities, aggregators, consumption management, energy storage) in the power system in order to improve the safety of its operation

No.	Name of the measure	
3-1.3.3-1	Enact public policies that will ensure the introduction of new services into the electric power system	
	The decarbonization process relies on mass democratization of electricity production through prosumers, energy communities, aggregators, consumption management, energy storage. The establishment of this production should be enabled by the adoption of public policies and relevant laws.	
	Competent authorities:	Governments, parliaments/assemblies
	Type of measure:	Strategic
	Sources of funding:	Donors
	Effect:	Creation of planning prerequisites for improving security of supply while meeting the needs of decarbonization
	Tracking method:	NRCP development status
	Connection with other goals:	Related to dimension 1, 2, 4 and 5 goals
	Deadlines:	2022-2024

3.4.1.1 Regional cooperation

In the oil and oil derivatives sector, a key element of regional cooperation is to ensure the necessary reserves in regional warehouses in accordance with the Directive.

In the natural gas sector, regional cooperation is reflected in the need to build at least one interconnecting gas pipeline with neighboring countries (Croatia and Serbia). A significant element of regional cooperation is the integration of the gas market (when established) into the regional market, which will further improve the level of security in this sector.

In the electricity sector, the connection of the domestic organized market, when it is established, with the regional one will significantly, among other effects, improve the safety of the operation of the electric power system in Bosnia and Herzegovina and the region.

3.4.1.2 Financial measures

See Part 5 of Section B

3.5.2 Reducing dependence on energy imported from third countries, in order to increase the resilience of domestic and regional energy systems (optional)

3.4.2.1 Policies and measures to achieve energy security

3-2	Reducing dependence on energy imported from third countries, in order to increase the resilience of domestic and regional energy systems

3-2.1	Reducing dependence on energy imported from third countries, in order to increase the resilience of domestic and regional energy systems - oil and oil derivatives

3-2.1.1	Reduce the consumption of oil and oil derivatives in the transport sector through decarbonisation and electrification of the sector

No.	Name of the measure	
3-2.1.1-1	**Enact public policies aimed at reducing consumption**	
	Use policies and measures to increase the consumption of electricity in the transport sector and thus reduce the consumption of oil and oil derivatives, which reduces dependence on the import of these energy sources.	
	Competent authorities:	See dimensions 1 and 2
	Type of measure:	Technical/financial
	Sources of funding:	See dimensions 1 and 2
	Effect:	Reduction of dependence on energy imports
	Tracking method:	See dimensions 1 and 2
	Connection with other goals:	Processed within the dimensions of Decarbonization (Renewable energy sources) and Energy efficiency
	Deadlines:	2022-2026

3-2.1.2	**Reduce the consumption of oil and oil derivatives by electrifying transport and using hydrogen**

No.	Name of the measure	
3-2.1.2-1	**Enact public policies with the aim of electrifying transport and using hydrogen**	
	Competent authorities:	See dimensions 1 and 2
	Type of measure:	Technical/financial
	Sources of funding:	See dimensions 1 and 2
	Effect:	See dimensions 1 and 2
	Tracking method:	See dimensions 1 and 2
	Connection with other goals:	Processed within the dimensions of Decarbonization (Renewable energy sources) and Energy efficiency
	Deadlines:	See dimensions 1 and 2

3-2.1.3	**Reduce the consumption of oil and oil derivatives by applying energy efficiency measures**

No.	Name of the measure	
3-2.1.3-1	**Enact public policies with the aim of electrifying transport and using hydrogen**	
	Competent authorities:	See dimensions 1 and 2
	Type of measure:	Technical/financial
	Sources of funding:	See dimensions 1 and 2
	Effect:	See dimensions 1 and 2
	Tracking method:	See dimensions 1 and 2
	Connection with other goals:	Processed within the dimensions of Decarbonization (Renewable energy sources) and Energy efficiency
	Deadlines:	See dimensions 1 and 2

3-2.2	**Reducing dependence on energy imported from third countries, in order to increase the resilience of domestic and regional energy systems - natural gas**

3-2.2.1	**Use energy efficiency measures to reduce the consumption of natural gas where it is used and thereby reduce dependence on imports**

No.	Name of the measure	
3-2.2.1-1	**Enact public policies aimed at reducing consumption**	
	See dimensions 1 and 2	
	Competent authorities:	See dimensions 1 and 2
	Type of measure:	Technical/financial
	Sources of funding:	See dimensions 1 and 2
	Effect:	See dimensions 1 and 2
	Tracking method:	See dimensions 1 and 2

	Connection with other goals:	See dimensions 1 and 2
	Deadlines:	See dimensions 1 and 2
3-2.2.2	**Reduce dependence on the import of natural gas by means of measures to convert fuel in industry to hydrogen and electricity**	
No.	**Name of the measure**	
3-2.2.2-1	**Enact public policies aimed at reducing consumption**	
	See dimensions 1 and 2	
	Competent authorities:	See dimensions 1 and 2
	Type of measure:	Technical/financial
	Sources of funding:	See dimensions 1 and 2
	Effect:	See dimensions 1 and 2
	Tracking method:	See dimensions 1 and 2
	Connection with other goals:	See dimensions 1 and 2
	Deadlines:	See dimensions 1 and 2
3-2.2.3	**By using heat pumps, reduce the need to use natural gas in the heating sector**	
No.	**Name of the measure**	
3-2.2.3-1	**Adopt public policies aimed at encouraging the use of heat pumps in the heating sector**	
	See dimensions 1 and 2	
	Competent authorities:	See dimensions 1 and 2
	Type of measure:	Technical/financial
	Sources of funding:	See dimensions 1 and 2
	Effect:	See dimensions 1 and 2
	Tracking method:	See dimensions 1 and 2
	Connection with other goals:	See dimensions 1 and 2
	Deadlines:	See dimensions 1 and 2
3-2.3	**Reducing dependence on energy imported from third countries, in order to increase the resilience of domestic and regional energy systems - electricity**	
	All the aforementioned goals and operational goals related to strengthening the diversification of electricity sources and supply from third countries in order to increase the resilience of the electric power system, also apply to the goal: Reducing dependence on the import of electricity from third countries, in order to increase the resilience of the domestic electric power system that's why they are not repeated here.	

3.4.2.2 Regional cooperation in this area;
All the elements of regional cooperation in the electricity sector mentioned in the previous operational goal are also important for this one, so they are repeated here.

3.4.2.3 Financial measures
See Part 5 of Section B

3.5.3 Increasing the flexibility of the energy system, especially with regard to the use of domestic energy sources, consumption management and energy storage

3.4.3.1 Policies and measures to achieve energy security

3-3	**Increasing the flexibility of the energy system, especially with regard to the use of domestic energy sources, consumption management and energy storage**
3-3.1	**Increasing the flexibility of the supply system, especially with regard to the use of domestic energy sources, by managing energy consumption and storage - oil and oil derivatives**
3-3.1.1	**If exploitation is profitable, exploit the deposits**

No.	Name of the measure	
3-3.1.1-1	**Determine the profitability of exploitation of reserves**	
	See 3-2.1.2: If profitable, exploit oil deposits	
	Competent authorities:	Entity Ministries for Energy
	Type of measure:	Technical/financial
	Sources of funding:	Strategic partner
	Effect:	Increasing security of supply
	Tracking method:	Exploitation justification study
	Connection with other goals:	N/A
	Deadlines:	2022-2025

3-3.1.2	**Ensure flexibility through the establishment of adequate reserves of oil and oil derivatives**

No.	Name of the measure	
3-3.1.2-1	**Enact legislation in accordance with Directive 2009/119 on the maintenance of minimum stocks of crude oil and/or oil derivatives**	
	The reduced security of supply of oil and oil derivatives is affected by the lack of adequate warehouses, i.e. non-compliance with the provisions of EU Directive 2009/119. It is necessary to pass appropriate legislation	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina
	Type of measure:	Regulatory
	Sources of funding:	on
	Effect:	Creation of preconditions for improvement of security of supply
	Tracking method:	Monitoring the procedure of adopting legislation
	Connection with other goals:	N/A
	Deadlines:	in 2023
3-3.1.1-2	**In case of profitability, activate the exploitation of domestic oil sources**	
	See 3-2.1.2: If profitable, exploit oil deposits	
	Competent authorities:	Entity Ministries for Energy
	Type of measure:	Technical, financial
	Sources of funding:	Strategic partner
	Effect:	Increasing security of supply
	Tracking method:	Reduction of dependence on imports
	Connection with other goals:	N/A
	Deadlines:	2025-2030

3-3.2	**Increasing the flexibility of the supply system, especially with regard to the use of domestic energy sources, by managing consumption and energy storage - natural gas**

3-3.2.1	**If exploitation is profitable, exploit the deposits**

No.	Name of the measure	
3-3.2.1-1	**Determine the profitability of exploitation of reserves**	
	Competent authorities:	Entity Ministries for Energy
	Type of measure:	Technical, financial
	Sources of funding:	Strategic partner
	Effect:	Increasing security of supply
	Tracking method:	Reduction of dependence on imports
	Connection with other goals:	N/A
	Deadlines:	in 2025
3-3.2.1-2	**Make an arrangement with strategic partners for the exploitation of reserves**	

	Competent authorities:	Entity Ministries for Energy
	Type of measure:	Technical, financial
	Sources of funding:	Strategic partner
	Effect:	Increasing security of supply
	Tracking method:	Reduction of dependence on imports
	Connection with other goals:	N/A
	Deadlines:	2025-2030
3-3.2.2	**Build at least one more international connecting gas pipeline that will ensure the adequacy and flexibility of the system**	
R. no.	**Name of the measure**	
3-3.2.2-1	**Build at least one new interconnection**	
	To achieve a satisfactory level of criterion N-1 in order to ensure the diversification of natural gas supply routes	
	Competent authorities:	MOFTER, entity ministries
	Type of measure:	Technical/financial
	Sources of funding:	loans
	Effect:	Increasing security of supply
	Tracking method:	Security of supply indicator
	Connection with other goals:	N/A
	Deadlines:	2030
3-3.2.3	**Regulate the functioning of the natural gas sector in accordance with EU legislation by enacting missing and harmonizing existing legislation**	
No.	**Name of the measure**	
3-3.2.3-1	**Establish an organized natural gas market and join the regional organized market**	
	Establish an organized natural gas market and join the regional organized market	
	Competent authorities:	OTS
	Type of measure:	Regulatory, technical, financial
	Sources of funding:	Loans
	Effect:	Improving security of supply
	Tracking method:	Trading indicator
	Connection with other goals:	N/A
	Deadlines:	2022-2025
3-3.2.4	**Enable the integration of the sector into the regional natural gas market**	
No.	**Name of the measure**	
3-3.2.4-1	**Establish an organized natural gas market and join the regional organized market**	
	Bosnia and Herzegovina has not established an organized natural gas market and is not integrated into regional markets, which reduces the efficiency of the system, increases costs, and also reduces the level of security of supply. Establishing a market and linking it to regional markets will improve the efficiency and security of the system	
	Competent authorities:	Regulatory commissions
	Type of measure:	Regulatory
	Sources of funding:	Loans
	Effect:	Improvement of security of supply
	Tracking method:	Monitoring the procedure of passing laws, creating regulations and establishing markets
	Connection with other goals:	N/A
	Deadlines:	2022-2025
3-3.2.5	**Enable consumption management in function of system flexibility**	

No.	Name of the measure	
3-3.2.5-1	**Establish an organized natural gas market and join the regional organized market**	
	Competent authorities:	Regulatory commissions
	Type of measure:	Regulatory
	Sources of funding:	Loans
	Effect:	Improvement of security of supply
	Tracking method:	Monitoring the procedure of passing laws, creating regulations and establishing markets
	Connection with other goals:	N/A
	Deadlines:	2022-2025

3-3.2.6	**Improve flexibility by adequately regulating the natural gas balance market**

No.	Name of the measure	
3-3.2.6-1	**Establish an organized natural gas market and join the regional organized market**	
	Competent authorities:	Regulatory commissions
	Type of measure:	Regulatory
	Sources of funding:	Loans
	Effect:	Improvement of security of supply
	Tracking method:	Monitoring the procedure of passing laws, creating regulations and establishing markets
	Connection with other goals:	N/A
	Deadlines:	2022-2025
No.	**Name of the measure**	
3-3.2.6-2	**With cooperation based on EU legislation, increase flexibility through the possibility of leasing capacity in regional warehouses and/or LNG terminals**	
	Competent authorities:	Regulatory commissions, traders
	Type of measure:	Regulatory
	Sources of funding:	on
	Effect:	Improvement of security of supply
	Tracking method:	Monitoring the procedure of passing laws, creating regulations and establishing markets
	Connection with other goals:	N/A
	Deadlines:	2022-2025

3-3.3	**Increasing the flexibility of the supply system, especially with regard to the use of domestic energy sources, by managing consumption and energy storage - electricity**

3-3.3.1	**Build domestic production capacities that will contribute to the adequacy and flexibility of the system**

3-3.3.1-1	**Develop an Integrated Plan(s), which will cover both the portfolio of electricity production and consumption so as to satisfy the aspects of security of supply and the achievement of decarbonization goals. The integrated plan will include energy efficiency measures, the integration of non-manageable renewable energy sources (nOIE) into the power system, and all consumption management measures in function of system flexibility.**	
	It is necessary to create an Integrated Energy and Climate Plan as a key document that will define plans for the construction of new production capacities, as well as the policies and measures that should support this.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina
	Type of measure:	Strategic
	Sources of funding:	Donors

	Effect:	Creation of planning prerequisites for improving security of supply while meeting the needs of decarbonization
	Tracking method:	NRCP development status
	Connection with other goals:	Related to dimension 1, 2, 4 and 5 goals
	Deadlines:	2022-2023
3-3.3.1-2	**Adopt public policies that will ensure the implementation of the Integrated Plan(s)**	
	See 3-1.3.2: Ensure the adequacy of the electric power system in options for the development of production capacities that will meet the goals of decarbonization	
	Competent authorities:	Governments, parliaments/assemblies
	Type of measure:	Strategic
	Sources of funding:	Donors
	Effect:	Creation of planning prerequisites for improving security of supply while meeting the needs of decarbonization
	Tracking method:	NRCP development status
	Connection with other goals:	Related to dimension 1, 2, 4 and 5 goals
	Deadlines:	2022-2023

3-3.3.2	**Enable the optimization and transparency of trading on the domestic and regional wholesale market and encourage the construction of nOIE**

No.	**Name of the measure**	
3-3.3.2-1	**Establish an organized electricity market and join the regional organized market**	
	An organized DA and ID market has not been established in Bosnia and Herzegovina. The organized market in the process of transition contributes to the integration of RES, transparency, trading efficiency, reduction of trading risks, reduction of system operating costs.	
	Competent authorities:	Regulatory commissions
	Type of measure:	Technical/administrative
	Sources of funding:	TSO Bosnia and Herzegovina
	Effect:	Improving system security
	Tracking method:	Monitoring the market establishment process
	Connection with other goals:	Adoption of the Law
	Deadlines:	2022-2025

3-3.3.3	**Ensure the flexibility of the power system in the estimated options for the development of production capacities**

No.	**Name of the measure**	
3-3.3.3-1	**Establish an organized electricity market and join the regional organized market**	
	See 3-1.3.1-1: Establish an organized electricity market and join the regional organized market	
	Competent authorities:	Regulatory commissions
	Type of measure:	Technical/administrative
	Sources of funding:	TSO Bosnia and Herzegovina
	Effect:	Improving system security
	Tracking method:	Monitoring the market establishment process
	Connection with other goals:	Adoption of the Law
	Deadlines:	2022-2025
3-3.3.3-2	**Develop an Integrated Plan(s), which will cover both the portfolio of electricity production and consumption so as to meet the aspects of security of supply and the achievement of decarbonization goals. The integrated plan will include energy efficiency measures, the integration of non-manageable renewable energy sources (nOIE) into the power system, and all consumption management measures in function of system flexibility.**	
	It is necessary to create an Integrated Energy and Climate Plan as a key document that will define plans for the construction of new production capacities, as well as the policies and measures that should support this.	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina
	Type of measure:	Strategic
	Sources of funding:	Donors

	Effect:	Creation of planning prerequisites for improving security of supply while meeting the needs of decarbonization
	Tracking method:	NRCP development status
	Connection with other goals:	Related to dimension 1, 2, 4 and 5 goals
	Deadlines:	2022-2023
3-3.3.3-3	**Adopt public policies that will ensure the implementation of the Integrated Plan(s)**	
	In order to be implemented, the policies and measures of the Integrated Energy and Climate Plan will require the adoption of public policies that will ensure their implementation.	
	Competent authorities:	Governments, parliaments/assemblies
	Type of measure:	Strategic
	Sources of funding:	Donors
	Effect:	Creation of planning prerequisites for improving security of supply while meeting the needs of decarbonization
	Tracking method:	NRCP development status
	Connection with other goals:	Related to dimension 1, 2, 4 and 5 goals
	Deadlines:	2022-2023

3-3.3.4	**Encourage the development of new services (prosumers, energy communities, aggregators, consumption management, energy storage) in the power system in order to improve the flexibility of its operation**

3-3.3.4-1	**Enact public policies that will ensure the introduction of new services into the electric power system**	
	See 3-3.3.1: Build domestic production capacities that will contribute to the adequacy and flexibility of the system	
	Competent authorities:	See 3-3.3.1
	Type of measure:	Technical/administrative
	Sources of funding:	See 3-3.3.1
	Effect:	See 3-3.3.1
	Tracking method:	See 3-3.3.1
	Connection with other goals:	See 3-3.3.1
	Deadlines:	See 3-3.3.1

3.4.3.2 Regional cooperation in this area

The construction of at least one more interconnecting gas pipeline and the integration of the domestic into the regional gas market will increase the level of flexibility of the gas system in Bosnia and Herzegovina. Integration into the regional market will bring a significant level of flexibility of the power system.

3.4.3.3 Financial measures.

See point 5 of section B

3.5.4 Enabling the application of contracts that reduce or interrupt the supply of customers in order to improve the resilience of the energy system

3.4.4.1 Policies and measures to achieve energy security

3-4	**Enabling the application of contracts that reduce or interrupt the supply of customers in order to improve the resilience of the energy system**
3-4.1	**Enabling the application of contracts that reduce or interrupt the supply of customers for the purpose of improving the resilience of the energy system - natural gas**
3-4.1.1	**Enable the improvement of the flexibility of the system through the application of contracts that reduce or interrupt the supply of customers with natural gas in order to improve the resilience of the energy system**

No.	**Name of the measure**	
3-4.1.1-1	**Make the necessary changes to the regulations to enable the application of this type of contract**	
	Contracts with the possibility of reducing or interrupting supply provide additional flexibility in the supply of natural gas. At the same time, this type of supply should be reflected in the prices for such consumers.	
	Competent authorities:	Regulatory commissions
	Type of measure:	Administrative

	Sources of funding:	N/A
	Effect:	Prerequisites for improving system flexibility
	Tracking method:	Monitoring the procedure of forming standard contracts that contain the necessary provisions.
	Connection with other goals:	N/A
	Deadlines:	2022-2024
3-4.1.1-2	**Carry out the necessary technical procedures to enable the application of this type of contract**	
	For the application of such contracts, it is necessary to make technical changes in terms of consumption monitoring and management of natural gas delivery.	
	Competent authorities:	OTSs and ODSs
	Type of measure:	Technical/financial
	Sources of funding:	OTSs and ODSs
	Effect:	Improving flexibility; lower balancing costs
	Tracking method:	Monitoring the work of OTS and ODS in this segment.
	Connection with other goals:	Processed within the dimensions of Decarbonization (Renewable energy sources) and Energy efficiency
	Deadlines:	2024-2026
3-4.2	**Enabling the application of contracts that reduce or interrupt the supply of customers to improve the resilience of the energy system – electricity**	
3-4.2.1	**Enable the improvement of the flexibility of the system through the application of contracts that reduce or interrupt the supply of customers with electricity in order to improve the resilience of the energy system**	
No.	**Name of the measure**	
3-4.2.1-1	**Make the necessary changes to the regulations to enable the application of this type of contract**	
	Contracts with the possibility of reducing or interrupting supply provide additional flexibility in the supply of natural gas. At the same time, this type of supply should be reflected in the prices for consumers who accept contracts.	
	Competent authorities:	Regulatory commissions
	Type of measure:	Administrative
	Sources of funding:	N/A
	Effect:	Prerequisites for improving system flexibility
	Tracking method:	Monitoring the procedure for amending regulations
	Connection with other goals:	N/A
	Deadlines:	2022-2024
3-4.2.1-2	**Carry out the necessary technical procedures to enable the application of this type of contract**	
	For the application of such contracts, it is necessary to make technical changes in terms of consumption monitoring and electricity supply management.	
	Competent authorities:	TSOs and DSOs
	Type of measure:	Technical/financial
	Sources of funding:	TSOs and DSOs
	Effect:	Improving the flexibility of system operation
	Tracking method:	Implementation of technical solutions.
	Connection with other goals:	N/A
	Deadlines:	2024-2026

3.4.4.2 Regional cooperation in this area;

Regional cooperation in this area includes the exchange of opinions and experiences of introducing this measure into the electric power system.

3.4.4.3 Financial measures.

See point 5 of section B

3.5.5 Protection against cyber attacks

3-5	**Protection against cyber attacks**
No.	**Name of the measure**

3-5.1	**Adoption of a strategy for cyber security in Bosnia and Herzegovina**	
	At the Bosnia and Herzegovina level, there are guidelines for the strategic framework of cyber security (from 2019), but there is no adopted strategy for the subject area. It is necessary to adopt and apply a unified strategy for cyber security at the level of Bosnia and Herzegovina. Development of strategies for the electric power sector is done by SERC, FERK and RERS. At the same time, it is important to foresee the creation of strategies for the remaining two energy sectors treated within the framework of the NECP. By adopting these strategies, preconditions are created for easier creation of accompanying action plans.	
	Competent authorities:	The Ministry of Security of Bosnia and Herzegovina in cooperation with the Ministry of Communications and Transport of Bosnia and Herzegovina and the Intelligence and Security Agency of Bosnia and Herzegovina (Strategy for Cyber Security) SERK, FERK, RERS (Strategies for the electric power sector)
	Type of measure:	Regulatory
	Sources of funding:	International funds, own resources
	Effect:	Creation of preconditions for easier creation of strategies in key areas and accompanying action plans
	Tracking method:	Development and adoption of the strategy
	Connection with other goals:	N/A
	Deadlines:	2023-2024
3-5.2	**Adoption of the legal framework for information security**	
	There is no legal framework for information security at the level of Bosnia and Herzegovina. The Law on Information Security was adopted in the RS. In Federation of Bosnia and Herzegovina, the Law on Information Security exists in the form of a draft, and in Brcko District of Bosnia and Herzegovina there is no legal framework that deals with this issue. It is necessary to enact and adopt the missing legal framework. This will clearly define the bearers of responsibility for cyber security, competent institutions, identify network and information system operators, etc.	
	Competent authorities:	Competent ministries at the level of Federation of Bosnia and Herzegovina and Brcko District of Bosnia and Herzegovina
	Type of measure:	Regulatory
	Sources of funding:	International funds, own resources
	Effect:	Creation of prerequisites for the identification of operators of key services, bearers of responsibility for cyber security and competences of subjects
	Tracking method:	Drafting and adoption of laws
	Connection with other goals:	on
	Deadlines:	2023-2024
3-5.3	**Establishment of a single contact point for information security at the level of Bosnia and Herzegovina**	
	It is necessary to establish a single point of contact for the security of information and communication systems in accordance with the NIS Directive and constitutional and legal competences. The single point of contact will connect competent bodies in Bosnia and Herzegovina with relevant bodies in other countries, and take over communication with the aim of ensuring international cooperation, exchange of experiences and reporting.	
	Competent authorities:	Competent ministry in Bosnia and Herzegovina
	Type of measure:	Organizational
	Sources of funding:	International funds, own resources
	Effect:	Implementation of examples of good practice, networking with neighboring countries and a more efficient response in the event of a cyber attack.
	Tracking method:	A single point of contact has been established
	Connection with other goals:	N/A
	Deadlines:	2023-2024
3-5.4	**Establishment of energy CERT (eng. Computer Emergency Response Team)**	
	It is necessary to appoint one or more CERTs for the sectors of electricity, natural gas, oil and oil derivatives, which ensure a high level of availability of their communication services and which at all times have the possibility of two-way communication, with clearly defined and well-known	

	communication channels. CERT can be established within the competent authority. For communication and information, CERT needs access to a suitable, secure and resilient infrastructure.	
	Competent authorities:	Competent ministries in Bosnia and Herzegovina
	Type of measure:	Organizational
	Sources of funding:	International funds, own resources
	Effect:	Strengthened action on threats to the security of information systems in the field of energy, reduction and prevention of incidents in the field.
	Tracking method:	Established energy CERT
	Connection with other goals:	on
	Deadlines:	2023-2024
3-5.5	**Identification of network and information systems of operators of key services**	
	For the application of such contracts, it is necessary to make technical changes in terms of consumption monitoring and management of natural gas delivery.	
	Competent authorities:	Critical infrastructure operators
	Type of measure:	Internal procedures
	Sources of funding:	Own funds of critical infrastructure operators
	Effect:	The existence of clearly defined procedures and technical standards for ensuring adequate cyber security.
	Tracking method:	Established procedures and list of technical standards
	Connection with other goals:	on
	Deadlines:	2023-2024
3-5.6	**Training program aimed at raising the level of awareness and knowledge about cyber security**	
	For the application of such contracts, it is necessary to make technical changes in terms of consumption monitoring and management of natural gas delivery.	
	Competent authorities:	Competent ministries
	Type of measure:	Educational, organizational
	Sources of funding:	International funds, own resources
	Effect:	Raising the level of awareness and knowledge about cyber security, increased professional capacity
	Tracking method:	Number of promotional events, education, training, announcements in the media
	Connection with other goals:	Dimension 5
	Deadlines:	2023-continuous

3.5 Dimension: Internal energy market

3.5.1 Achieving the required degree of power interconnection

3.4.1.1 Policies and measures for achieving the target level of interconnection

4-1	**To achieve the required degree of power interconnection**	
4-1.1	**Strengthen interconnection with neighboring systems in order to strengthen regional interconnection. Realize planned interconnection lines with neighboring systems**	
No.	**Name of the measure**	
4-1.1-1	**Build a 400 kV transmission line Višegrad – Bajina Bašta (PECI project)**	
	The construction of this transmission line will further improve the regional interconnection of the countries of the Western Balkans and create preconditions for the exchange of electricity in the region as an additional incentive for the integration of national markets into regional ones.	
	Competent authorities:	Elektroprenos
	Type of measure:	Technical/financial
	Sources of funding:	WBIF
	Effect:	Increase of interconnecting capacities
	Tracking method:	Dynamics of transmission line construction
	Connection with other goals:	Energy security
	Deadlines:	in 2026
4-1.1-2	**Build a 400 kV transmission line Banja Luka – Lika (Cr) (PMI)**	
	The construction of this transmission line will further improve the connection of the countries of the Western Balkans with the EU countries, strengthen regional interconnection and create	

	preconditions for the exchange of electricity in the region as an additional incentive for the integration of national markets into the regional and regional into the pan-European market.	
	Competent authorities:	NOS Bosnia and Herzegovina (Independent System Operator in Bosnia and Herzegovina), Elektroprenos
	Type of measure:	Technical/financial
	Sources of funding:	Loans
	Effect:	Increase of interconnecting capacities
	Tracking method:	Dynamics of transmission line preparation and construction
	Connection with other goals:	Energy security
	Deadlines:	2030
4-1.1-3	**Upgrade of 220 kV lines between Bosnia and Herzegovina and Croatia to 400 kV??**	
	The upgrade of this transmission line will further improve the connection between the countries of the Western Balkans and the EU countries, strengthen regional interconnection and create preconditions for the exchange of electricity in the region as an additional incentive for the integration of national markets into the regional and regional into the pan-European market.	
	Competent authorities:	NOS Bosnia and Herzegovina (Independent System Operator in Bosnia and Herzegovina), Elektroprenos
	Type of measure:	Financial
	Sources of funding:	Loans
	Effect:	Increase of interconnecting capacities
	Tracking method:	Dynamics of transmission line preparation and construction
	Connection with other goals:	Energy security
	Deadlines:	in 2033
4-1.2	**In the event that it proves necessary, and on the basis of the determined potentials and planning of the construction of renewable energy sources, to additionally strengthen the interconnection of the two electric power systems (Bosnia and Herzegovina and the Republic of Croatia).**	
4-1.2-1	**Strengthen the electric power interconnection of Dalmatia (R.C.) and Herzegovina (Bosnia and Herzegovina) in order to enable the transport of electricity from renewable sources**	
	The greatest potentials for the construction of wind power plants and solar power plants are in the area of Herzegovina in Bosnia and Herzegovina and in the area of Dalmatia in the Republic of Croatia. Due to the complementarity of these areas in terms of potential, and due to the weak power connection of these two areas, it is necessary to increase the interconnection capacities between these two areas in order to enable the evacuation of production from RES.	
	Competent authorities:	NOS Bosnia and Herzegovina (Independent System Operator in Bosnia and Herzegovina), Elektroprenos
	Type of measure:	Administrative/technical/financial
	Sources of funding:	Loans
	Effect:	Integration of VoIE and stronger interconnection between the Republic of Croatia and Bosnia and Herzegovina
	Tracking method:	The dynamics of resolving administrative obstacles, preparation and construction of transmission lines
	Connection with other goals:	Energy security
	Deadlines:	2030

3.4.1.2 Regional cooperation in this area;

The construction of interconnecting lines is an important component of regional cooperation that improves the conditions for the functioning of the domestic and regional organized market.

3.4.1.3 Financial measures.

See point 5 of section B.

3.5.2 Ensuring adequate infrastructure for energy transport

3.4.2.1 Policies and measures related to elements of energy transmission infrastructure;

4-2	**Provide adequate infrastructure for energy transport**
4-2.1	**Development of electricity transmission infrastructure**
4-2.1.1	**Build the electric power infrastructure in accordance with the Long-Term Plan for the Development of the Transmission Network**

No.	Name of the measure	
4-2.1.1-1	**Realize plans for the construction of the power transmission network.**	
	Implement a long-term plan for the construction of transmission lines and substations, made in accordance with the criteria for planning the development of the transmission network.	
	Competent authorities:	Elektroprenos
	Type of measure:	Technical/financial
	Sources of funding:	Elektroprenos assets and loans
	Effect:	Satisfying production and consumption needs in Bosnia and Herzegovina
	Tracking method:	Implementation of the Long-term Development Plan
	Connection with other goals:	Energy security
	Deadlines:	2030

4-2.1.2	**Enable the timely connection of newly built nOIE facilities**

R. no.	Name of the measure	
4-2.1.2-1	**Identify and remove legal barriers for harmonizing the procedures for issuing permits for the construction of transmission and production facilities in order to enable the timely connection of new RES to the transmission network.**	
	The parts of Bosnia and Herzegovina with the greatest potential for the construction of RES (solar and wind power plants) are poorly networked with a high-voltage network. On the other hand, preparations for construction and construction in this area will soon intensify. However, due to the criteria on the basis of which the long-term plan for the development of the transmission network is drawn up, its development may significantly lag behind the construction of these power plants and thus enable timely connection of the power plants to the network.	
	Competent authorities:	DERK (State Electricity Regulatory Commission), Elektroprenos
	Type of measure:	Technical/financial
	Sources of funding:	Elektroprenos funds, loans, investors' own participation
	Effect:	Efficient integration of VOIE
	Tracking method:	Monitoring of changes in planning criteria, preparation of the Long-Term Plan for the development of the transmission network and construction
	Connection with other goals:	Energy security
	Deadlines:	in 2023

4-2.1.3	**Ensure the reduction of high voltages in the network to an acceptable level**

No.	Name of the measure	
4-2.1.3-1	**Implement the recommendations of the Study**	
	The regional study identified the occurrence of excessively high voltages in the region, including Bosnia and Herzegovina. The study also gave recommendations for reducing these tensions.	
	Competent authorities:	NSO Bosnia and Herzegovina (Independent System Operator in Bosnia and Herzegovina), Elektroprenos
	Type of measure:	Technical/financial
	Sources of funding:	Credits and WBIF
	Effect:	Improving network security
	Tracking method:	Monitoring the implementation of the Study's recommendations
	Connection with other goals:	Energy security
	Deadlines:	in 2023

4-2.2	**Development of infrastructure for natural gas transportation**

4-2.2.1	**If the role of natural gas in the energy transition is defined as essential, ensure the connection of consumer centers with the transport gas system**

No.	Name of the measure
4-2.2.1-1	**Create/innovate studies for the construction of new gas transport pipelines in Bosnia and Herzegovina**

	In the light of the role of natural gas in Bosnia and Herzegovina and Europe, create/innovate studies on the development of the natural gas transport network in Bosnia and Herzegovina.	
	Competent authorities:	OTS's
	Type of measure:	Technical/financial
	Sources of funding:	OTS's
	Effect:	Recommendations regarding the development of the transport network.
	Tracking method:	Follow-up of studies
	Connection with other goals:	Energy security/Decarbonization
	Deadlines:	in 2025

4-2.2.2	**Carry out the gasification of consumer centers, provided that the realization of the Operational objective 4-2-2-1 is planned**

No.	**Name of the measure**	
4-2.2.1-1	**Create/innovate studies on the construction of new distribution networks in Bosnia and Herzegovina**	
	Increased capacities of the transport network and connection with consumer centers will have an effect if a distribution network is developed in these centers. That is why, as a first step, it is necessary to carry out studies on the development of the distribution network and the justification of the construction.	
	Competent authorities:	DSOs
	Type of measure:	Technical/financial
	Sources of funding:	DSOs
	Effect:	Recommendations regarding the development of the distribution network
	Tracking method:	Monitoring of study design and results
	Connection with other goals:	Energy security/Decarbonization
	Deadlines:	in 2025

3.4.2.2 Regional cooperation in this area

High voltages in the entire network have a serious impact on the operation of electric power systems in the region, and therefore also in Bosnia and Herzegovina. The previously conducted study on the method of eliminating these voltages is an example of good regional cooperation, and this will also include work on the installation of appropriate chokes according to the recommendations of the study, which will affect the elimination of high voltages.

3.4.2.3 Financial measures

See point 5 of section B

3.5.3 Market integration

3.4.3.1 Policies and measures related to elements of market integration;

3.4.3.1.1 Measures to increase the flexibility of the energy system with regard to the production of energy from renewable sources

4-3	**Market integration**
4-3.1	**Increasing system flexibility**
4-3.1.1	**Increase flexibility through the establishment of an organized market in the country and connection with neighboring markets**

No.	**Name of the measure**	
4-3.1.1-1	**Enact and implement the Law on Electricity and Natural Gas Regulator, Transmission and Electricity Market (Law)**	
	The condition for establishing an organized electricity market is the adoption of the aforementioned law.	
	Competent authorities:	Governments and parliaments/assemblies
	Type of measure:	Administrative

	Sources of funding:	N/A
	Effect:	Prerequisites for establishing a market
	Tracking method:	N/A
	Connection with other goals:	Energy security
	Deadlines:	in 2022
4-3.1.1-2	**Establish an electricity market operator in the form of an exchange for the day-ahead and intra-day market.**	
	The establishment of an organized market contributes to the flexibility of the system.	
	Competent authorities:	NOS Bosnia and Herzegovina (Independent System Operator in Bosnia and Herzegovina)
	Type of measure:	Technical/financial
	Sources of funding:	NOS Bosnia and Herzegovina (Independent System Operator in Bosnia and Herzegovina)
	Effect:	Functioning of the organized market and improvement of flexibility
	Tracking method:	Monitoring the realization of the plan for establishing an organized market
	Connection with other goals:	Energy security
	Deadlines:	in 2023
4-3.1.1-3	**Integrate into the regional electricity market**	
	The connection of national organized DA and ID markets to regional ones improves the level of flexibility of national and regional systems.	
	Competent authorities:	NOS Bosnia and Herzegovina (Independent System Operator in Bosnia and Herzegovina)
	Type of measure:	Technical/financial
	Sources of funding:	NOS Bosnia and Herzegovina (Independent System Operator in Bosnia and Herzegovina)
	Effect:	Improving flexibility
	Tracking method:	Monitoring of the regional connectivity plan
	Connection with other goals:	Energy security
	Deadlines:	2023(2026)
4-3.1.1-4	**Establish a system of exchange of balancing energy and netting of imbalances based on the principles defined in the Guidelines for Balancing Electricity.**	
	Establishment of the balance energy exchange system and imbalance netting will reduce system operating costs and increase the level of flexibility.	
	Competent authorities:	NOS Bosnia and Herzegovina (Independent System Operator in Bosnia and Herzegovina)
	Type of measure:	Technical/financial
	Sources of funding:	NOS Bosnia and Herzegovina (Independent System Operator in Bosnia and Herzegovina)
	Effect:	Reducing costs and improving flexibility
	Tracking method:	N/A
	Connection with other goals:	Energy security
	Deadlines:	2025 (2027)

4-3.1.2	**Improve flexibility by enabling the establishment and operation of aggregators, storage, connection and integration of new categories of system users (prosumers, energy communities)**

No.	**Name of the measure**	
4-3.1.2-1	**Enact secondary legislation to enable the establishment and operation of aggregators, storage, connection and integration of new categories of system users (prosumers, energy communities).**	
	The implementation of the adopted laws will be enabled by the necessary secondary legislation.	
	Competent authorities:	Entity Ministries for Energy and the Government of D. Brčko.
	Type of measure:	Administrative
	Sources of funding:	Energy Regulatory Commission of the Republic of Srpska
	Effect:	Creation of preconditions for decarbonization of the sector
	Tracking method:	The procedure for adopting secondary legislation
	Connection with other goals:	Energy security; Decarbonization

	Deadlines:	in 2023
4-3.1.3	**Improve competitiveness and the presence of independent suppliers through the elimination of subsidies and bringing wholesale and retail prices to a realistic level so that they fully reflect production costs.**	
No.	**Name of the measure**	
4-3.1.3-1	**Eliminate cross-subsidies between small commercial customers and households through the measures of regulatory commissions and the establishment of an organized market.**	
	Cross-subsidies between certain categories of customers are still present. In order to improve competitiveness on the electricity market and bring public supply prices to a realistic level, it is necessary to eliminate existing subsidies.	
	Competent authorities:	Regulatory commissions
	Type of measure:	Administrative
	Sources of funding:	Regulatory commissions
	Effect:	Improving competitiveness
	Tracking method:	Monitoring of reports of regulatory commissions
	Connection with other goals:	Energy security
	Deadlines:	in 2024
4-3.1.3-2	**The measures of the legislative and executive authorities, as well as regulatory commissions, eliminate direct and indirect subsidization of electricity production.**	
	It is evident that there are different types of electricity production subsidies that reduce competitiveness on the market. Subsidies are of direct and indirect nature. Legislative and executive authorities should take legal and managerial measures (in companies) to eliminate subsidies.	
	Competent authorities:	Executive and legislative power
	Type of measure:	Administrative
	Sources of funding:	N/A
	Effect:	Improving competitiveness
	Tracking method:	Monitoring of reports of regulatory commissions
	Connection with other goals:	Energy security
	Deadlines:	in 2026
4-3.1.4	**Introduction of the possibility of priority dispatching and redispatch of production and redispatch of consumption management based on objective, transparent and non-discriminatory criteria**	
No.	**Name of the measure**	
4-3.1.4-1	**To supplement the legislation, where provisions are missing that enable priority dispatching and re-dispatching of production and dispatching of consumption management**	
	By amending and applying the legislation that will make it possible **priority dispatching and re-dispatching of production and dispatching of consumption management will improve the flexibility of the system.**	
	Competent authorities:	Executive authority
	Type of measure:	Administrative
	Sources of funding:	N/A
	Effect:	Improving system flexibility
	Tracking method:	The process of amending the legislation
	Connection with other goals:	Energy security
	Deadlines:	in 2025

3.4.3.1.2 Regional cooperation

The integration of the domestic organized market into the regional one, including a joint, regionally based system of balancing and provision of auxiliary services, represents, as stated above, the key elements of improving the operation of the market through regional cooperation.

3.4.3.1.3 Financing

See point 5 of section B

3.4.3.2 Policies and measures related to the non-discriminatory participation of RES;

3.4.3.2.1 By establishing an organized market in accordance with Regulation 2019/943, enable the non-discriminatory integration of RES

The organized market is a key element for the integration of renewable energy sources and represents a basic step that should be taken in order to ensure the non-discriminatory participation of these sources in the green transition process.

4-3.2	**Measures to strengthen the non-discriminatory participation of renewable energy sources, consumption management and storage**
4-3.2.1	**By establishing an organized market in accordance with Regulation 2019/943, enable the non-discriminatory integration of RES**

No.	**Name of the measure**	
4-3.2.1-1	**Amend the Market Rules and Distribution Network Rules to enable the non-discriminatory integration of RES.**	
	It is necessary to analyze the existing legislation and rules in order to, in case it proves necessary, to amend them so as to enable the non-discriminatory integration of RES.	
	Competent authorities:	Executive and legislative authorities, regulatory commissions, companies
	Type of measure:	Administrative
	Sources of funding:	N/A
	Effect:	Improving competitiveness and conditions for the integration of RES
	Tracking method:	Monitoring the procedure for amending and adopting legislation
	Connection with other goals:	Decarbonization, Energy security
	Deadlines:	in 2022

4-3.2.2	**Establish a market-based incentive system for nOIE**

No.	**Name of the measure**	
4-3.2.2-1	**Amend the laws on renewable sources so that the incentive system is based on market mechanisms.**	
	The existing incentive system for RES is outdated and should be changed by introducing auctions and feed in premium mechanisms.	
	Competent authorities:	Executive and legislative power
	Type of measure:	Administrative
	Sources of funding:	N/A
	Effect:	Improving the integration of RES and reducing the cost of operating the system
	Tracking method:	Monitoring of the law-making procedure
	Connection with other goals:	Decarbonization, Energy security
	Deadlines:	in 2022
4-3.2.2-2	**Enact and implement the Law on Electricity and Natural Gas Regulator, Transmission and Electricity Market (Law)**	
	See 4-3.1.1-1: Enact and implement the Law on Electricity and Natural Gas Regulator, Transmission and Electricity Market (Law)	
	Competent authorities:	See 4-3.1.1-1
	Type of measure:	Administrative
	Sources of funding:	See 4-3.1.1-1
	Effect:	See 4-3.1.1-1
	Tracking method:	See 4-3.1.1-1
	Connection with other goals:	See 4-3.1.1-1
	Deadlines:	See 4-3.1.1-1
4-3.2.2-3	**Establish an electricity market operator in the form of an exchange for the day-ahead and intra-day market.**	
	See 4-3.1.1-2: Establish an electricity market operator in the form of an exchange for the day-ahead and intra-day market.	
	Competent authorities:	See 4-3.1.1-2
	Type of measure:	Technical/financial

	Sources of funding:	See 4-3.1.1-2
	Effect:	See 4-3.1.1-2
	Tracking method:	See 4-3.1.1-2
	Connection with other goals:	See 4-3.1.1-2
	Deadlines:	See 4-3.1.1-2

4-3.2.3	**Enable the connection and integration of new users who produce electricity from nOIE into the market**

No.	**Name of the measure**	
4-3.2.3-1	**Amend/amend the laws so that they enable the connection and integration of new users of the distribution system that produce electricity from RES into the market.**	
	It is necessary to make it possible through legislative changes connection and integration of new users of the distribution system that produce electricity from RES into the market.	
	Competent authorities:	Executive and legislative power
	Type of measure:	Administrative
	Sources of funding:	N/A
	Effect:	Increased production from RES
	Tracking method:	Monitoring the process of changes and implementation
	Connection with other goals:	Decarbonization, Energy security
	Deadlines:	in 2023
4-3.2.3-2	**Amend/supplement Market Rules, Network Rules and Distribution Network Rules**	
	Amendments to the law will enable and require amendments to secondary legislation.	
	Competent authorities:	NOS Bosnia and Herzegovina (Independent System Operator in Bosnia and Herzegovina), Distribution Centers Operators
	Type of measure:	Administrative
	Sources of funding:	N/A
	Effect:	Increased production from RES
	Tracking method:	Monitoring the process of changes and implementation
	Connection with other goals:	Decarbonization, Energy security
	Deadlines:	in 2023

4-3.2.4	**Create a legal framework that will make the process of issuing permits for the construction of renewable energy sources more efficient**

No.	**Name of the measure**	
4-3.2.4-1	**Create an analysis of legal obstacles for efficiently and transparently issuing permits for the construction of RES with special emphasis on new types of producers (prosumers, citizen energy, energy communities).**	
	It is evident that investors are still faced with a series of obstacles for issuing permits for the construction of renewable energy sources, which slows down the construction and integration of renewable energy sources. For this reason, it is necessary to analyze these obstacles and propose ways and dynamics of their elimination. The obstacles are in the existing primary and secondary legislation. In addition, there are obstacles in new and/or amended spatial plans of areas where there is potential for construction.	
	Competent authorities:	Legislative and executive power
	Type of measure:	Administrative
	Sources of funding:	budgets
	Effect:	Speeding up the issuance of permits
	Tracking method:	Monitoring the implementation of analysis recommendations
	Connection with other goals:	Decarbonization, Energy security
	Deadlines:	in 2022
4-3.2.4-2	**Make changes in regulations to make the licensing process more efficient**	
	After changing the primary legislation, it is necessary to make changes in the secondary legislation in order to speed up and facilitate the process of obtaining building permits.	
	Competent authorities:	Executive power, Regulatory commissions, DSOs
	Type of measure:	Administrative
	Sources of funding:	N/A
	Effect:	Speeding up the issuance of permits

	Tracking method:	Monitoring the implementation of analysis recommendations
	Connection with other goals:	Decarbonization, Energy security
	Deadlines:	in 2023

3.4.3.2.2 Regional cooperation

3.4.3.2.3 Finance

See point 5 of section B

3.4.3.3 Policies and measures related to the participation of consumers in the operation of the electric power system through their own production using new technologies;

3.4.3.3.1 With an appropriate policy, enable and encourage the participation of consumers in the operation of the electric power system through their own production using new technologies

For the implementation of the renewable energy policy and related measures, the first step is to define a public policy that will provide a framework for the creation of political documents and, based on them, appropriate measures (laws and other regulations) that will enable the achievement of the goal of greater integration of renewable energy into the network.

4-3.3	**Consumer participation in the operation of the electric power system through own production using new technologies**	
4-3.3.1	**With an appropriate policy, enable and encourage the participation of consumers in the operation of the electric power system through their own production using new technologies**	
No.	**Name of the measure**	
4-3.3.1-1	**Adopt strategic documents that define public policies that will enable and encourage consumer participation in the operation of the electric power system through own production using new technologies**	
	The adoption of the NECP and the energy development strategy should be the basis for the adoption of public policy and legislation that will ensure the implementation of this policy.	
	Competent authorities:	Legislative and executive power
	Type of measure:	Technical/financial/administrative
	Sources of funding:	N/A
	Effect:	Increased participation of consumers in the production of electricity
	Tracking method:	Production capacities of this type of manufacturer
	Connection with other goals:	Decarbonization, Security of supply
	Deadlines:	in 2022
4-3.3.1-2	**Enact missing regulations and supplement existing ones that will enable and encourage consumer participation in the operation of the electric power system through their own production using new technologies**	
	Enact regulations that will enable the implementation of public policies	
	Competent authorities:	Legislative and executive authorities, regulatory commissions, companies operating in the energy sector
	Type of measure:	Administrative
	Sources of funding:	N/A
	Effect:	Increased participation of consumers in the production of electricity
	Tracking method:	Production capacities of this type of manufacturer
	Connection with other goals:	Decarbonization, Security of supply
	Deadlines:	in 2023

3.4.3.3.2 Regional cooperation

3.4.3.3.3 Finance

See point 5 of section B

3.4.3.4 Policies and measures related to ensuring the adequacy and flexibility of the electric power system with regard to the participation of nOIE

3.4.3.4.1 Determine an alternative policy for the development of new production capacities based on nOIE and without new thermal power plants and, within this framework, define the needs for ensuring the adequacy and flexibility of the system.

Through appropriate strategic documents, it is necessary to define a clear policy of ending the use of fossil fuels for the production of electricity and a strategy for the construction of renewable energy sources

4-3.4	**Ensuring the adequacy and flexibility of the electric power system considering the participation of nOIE**	
4-3.4.1	**Determine an alternative policy for the development of new production capacities based on nOIE and without new thermal power plants and, within this framework, define the needs for ensuring the adequacy and flexibility of the system.**	
No.	**Name of the measure**	
4-3.4.1-1	**Strategically opt for a production capacity structure that will meet the goals defined in the Decarbonization dimension**	
	Adopt strategic decisions and public policies for the future development of production capacities that will be aligned with decarbonization goals	
	Competent authorities:	Legislative and executive power
	Type of measure:	Administrative
	Sources of funding:	N/A
	Effect:	Assumptions for the decarbonization of the energy sector
	Tracking method:	The process of defining the structure of production capacities
	Connection with other goals:	Decarbonization, Security of supply
	Deadlines:	in 2022
4-3.4.1-2	**Perform a techno-economic analysis of the selected variants of the development of production facilities in order to choose the most favorable solution**	
	Competent authorities:	Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina, Entity Ministries and Government of Brčko District
	Type of measure:	Technical
	Sources of funding:	donors
	Effect:	Assumptions for the choice of the decarbonization option for the development of production capacities
	Tracking method:	The process of creating an analysis
	Connection with other goals:	Decarbonization, Security of supply
	Deadlines:	in 2022
4-3.4.2	**Establish an organized market that will facilitate the integration of nOIE and the integration of new customers**	
	The policies and measures for achieving this operational objective are identical to the policies and measures for achieving Operational Objective 4-3-1-1: Increase flexibility through the establishment of an organized market in the country and connection with neighboring markets	
4-3.4.3	**Connect with neighboring markets and integrate into the regional and wider European market.**	
	The policies and measures for achieving this operational objective are identical to the policies and measures for achieving Operational Objective 4-3-4-2: Increase flexibility through the establishment of an organized market in the country and connection with neighboring markets.	
4-3.4.4	**By separating DSOs from other functions within a vertically integrated company, ensure equal treatment of nOIE and their contribution to the adequacy and flexibility of the system**	
R. no.	**Name of the measure**	

4-3.4.4-1	**Realize the legal obligations of the separation of DSOs, including the establishment and functioning of the compliance system.**	
	Bosnia and Herzegovina has still not implemented the obligation to separate DSO from other activities. One of the preconditions for the functioning of an organized and transparent market is the separation of DSOs from other activities.	
	Competent authorities:	Legislative and executive power, regulatory commissions, companies in the electric power sector
	Type of measure:	Administrative/financial
	Sources of funding:	companies
	Effect:	Improvement of trading transparency
	Tracking method:	Monitoring the adoption and implementation of laws and regulations
	Connection with other goals:	Energy security
	Deadlines:	in 2022
4-3.4.4-2	**By adopting, amending and changing appropriate regulations, train DSOs for the integration of renewable energy in such a way that they contribute to the adequacy and flexibility of the system**	
	By integrating distributed and other RES into the distribution system, the role of the DSO changes. That is why it is necessary to enable changes in the work of DSOs in order for them to assume their new roles.	
	Competent authorities:	Regulatory commissions
	Type of measure:	Technical/financial
	Sources of funding:	DSOs
	Effect:	Increasing the integration of RES
	Tracking method:	Increasing the capacity of RES
	Connection with other goals:	Decarbonization, Energy security
	Deadlines:	in 2023

3.4.3.4.2 Regional cooperation

The concept of developing and building new production capacities is based, among other things, on regional cooperation in terms of optimizing the use of available resources, establishing an organized regional market (and beyond)

3.4.3.4.3 Finance

See point 5 of section B

3.4.3.5 Policies and measures related to consumer protection and improving competitiveness in the retail market

3.4.3.5.1 Consumer protection and improvement of competitiveness on the retail market

In the implementation of these policies and measures, it is important to enable the functioning of the retail market by transparently adopting prices that reflect the real costs of production, transmission and distribution of electricity and thereby provide alternative supply by the incumbents. In this regard, a market-based system of providing universal services and public supply services should be implemented.

4-3.5	**Consumer protection and improvement of competitiveness on the retail market**
4-3.5.1	**Establish electricity prices that fully reflect production costs, improve tariffs for network use, use of smart meters, defining conditions for new categories of system users and create conditions for competitive participation of independent suppliers on the retail market**
	The policies and measures for achieving this operational objective are identical to the policies and measures for achieving Operational Objective 4-3-1-3: Improve competitiveness and the presence of independent suppliers through the elimination of subsidies and bringing wholesale and retail prices to a realistic level so that they fully reflect production costs .
4-3.5.2	**Introduce market principles in supply through the mechanism of universal service and public supply**
No.	**Name of the measure**
4-3.5.2-1	**To change/amend the regulations so as to ensure that the supplier(s) for the supply needs of consumers using universal service and public supply mechanisms are determined on market principles.**

	The obligation is to ensure that all suppliers, who meet the requirements, have the possibility to provide universal services and public supply services. In order to achieve this, it is necessary to incorporate provisions that enable this into the corresponding laws.	
	Competent authorities:	Legislative and executive power, Regulatory Commissions
	Type of measure:	Administrative
	Sources of funding:	N/A
	Effect:	Transparency and market improvement
	Tracking method:	Auction procedures
	Connection with other goals:	Energy security
	Deadlines:	in 2025

3.4.3.5.2 Regional cooperation

3.4.3.5.3 Finance

See point 5 of section B

3.5.4 Ensuring adequate treatment of energy poverty (Protection of vulnerable consumers)

3.4.4.1 Policies and measures related to elements of energy poverty (optional).

In the process of establishing an organized market, building new production facilities, changing prices on the market and introducing prices for domestic customers that reflect the real operating costs of the system, the protection of socially vulnerable customers is of key importance for a socially just transition. That is why it is a priority to enact regulations that will clearly define this area and establish mechanisms for providing financial resources for the implementation of the program.

4-4	**Ensure adequate treatment of energy poverty (Protection of vulnerable consumers)**

Energy poverty is a serious problem that affects many countries around the world, including Bosnia and Herzegovina. It refers to the lack of access to reliable, affordable, and sustainable energy to meet basic household energy needs such as heating, cooling, lighting, and cooking. Energy poverty can have serious consequences for social inclusion, health, and the quality of life of affected communities.

Decarbonization of the energy sector refers to the reduction of greenhouse gas emissions from energy sources that use fossil fuels such as coal, oil, and gas. The main goal of decarbonization is to transition to cleaner energy sources such as renewable energy sources (solar, wind, hydro) in order to reduce negative impacts on climate change.

There is a strong connection between energy poverty and the decarbonization of the energy sector. Energy poverty is often a result of the lack of access or high costs of traditional fossil fuels to meet energy needs. This is especially true for marginalized communities living in rural areas or low-income urban areas. Decarbonization of the energy sector can have a positive impact on addressing energy poverty in several ways:

- **Increasing access to clean energy**: Transitioning to renewable energy sources as an alternative to fossil fuels can ensure affordable and sustainable energy for communities vulnerable to energy poverty.
- **Reducing energy costs**: Renewable energy sources such as solar and wind energy can reduce energy costs for households. This can help alleviate the financial burdens associated with energy poverty.
- **Improving energy efficiency**: Energy efficiency is a key component of decarbonization. Improving the energy efficiency of households can reduce the need for energy, thereby reducing costs and helping to combat energy poverty.

Within the framework of the SECAP (Strategic Energy and Climate Action Plan) process under the Covenant of Mayors, energy poverty plays an important role. SECAP is an instrument through which cities and municipalities develop strategies to reduce greenhouse gas emissions and adapt to climate change. Integrating aspects of energy poverty into the SECAP process allows local authorities to identify and address energy poverty as a key challenge.

SECAP can include measures and policies targeted towards energy-poor households, such as energy retrofit programs, energy efficiency subsidies, or social tariffs for energy. Through the SECAP process, local authorities can ensure that the needs of energy-poor citizens are taken into account when planning measures for decarbonization and sustainable energy transition. The link between energy poverty and the SECAP process within the Covenant of Mayors clearly demonstrates the importance of integrating the social dimension into efforts to decarbonize the energy sector.

Ensuring access to sustainable energy for all citizens is a crucial element in building a sustainable and inclusive energy sector in Bosnia and Herzegovina.

To address energy poverty in Bosnia and Herzegovina, a number of key activities need to be undertaken. Here are some of the main activities that could be implemented:

- **Analysis and identification of areas with the highest energy poverty**: The first activity is to conduct a thorough analysis to identify areas with the highest energy poverty. This involves collecting data on households most affected by lack of access to affordable energy and high costs.
- **Energy retrofit programs**: Development and implementation of energy retrofit programs targeted at energy-poor households. These programs should provide financial support for improving the energy efficiency of

homes, including insulation, window replacement, installation of energy-efficient heating and cooling systems, and the use of renewable energy sources.

- **Social tariffs for energy**: Introduction of social tariffs for energy that enable energy-poor households to access cheaper energy. These tariffs should be fair and specifically targeted at low-income households with high energy costs.
- **Energy efficiency education**: Implementation of energy efficiency education programs to raise awareness among the public about measures that can reduce energy consumption and costs. Education should include information about energy-efficient appliances, proper energy use, and tips for reducing energy bills.
- **Collaboration with local authorities and civil society organizations**: Collaboration is needed between government institutions, local authorities, and civil society organizations to successfully address energy poverty. Partnerships can involve knowledge exchange, resource sharing, and joint planning and implementation of projects.
- **Financial support**: Ensuring adequate financial support for the implementation of energy poverty alleviation programs. This can include securing funding from national and international sources, energy efficiency and renewable energy funds, as well as encouraging private investments.
- **Monitoring and evaluation**: Regular monitoring and evaluation of implemented activities to assess their effectiveness and identify necessary adjustments. This will enable continuous improvement of strategies and programs for addressing energy poverty.

It is important to note that implementation requires the collaboration and support of various stakeholders, including the government, local authorities, civil society organizations, and the community as a whole.

4-4.1	**Protect socially vulnerable customers with an adequate policy.**

No.	**Name of the measure**	
4-4.1-1	**Enact the missing regulations to regulate the adoption and implementation of the policy for the protection of socially vulnerable customers**	
	In Bosnia and Herzegovina, there are no regulations obliging the adoption of a policy for the protection of socially vulnerable customers. In order to establish a market, it is necessary to adequately protect these customers. That is why it is necessary to pass regulations that will establish this obligation.	
	Competent authorities:	Legislative and executive power
	Type of measure:	Administrative
	Sources of funding:	N/A
	Effect:	Creation of prerequisites for creating a protection program
	Tracking method:	The process of making regulations
	Connection with other goals:	Decarbonization
	Deadlines:	in 2023
4-4.1-2	**Establish a database of socially vulnerable customers based on established criteria**	
	A key activity in the creation of a program for the protection of socially vulnerable categories of the population is the establishment, based on the criteria established above, of a database of these categories.	
	Competent authorities:	The Council of Ministers of Bosnia and Herzegovina, entity governments
	Type of measure:	Administrative/Technical/Financial
	Sources of funding:	budget
	Effect:	Prerequisites for the application of protective measures
	Tracking method:	The process of establishing a database
	Connection with other goals:	N/A
	Deadlines:	in 2024

4-4.2	**Provide the necessary funds for the implementation of the policy with the policy of protecting socially vulnerable customers**

No.	**Name of the measure**	
4-4.2-1	**Establish funds and a fund collection system for the implementation of the Program for the Protection of Socially Vulnerable Customers**	
	The implementation of the protection program is possible only if there are funds that will be used for this purpose. Funds can be provided from the budget, donations, EE schemes, ETS.	
	Competent authorities:	Legislative and executive power
	Type of measure:	Technical/financial
	Sources of funding:	budget, donations, EE, ETS schemes.
	Effect:	Protection of the socially vulnerable

	Tracking method:	Funding
	Connection with other goals:	N/A
	Deadlines:	in 2024

4-4.3	**Support the implementation of the protection program through a policy of combined measures from different dimensions (including fiscal policy).**

No.	**Name of the measure**	
4-4.3-1	**Create a complete program of measures for the implementation of the protection policy for socially vulnerable customers**	
	Competent authorities:	Competent ministries and agencies
	Type of measure:	Technical/financial
	Sources of funding:	See 4-4.2-1
	Effect:	Created prerequisites for the protection of socially vulnerable categories
	Tracking method:	The process of creating a program
	Connection with other goals:	N/A
	Deadlines:	in 2024

4-4.4	**By educating socially vulnerable customers, support the implementation of their protection policy, including the application of energy efficiency measures**

No.	**Name of the measure**	
4-4.4-1	**Create and implement education programs for socially vulnerable customers in order to help implementing the policy of their protection.**	
	A very important segment of the protection program for socially vulnerable customers is their education.	
	Competent authorities:	Governments and Agencies
	Type of measure:	Technical/financial
	Sources of funding:	See 4-4.2-1
	Effect:	Application of EE measures
	Tracking method:	Number of educated
	Connection with other goals:	N/A
	Deadlines:	in 2024

3.5 Dimension: Research, innovation and competitiveness

3.5.1 Creation of a framework for the successful implementation of the Research, innovation and competitiveness dimension in the context of the implementation of the energy transition and the implementation of the NECP goals

5-1	**Creation of a framework for the successful implementation of the Research, innovation and competitiveness dimension in the context of the implementation of the energy transition and the implementation of the NECP goals**

R. no.	**Name of the measure**
5-1.1	**Adopting/updating strategic documents and laws**
	It is necessary to adopt/update the following strategic documents and laws: 1. Update Strategy for adaptation to climate change and low-emission development of Bosnia and Herzegovina, 2022-2030. 2. Updating the Science Development Strategy in Bosnia and Herzegovina - Revised framework document, 2022-2030. 3. Implementation of the Third Energy Package into domestic legislation 4. Adoption of the Bosnia and Herzegovina Energy Law in 2022. 5. Adoption of the Law on Electricity in the Federation of Bosnia and Herzegovina, 2022.

	6. Adoption of the Federation of Bosnia and Herzegovina Law on Renewable Energy Sources and Efficient Cogeneration, 2022. 7. Adoption of the Law on Heating in Federation of Bosnia and Herzegovina, RS and Brcko District in 2023.	
	Competent authorities:	Parliament of Bosnia and Herzegovina, Council of Ministers of Bosnia and Herzegovina, Parliament of Federation of Bosnia and Herzegovina, Government of Federation of Bosnia and Herzegovina, Parliament of RS, Government of RS
	Type of measure:	Political, legal
	Sources of funding:	The listed competent institutions
	Effect:	Establishment of a framework for the implementation of the NECP.
	Tracking method:	Through the adoption of the aforementioned acts
	Connection with other goals:	The above-mentioned documents are a prerequisite for the establishment of a framework for achieving the goals of the NECP
	Deadlines:	Adoption of the aforementioned acts within the specified deadlines
5-1.2	**Inclusion of public opinion in the Energy Transition process**	
	▪ Informing the public about all activities in the field of energy transition, through regular and dedicated media broadcasts, with a focus on the role of each entity and individual in the process. ▪ Organizing public debates and round tables on key topics of energy transition (energy cooperatives, production for own needs, micro-grids, energy efficiency,...)	
	Competent authorities:	Governments, public companies (EP Bosnia and Herzegovina, EPRS, EPHZHB, Toplane Sarajevo, Grijanje Tuzla, Komunalno Brčko, etc.)
	Type of measure:	Promotional
	Sources of funding:	The mentioned institutions, grant funds from international institutions
	Effect:	The involvement of all relevant institutions in the process of promoting the Energy Transition
	Tracking method:	Number of organized public debates, round tables, special shows dedicated to the Energy Transition
	Connection with other goals:	The measure is related to all dimensions, and especially to the objectives of the Energy Efficiency Dimension, RES
	Deadlines:	Deadlines: Continuous assignment

3.5.2 Establishment of new and strengthening of existing scientific research and research and development capacities in the field of energy and climate

5-2	**Establishment of new and strengthening of existing scientific research and research and development capacities in the field of energy and climate**	
No.	**Name of the measure**	
5-2.1	**Identification and mapping of available capacities for scientific research and research development activities**	
	▪ Gap analysis and identification of areas lacking research and general capacity for research activities. ▪ Identification of existing research and development institutions in the field of energy (independent, at universities and in companies) ▪ Identification of available capacities and equipment in these institutions ▪ Identification of available personnel and references	
	Competent authorities:	Competent ministries for education and science at all levels, Bosnia and Herzegovina, RS, Federation of Bosnia and Herzegovina, Cantons, District Brcko, universities
	Type of measure:	Organizational
	Sources of funding:	Own funds, grant funds from international institutions
	Effect:	Map of research and development institutions, with available capacities, personnel and references.

	Tracking method:	Through the information system of the ministries of education and science in Federation of Bosnia and Herzegovina, RS, cantons and District Brcko
	Connection with other goals:	The measure is linked to the goal of developing and implementing new smart technologies (RES, IT, Smart networks).
	Deadlines:	in 2025
5-2.2	**Establishment of a new research and development infrastructure to support the achievement of NECP goals**	
	▪ Establishment of new institutes and development groups in the field of energy, climate and environment at universities ▪ Establishment of Sectors and development groups in the real sector - companies	
	Competent authorities:	Competent bodies: Governments, competent ministries, universities, companies
	Type of measure:	Organizational
	Sources of funding:	Own funds, local projects, international projects.
	Effect:	Number of newly established research and development institutions
	Tracking method:	Through development projects, (international and local)
	Connection with other goals:	The measure is related to the implementation goals of RES and Energy Efficiency
	Deadlines:	Continuous activity
5-2.3	**Formation of new companies in the field of energy - START UP companies**	
	▪ Formation of the Agency for legal and financial support for the establishment of START UP companies based on the revolving model of the return of financial resources ▪ Formation of START UP companies in the field of energy, climate and environment.	
	Competent authorities:	Government of Federation of Bosnia and Herzegovina, Government of Republika Srpska, Cantonal governments, Government of Brcko District
	Type of measure:	Organizational, financial
	Sources of funding:	Own budget funds, grant funds, favorable loans.
	Effect:	Establishment of a system to support START UP companies
	Tracking method:	Number of formed agencies and START UP companies
	Connection with other goals:	The measure is directly related to other goals depending on the activities of the newly formed START UP companies
	Deadlines:	Continuous activity starting in 2024
5-2.4	**Encouraging innovation and patents**	
	Adopt ordinances to encourage and stimulate innovations and patents in the energy sector	
	Competent authorities:	Institutes, Companies (power companies, public companies, private sector)
	Type of measure:	Legal, financial
	Sources of funding:	Own funds
	Effect:	Implementation of new solutions (innovations and patents)
	Tracking method:	Number of innovations and patents
	Connection with other goals:	The measure is directly related to the goals of decarbonization of the energy sector, implementation of RES and energy efficiency.
	Deadlines:	Continuous activity

3.5.3 Strengthening the competences of scientific and professional staff for the implementation of the energy transition and NECP

5-3	**Strengthening the competences of scientific and professional staff for the implementation of the energy transition and NECP**
No.	**Name of the measure**
5-3.1	**Reform of the education system**
	▪ Introduction of new studies (curriculum) in the field of energy, climate and environment. ▪ Introduction of new professional programs and courses, at faculties, which cover areas of Energy Transition

	▪ Continuous adaptation of the syllabus for existing professional subjects: new methods, technologies and solutions in the field of energy, climate and sustainable development.	
	Competent authorities:	Competent ministries and universities, faculties
	Type of measure:	Organizational
	Sources of funding:	Own funds, grants
	Effect:	Curricula and programs aligned with the needs of the Energy Transition
	Tracking method:	Monitoring method: Number of new courses at faculties, content of syllabus
	Connection with other goals:	Connection with other goals: Connection with all goals of the Energy Transition and NECP
	Deadlines:	Continuous activity, starting from 2024
5-3.2	**Lifelong learning**	
	▪ Establishment of a model for lifelong learning of personnel in the field of energy ▪ Organizing and introducing lifelong learning programs and courses at universities ▪ Establishment of training centers for lifelong learning in companies	
	Competent authorities:	Universities, companies
	Type of measure:	Organizational
	Sources of funding:	Own funds, grants
	Effect:	Personnel trained for the development and implementation of new solutions and technologies in the field of energy, climate and sustainable development
	Tracking method:	The number of established training centers, programs and personnel undergoing lifelong learning programs
	Connection with other goals:	Connection with all NECP goals through personnel training
	Deadlines:	Continuous activity
5-3.3	**Participation in international projects**	
	▪ Organization of trainings and training of institutions and personnel for the preparation of applications for international projects (Horizon, Europa, Intereg, Erasmus,...) ▪ Establishing cooperation with international institutions and applying for international projects in the field of energy, climate and sustainable development. ▪ Implementation of development and research results from international projects in the real sector	
	Competent authorities:	Competent ministries, universities, institutes, companies
	Type of measure:	Organizational, financial
	Sources of funding:	International funds and programs for research and development
	Effect:	Getting to know new trends, solutions and technologies in the field of energy.
	Tracking method:	Number of international projects, number of involved institutions and researchers, number of implemented solutions in the real sector
	Connection with other goals:	The measure is directly related to the goals: the development of personnel for research and development, and the implementation of technologies and technical-technological solutions to achieve the goals of decarbonization, the implementation of RES and energy efficiency
	Deadlines:	Continuous activity
5-3.4	**Creating a favorable environment for attracting young people to study committees with teaching subjects in the context of the Energy Transition and the implementation of the NECP**	
	▪ Modernization of curricula in accordance with the needs of the energy sector ▪ Scholarships for students at faculties in accordance with the needs of the energy sector ▪ Involvement of students in development projects at universities and commercial companies ▪ Investing in modern tools at faculties to prepare students for work in the real sector ▪ Creating opportunities for opening START UP companies next to universities (space, personnel, legal support)	
	Competent authorities:	Competent ministries, universities, companies (public and private)
	Type of measure:	Organizational, financial

	Sources of funding:	Budgets of governments at all levels, companies, international funds and agencies
	Effect:	Prepared personnel for the real sector, new START UP companies, a new generation of experts for the implementation of the Energy Transition
	Tracking method:	The number of scholarships awarded by business companies, the number of students involved in projects, the number of new START UP companies,...
	Connection with other goals:	Direct connection with the development and implementation of new technologies in the field of decarbonization, implementation of RES, energy efficiency, integration of the electricity market. energy.
	Deadlines:	Continuous activities
5-3.5	**Certification of competence and excellence of personnel in the field of energy, technology and climate**	
	▪ Introduction of licenses for experts ▪ Participation in certified courses in the field of Energy Transition ▪ Periodic renewal of licenses on the basis of: completed projects, written and published professional and scientific works, studies, studies, project documentation, patents, innovations	
	Competent authorities:	Competent ministries, chambers of commerce, agencies
	Type of measure:	Organizational
	Sources of funding:	Own resources, international funds, international projects
	Effect:	Competent personnel in the fields of: energy, smart technology, climate, environment...
	Tracking method:	Number of issued and renewed licenses per year
	Connection with other goals:	Direct link to all targets
	Deadlines:	Continuous activities

3.5.4 Increasing investment in scientific research and research and development work

5-4	**Increasing investment in scientific research and research and development work and the development and introduction of new technologies in the field of energy and climate**	
R. no.	**Name of the measure**	
5-4.1	**Increase in budget allocations for scientific research and research and development work**	
	▪ Gradual increase of investment in scientific research and development work from the existing 0.3% to reach 1.5% of GDP by 2030 ▪ Gradual increase in investment in scientific research and development work until reaching 3% (EU average) GDP by 2050	
	Competent authorities:	The Council of Ministers of Bosnia and Herzegovina, the Government of the Federation of Bosnia and Herzegovina, the Government of the RS, the governments of cantons in the Federation of Bosnia and Herzegovina, the Government of Brcko District
	Type of measure:	Financial
	Sources of funding:	Budget funds
	Effect:	Creation of financial assumptions for investments in research and development of projects in the field of energy, climate and environment,...
	Tracking method:	Amount of allocated budget funds for scientific research work, number of realized projects from these funds in the field of energy, climate, environment,...
	Connection with other goals:	Development and implementation of technologies for achieving decarbonization goals, increasing RES capacity, increasing energy efficiency
	Deadlines:	Year 2030.
5-4.2	**Establishment/Intensification of cooperation with international development institutions with the aim of inclusion in international development projects, especially those financed by the EU (Horizon Europe, Interreg Danube, Erasmus, WIBIF, etc.)**	
	▪ Inclusion of universities, institutes, companies in the network of international development institutions	

	▪ Training for preparing applications for (Horizon Europe, Interreg, Erasmus, WIBIF,...) ▪ Increasing the number of applications in consortium with international institutions	
	Competent authorities:	Universities, company institutes,...
	Type of measure:	Organizational, financial
	Sources of funding:	International funds
	Effect:	Acquisition of new knowledge, experiences of technical and technological solutions,...
	Tracking method:	Number of applications, number of projects approved by competent international institutions
	Connection with other goals:	Connection with goals: decarbonization, increase of capacity in RES, energy efficiency, smart technologies
	Deadlines:	Continuous activity

3.5.5 Improvement of mechanisms for stimulating innovations in the field of energy and climate

5-5	**Improvement of mechanisms for stimulating innovations in the field of energy and climate**	
R. no.	**Name of the measure**	
5-5.1	**Patent application and acceptance mechanisms**	
	▪ Encourage the application of patents at universities, institutes and commercial companies. ▪ Finance the process of applying for individual patents ▪ Internal regulation to introduce more rewarding patents and innovations ▪ Support the implementation of patents and innovations in the real sector	
	Competent authorities:	Patent Office, Universities, institutes, real sector (public and private)
	Type of measure:	Technical, promotional, financial, regulatory
	Sources of funding:	Budget funds, funds, companies
	Effect:	New technical and technological solutions and technologies
	Tracking method:	Number of applied patents, number of accepted patents
	Connection with other goals:	Connection with the goals: decarbonization, increasing RES capacity, energy efficiency.
	Deadlines:	Continuous activity
5-5.2	**Encouraging innovation**	
	▪ Enact or improve regulations to encourage innovation in the real sector (public and private) ▪ Financially support innovations and reward innovators ▪ Implement innovations in the real sector	
	Competent authorities:	Companies in the real sector (public and private)
	Type of measure:	Financial
	Sources of funding:	Own funds
	Effect:	New technical and technological solutions
	Tracking method:	Number of innovations
	Connection with other goals:	Connection with goals: decarbonization, increasing production from RES, energy efficiency,...
	Deadlines:	Continuous activities
5-5.3	**Transfer of knowledge, technologies, experiences, licenses**	
	▪ Technology transfer and production of components for new technologies in cooperation with companies that produce these technologies (poles for wind turbines, transformers, solar panels, substructure for photovoltaic power plants,...) ▪ Development of companies for the production of new technologies ▪ Purchase of licenses for the production of new technologies (chargers for electric cars, batteries, parts of electric cars, meters, software tools...)	
	Competent authorities:	Commercial companies (public and private), institutes, universities
	Type of measure:	Organizational, financial, promotional
	Sources of funding:	Own resources, funds
	Effect:	Creation of new jobs, acquisition of new knowledge and tools.
	Tracking method:	Number of newly opened companies, plants in existing companies, acquired licenses, employees.
	Connection with other goals:	Linked to all objectives
	Deadlines:	Continuous activity