

UPDATE ON DEVELOPMENTS OF REGULATORY FRAMEWORK REGARDING RENEWABLES AND FLEXIBILITY

DECEMBER 2024





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I INTRODUCTION

1. About ECRB

The Energy Community Regulatory Board (ECRB) operates based on the Treaty establishing the Energy Community (hereinafter 'the Treaty'). As an institution of the Energy Community¹, ECRB advises the Energy Community Ministerial Council and Permanent High Level Group on details of statutory, technical and regulatory rules and makes recommendations in the case of cross-border disputes between regulators.

ECRB is the independent regional voice of energy regulators in the Energy Community. ECRB's mission builds on three pillars: providing coordinated regulatory positions to energy policy debates, harmonizing regulatory rules across borders and sharing regulatory knowledge and experience.

2. Scope of the report

The integration of renewable energy sources (RES) is one of the key mechanisms to reduce green-house gas emissions and enable a clean energy transition. Initial incentive schemes based on fixed purchase prices, exemptions from balance responsibility, and guaranteed offtake became out of date due to the excessive distortions they caused to the target model of the energy market. For this reason, aiming to align with EU legal acquis, all Energy Community Contracting Parties (EnC CPs) and Observers have started the process of transposition of RES directives into their legislation and began introducing market-based incentive models for the use of RES, while *feed-in tariff* scheme remained in place for some small-scale or demonstration projects.

On the other hand, fostering RES integration comes with a lot of challenges in terms of creating an adequate market environment to enable their participation, including aggregation, facilitating their connection etc. System operators, not only transmission system operators (TSOs) but also distribution system operators (DSOs), are facing more challenges than ever. It is necessary to provide sufficient connection capacity, but the management of the network, both transmission and distribution, is an even bigger challenge. For this reason, the need for flexibility becomes more necessary than ever.

3. Methodology

Data and analysis contained in the present report are based on the information and data provided by the regulatory authorities in EnC CPs and Observers. For this purpose, a questionnaire was prepared and distributed to the regulatory authorities in: Albania – *Energy Regulatory Entity of Albania (ERE)*, Armenia – *Public Services Regulatory Commission (PSRC)*, Bosnia and Herzegovina – *State Electricity Regulatory Commission of Bosnia and Herzegovina (SERC)*, Georgia – *Georgian National Energy and Water Supply Regulatory Commission (GNERC)*,



Kosovo*¹ – *Energy Regulatory Office of Kosovo** (ERO), Moldova – *National Agency for Energy Regulation of the Republic of Moldova* (ANRE), Montenegro – *Energy and Water Regulatory Agency of Montenegro* (REGAGEN), North Macedonia – *Energy, Water Services and Municipal Waste Management Services Regulatory Commission of the Republic of North Macedonia* (ERC), Serbia – *Energy Agency of the Republic of Serbia* (AERS), and Ukraine – *National Energy and Utilities Regulatory Commission of Ukraine* (NEURC).

¹ Throughout this document, this designation is without prejudice to positions on status, and is in line with UNSCR 1244 and the ICJ Advisory Opinion on the Kosovo* declaration of independence.



II COMPARATIVE ANALYSIS

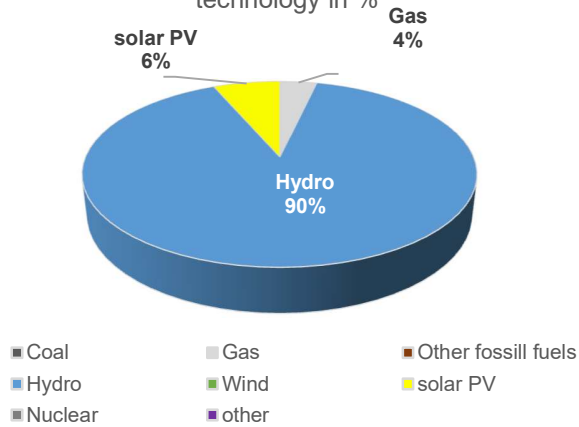
1. Overview of generation technologies

Electricity generation has always been dependent on available sources which was the deciding development factor. The most available conventional sources were coal and hydro potential, which resulted in most countries building energy systems based on coal-fired thermal power plants and hydropower plants, with the exception of Ukraine and Armenia, where the major energy source is nuclear energy and gas, respectively. The promotion of green agenda has led to accelerated development and penetration of RES, namely photovoltaic (PV) and wind.

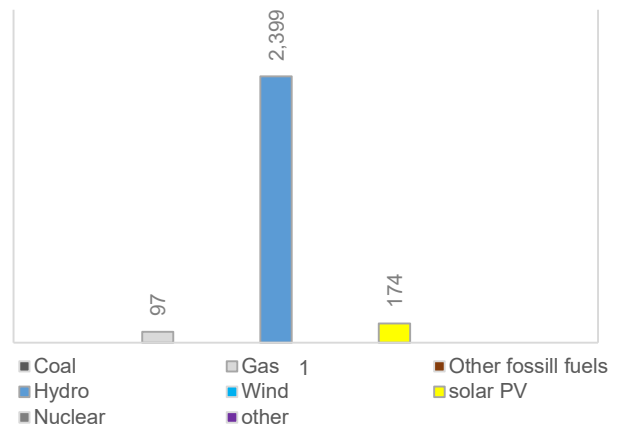
The following figures show the current state of installed generation technologies in EnC CPs and Armenia, with some exceptions related to Moldova and Ukraine data. Also, the shares of supported RES in total RES generation capacities and in total generation capacities are shown.

ALBANIA

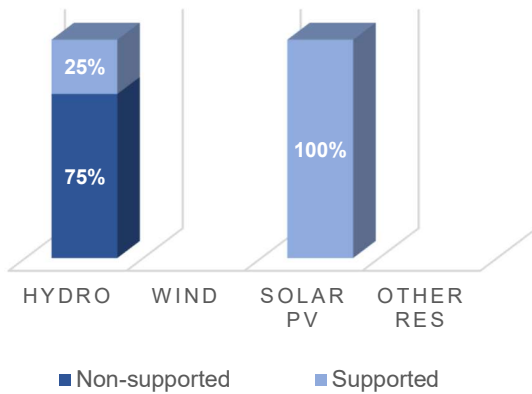
The share of generation capacity per technology in %



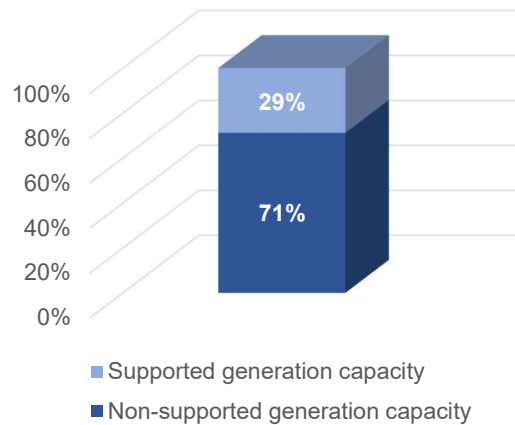
Installed capacity per technology in MW



The share of supported RES in total RES generation capacity



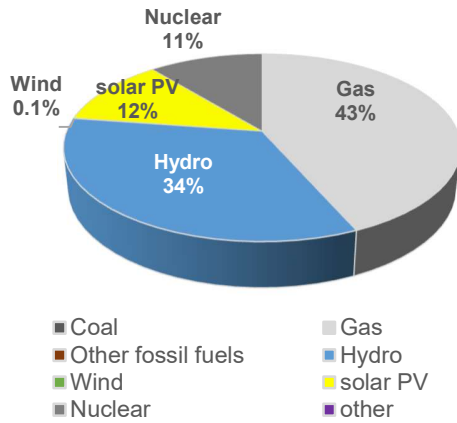
The share of supported RES in total generation capacity



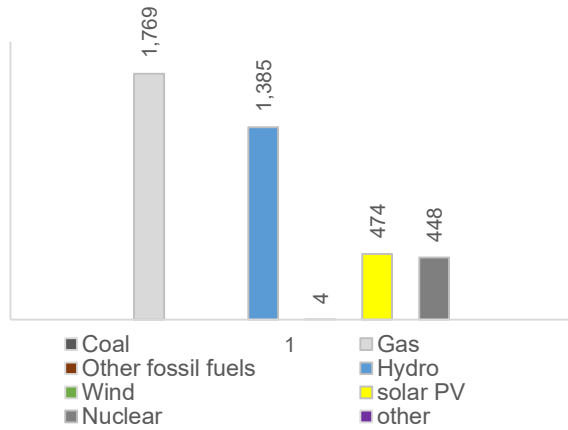


ARMENIA

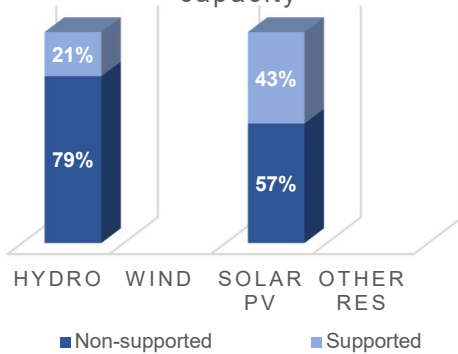
The share of generation capacity per technology in %



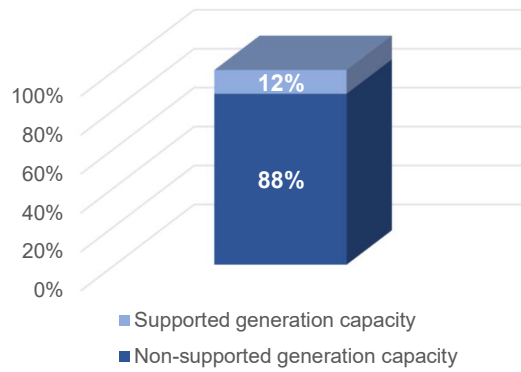
Installed capacity per technology in MW



The share of supported RES in total RES generation capacity

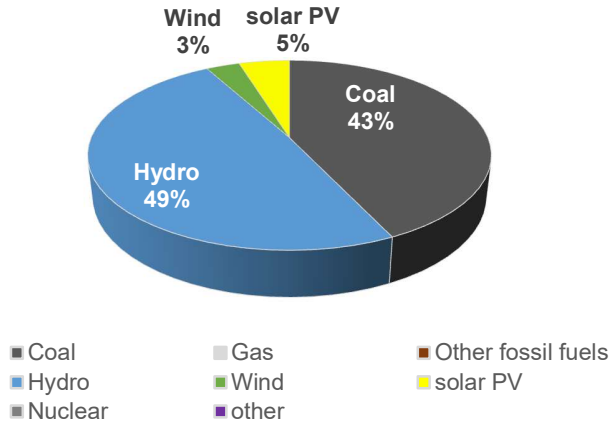


The share of supported RES in total generation capacity

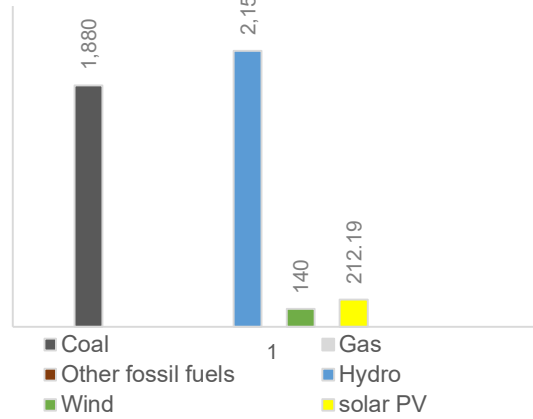


BOSNIA AND HERZEGOVINA

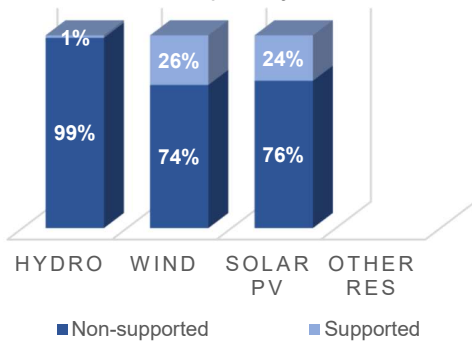
The share of generation capacity per Technology in %



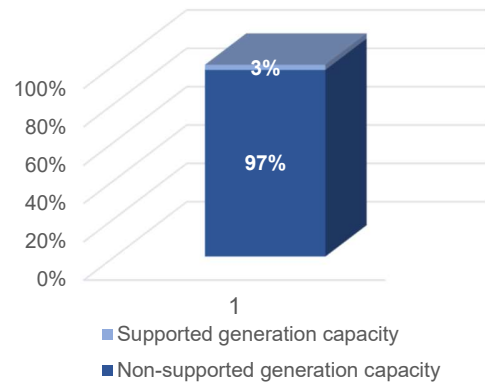
Installed capacity per technology in MW



The share of supported RES in total RES generation capacity

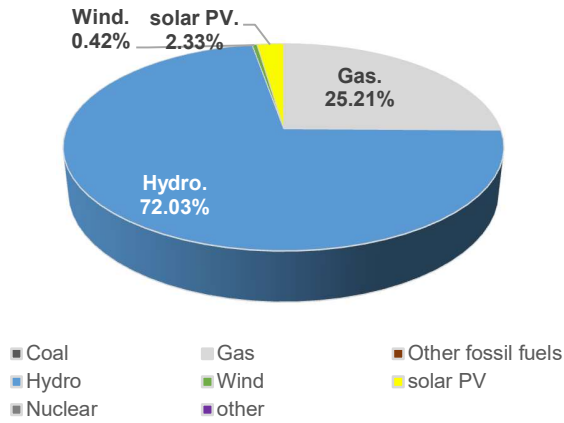


The share of supported RES in total generation capacity

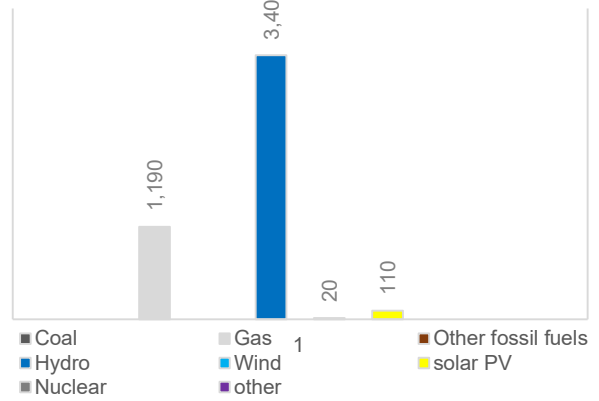


GEORGIA

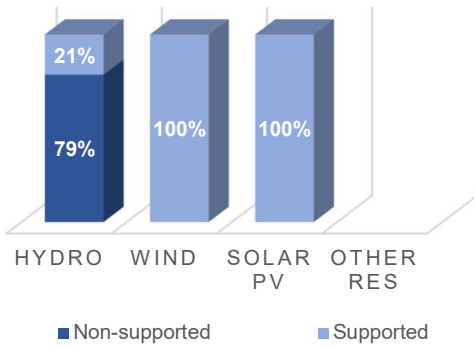
The share of generation capacity per technology in %



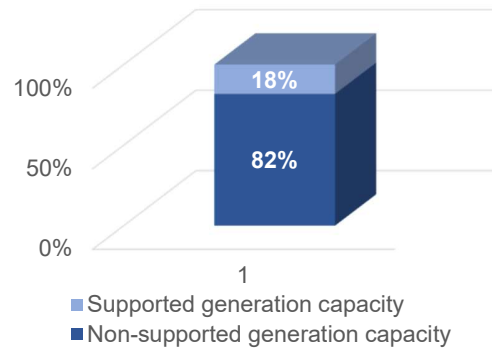
Installed capacity per technology in MW



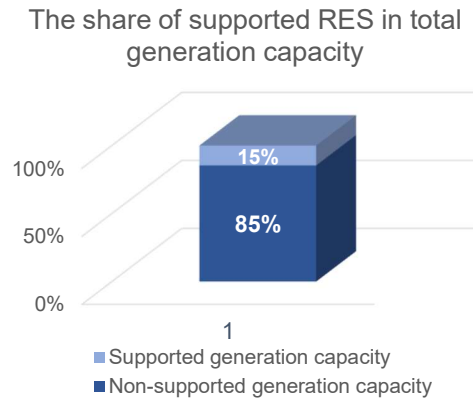
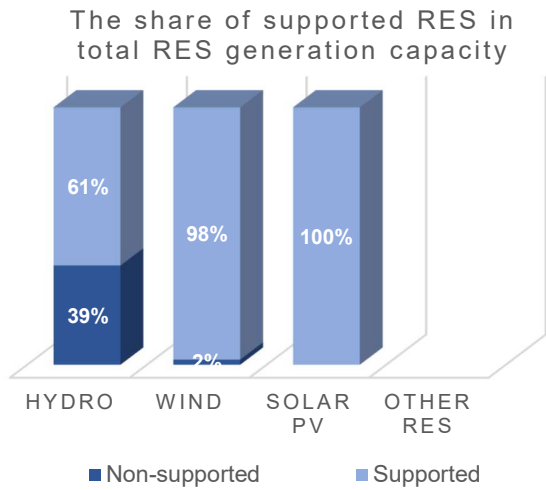
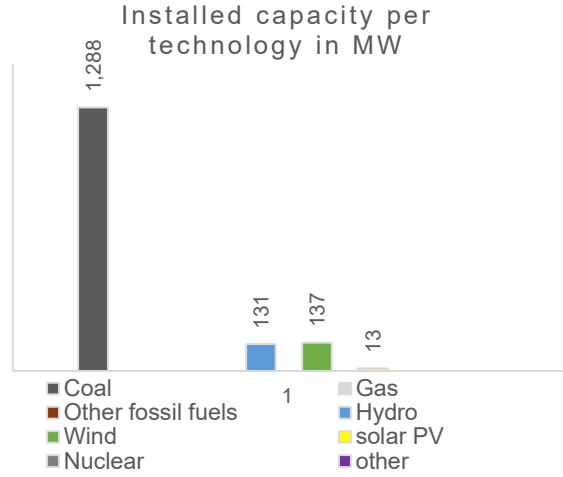
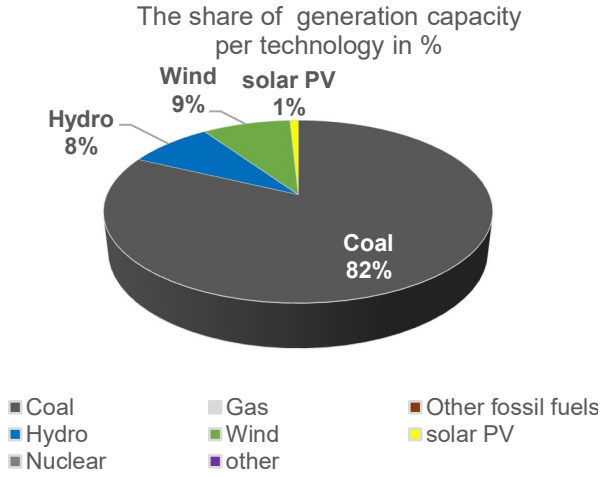
The share of supported RES in total RES generation capacity



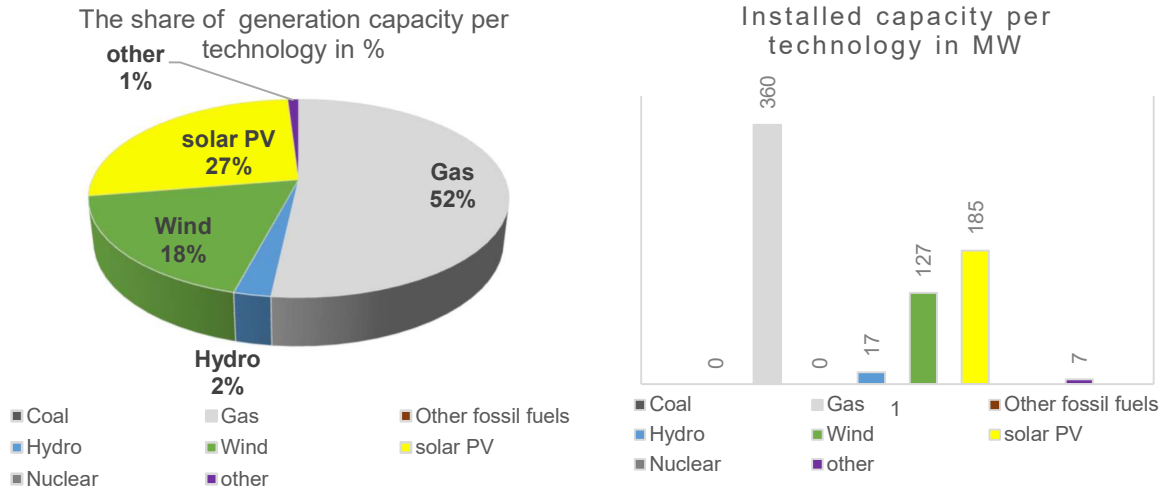
The share of supported RES in total generation capacity



KOSOVO*



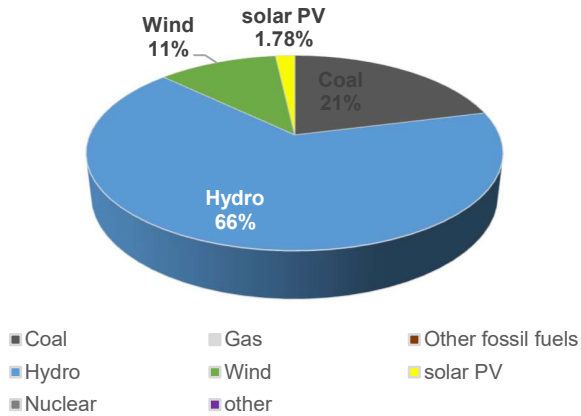
MOLDOVA



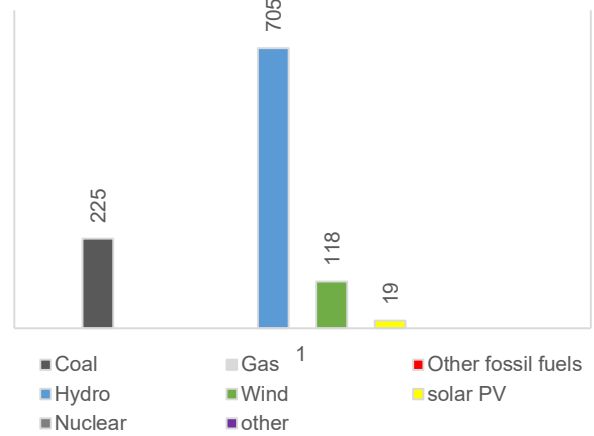
Note: Data without MGRES, a major electricity producer, covering in summer up to 95% of the electricity supply in contrast to only around 60% in winter. In legal terms, MGRES is located in the territory of the Republic of Moldova, but de facto the authorities do not control the region of location.

MONTENEGRO

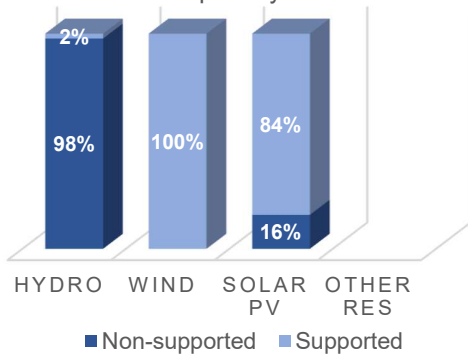
The share of generation capacity per technology in %



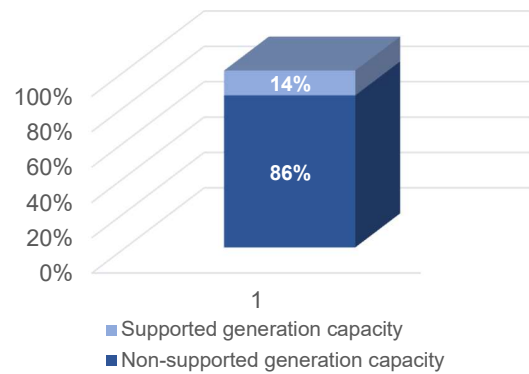
Installed capacity per technology in MW



The share of supported RES in total RES generation capacity

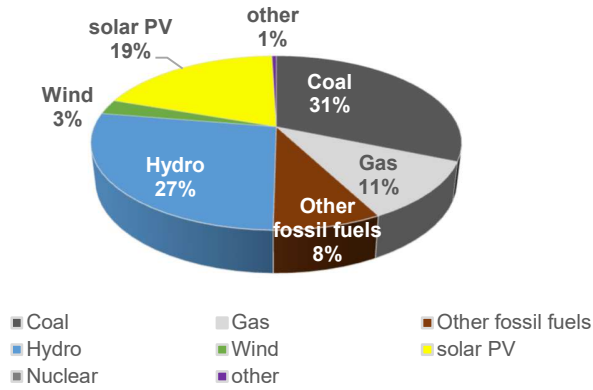


The share of supported RES in total generation capacity

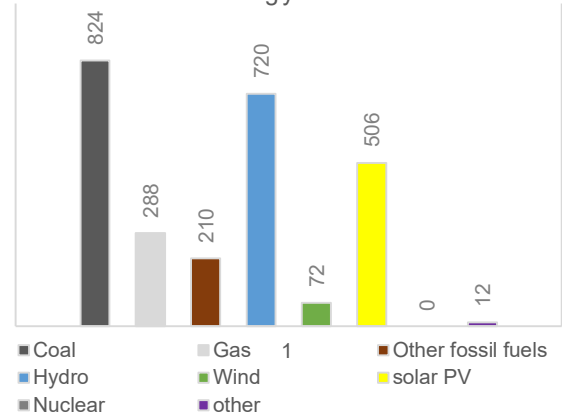


NORTH MACEDONIA

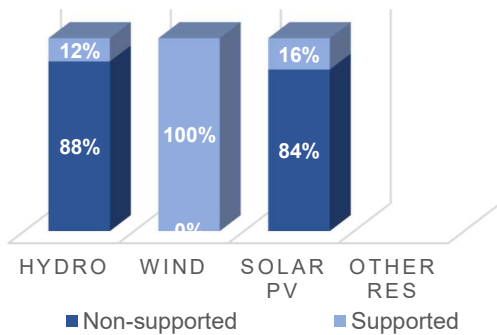
The share of generation capacity per technology in %



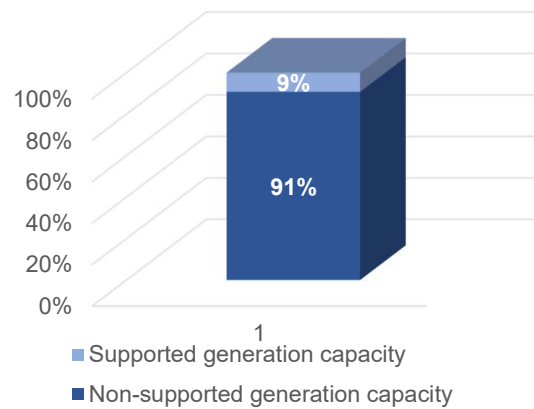
Installed capacity per technology in MW



The share of supported RES in total RES generation capacity

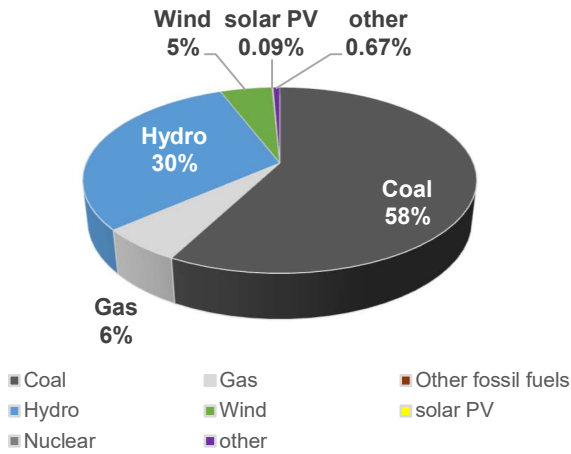


The share of supported RES in total generation capacity

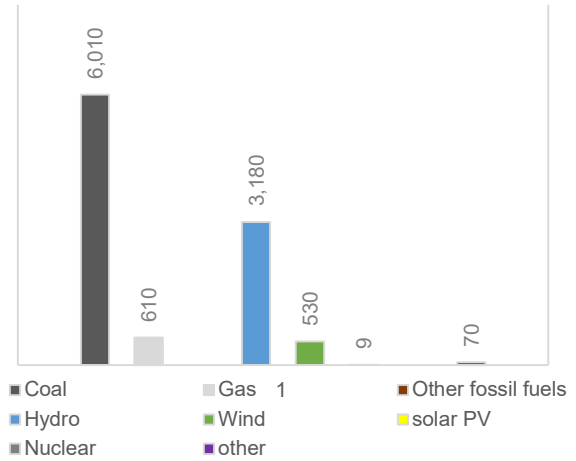


SERBIA

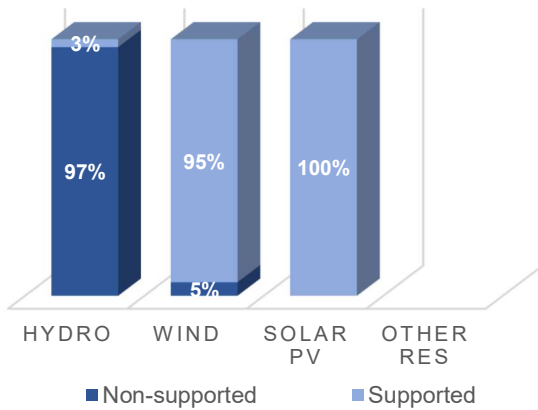
The share of generation capacity per technology in %



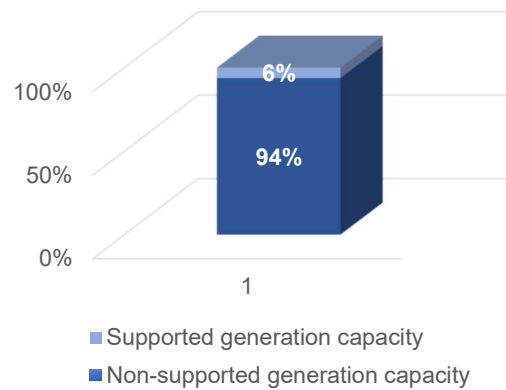
Installed capacity per technology in MW



The share of supported RES in total RES generation capacity

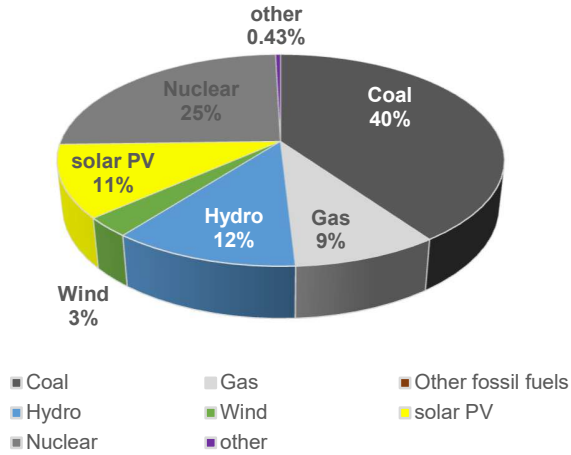


The share of supported RES in total generation capacity

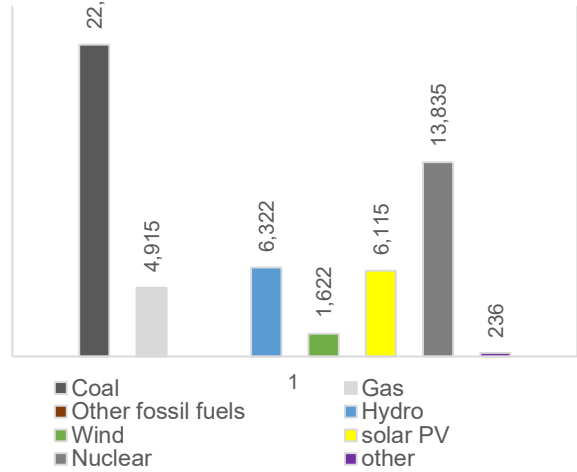


UKRAINE

The share of generation capacity per technology in %



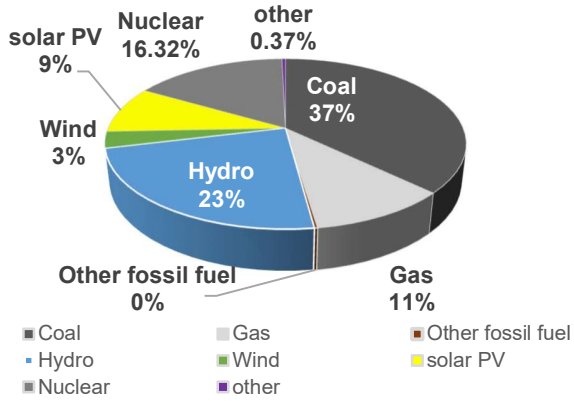
Installed capacity per technology in MW



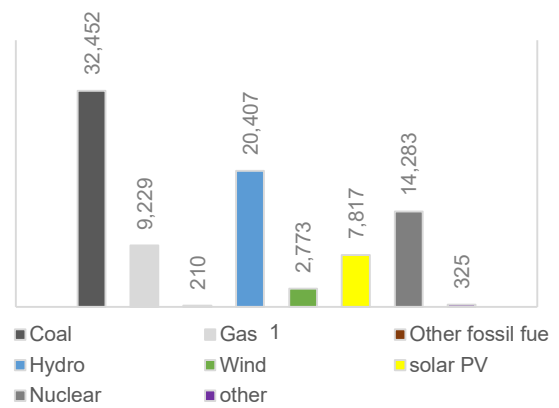
*For Ukraine data from 2021 are shown, due to the Martial Law ban.

OVERALL

The share of generation capacity per technology in %

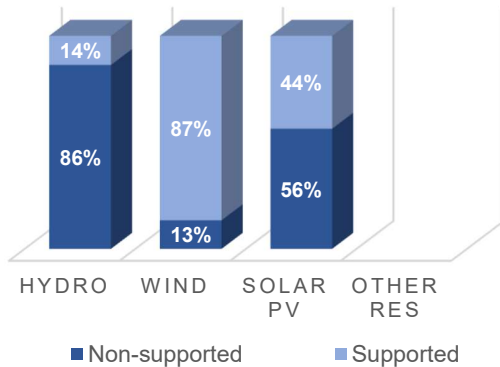


Installed capacity per technology in MW

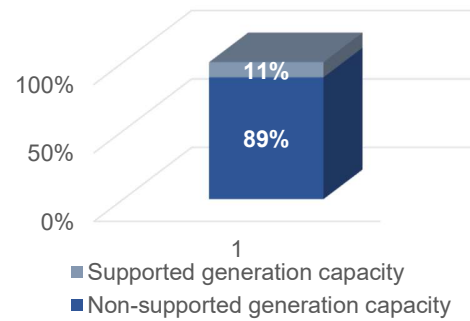




The share of supported RES in total RES generation capacity



The share of supported RES in total generation capacity



*The total share of supported RES is shown without data of Moldova and Ukraine

2. Transposition of EU legislation related to renewable energy sources

Directive (EU) 2018/2001 on the promotion of the use of energy from renewable sources, as adapted and adopted by the Ministerial Council of the Energy Community (hereinafter: EnC RED II) became part of the Energy Community *acquis communautaire* in November 2021. In line with Decision 2021/14/MC-EnC, all EnC CPs were obliged to bring into force laws and regulations in order to comply with EnC RED II by the end of December 2022.

Based on the information given, all EnC CPs are making great efforts to complete transposition in national legislation. Assessing the degree of transposition is difficult, but there has been quite a progress compared to the previous reporting period. In **Albania**, *Law 24/2023 on the promotion of use of energy*, which is partially aligned with EnC RED II, was adopted in April 2023.

According to the *Comprehensive and Enhanced Partnership Agreement (CEPA)* signed between the EU and the Republic of Armenia and entered into force as of 1 March 2021, **Armenia**, as EnC Observer, undertakes actions to gradually align its legislation to *Directive 2009/28/EC of the European Parliament and of the Council of 23rd of April 2009 on the promotion of the use of energy from renewable sources* (hereinafter: RED I) (6 years of the entry into force of CEPA). As part of the strategic programs for the development of the energy sector in Armenia, and in accordance with the planned schedule for implementing these programs, as approved by Government Decision, it is anticipated that the Ministry of Territorial Development and Energy Infrastructures of the Republic of Armenia, in collaboration with the PSRC, will in 2025 develop new *laws on electricity and on renewables and energy efficiency* for Armenia. These new Laws aim to address the challenges that have arisen in the current electricity market model and the trading mechanism by incorporating the best international practices. The main reforms proposed in the new draft *Law on Renewable Energy and Energy Efficiency* are: the introduction of auctions for the purpose of a transparent, nondiscriminatory bidding process for RES power plant and storage facilities,



implementation of market-based support schemes in the renewable energy sector such as premium tariff, guarantees of origin for electricity and introduction of contract for difference (CfD).

In **Bosnia and Herzegovina**, the transposition varies depending on the entity. In **Bosnia and Herzegovina's entity Federation of Bosnia and Herzegovina (FBiH)**, the transposition has been partly completed through new laws: *Law on Electricity of FBiH* and *Law on the Use of RES and Efficient Cogeneration*. In accordance with the explanation of the proponent of *Law on the Use of RES and Efficient Cogeneration*, the Federal Ministry of Energy, Mining and Industry, when drafting this law, Directive 2018/2001/EU was largely transposed. *Law on Electricity of the FBiH* ("Official Gazette of the Federation of Bosnia and Herzegovina", no. 60/23) entered into force on 17 August 2023 and *Law on the Use of RES and Efficient Cogeneration* ("Official Gazette of the Federation of Bosnia and Herzegovina", no. 82/23) entered into force on 2 November 2023 and is in application from 2 May 2024. The new legal framework brings several significant novelties: *feed-in tariff* and *feed-in premium* incentive schemes, auction processes for *feed-in tariff* (small plants and renewable energy communities) and *feed-in premium* (large plants)², the concepts of energy credit, monetary credit, net metering and net billing, prosumer and community of RES, the jurisdiction of *Regulatory Commission for Energy in Federation of Bosnia and Herzegovina* (FERK) and the DSO to determine the status of an eligible producer, the obligation of the regulator to issue licenses for the performance of power generation activities in power plants with an installed capacity of up to 1 MW is abolished, the obligation of the Federal Ministry of Energy, Mining and Industry to issue an energy license for the construction of power plants with an installed capacity of less than 1 MW, except for hydropower plants, is abolished, a mandatory deadline for carrying out the unbundling process of the DSO is introduced, as well as the adoption of a compliance program, the concept of closed distribution systems is introduced, balancing responsibility and obligations regarding balancing are defined, the guarantee of the origin of electricity and the entire process of issuance, cancellation and transfer are defined, the terms aggregator, active customer, EV charging point, energy storage and storage operator, prosumer (buyer/producer) are defined, the concept of renewable energy communities and citizens' energy communities is defined, the calculation of the structure of residual electricity (residual mix) is defined, supply schemes are defined according to the net billing and net metering model and a direct link is introduced with the National Energy and Climate Plan and the entity plans for energy and climate (NECP BiH and ECP FBiH). In **Bosnia and Herzegovina's entity Republika Srpska (RS)**, EnC RED II is largely transposed through the RES Law ("Official Gazette of Republika Srpska", no. 16/22). Energy Law where the most important aspects are: auction processes for large plants are being introduced, the concepts of energy credit, monetary credit, net metering and net billing, prosumer and community of RES were introduced, the jurisdiction of *Regulatory Commission for Energy of Republika Srpska* (RERS) and the DSO to determine the status of an eligible producer, balancing responsibility and obligations regarding balancing are defined, the guarantee of the origin of electricity and the entire process of issuance, cancellation and transfer are defined, the calculation of reference market price is defined and supply schemes are defined according to the net billing, net metering and standard scheme of supply model. In **Brcko District**

² The procedure is carried out by the *Operator for RES and Efficient Cogeneration*.



(BD) the transposition has been completed. *Law on RES of the BD BiH* was adopted in July 2022. The provisions of directives concerning RES have been transposed into this law.

In 2019, the Parliament of **Georgia** approved *Law on the Promotion and Use of Energy from Renewable Sources* (RES Law), effectively transposing EnC RED I into national legislation. Currently, Georgia is in the process of transposition of EnC RED II. These ongoing amendments aim to introduce renewable self-consumer and Renewable energy Communities concepts in Georgia's legislation.

In **Kosovo***, Law No. 08/L-258 on the promotion of the use of RES transposed the EnC RED II. The RES Law prescribes the principles and objectives of policies for promoting RES by defining the tasks and functions of the stakeholders in relation to the RES support, as well as: setting a mandatory goal for the overall percentage of energy from RES in gross final energy consumption for Kosovo* until 2030, determining the rights and obligations for the construction of new production capacities based on RES and establishes competitive mechanisms for supporting new production capacities based on Renewable Sources of Energy, defining the principles of the Support Scheme for Electricity Production, as well as energy for heating and cooling from RES, encourage consumers to produce, store and sell excess electricity from RES.

Law no. 10/2016 on the promotion of energy use from RES partially transposes EnC RED II in **Moldova**. The main novelties in relation to the previous law from 2016 are: introduction of the Government's obligation to establish the national sectoral target for the 2030 time horizon, the introduction of the Government's right to apply "statistical transfers" of energy from RES with other EnC CPs or EU Member States, simplifying the administrative procedures related to the development of a project in the field of renewable energy, establishing the primary legal framework that favors the emergence of a national market of guarantees of origin and its regional integration, promoting the concept of "prosumer", "net billing" and "energy communities", with the creation of the necessary legal framework (including the transition from "net metering" to "net billing"), promoting the use of RES in the heating and cooling and transport sectors, the operation of changes and additions in the part related to the organization of auctions and the content of the auction documentation, the specific rights and obligations of the eligible producers, establishing the right of eligible producers to receive payments (compensations) for limiting the quantities of electricity from RES injected into the electricity networks, establishing in law temporary provisions for the balancing responsibility of eligible producers and establishing the moment RES producers would assume full financial responsibility for the caused imbalances.

In **Montenegro**, Law on RES, in force in 2024, transposed the EnC RED II. This law has introduced a market-based support scheme, i.e., *feed-in premium*. Support schemes incentivize production for new capacities until the quota has been reached. The right to receive the support is based on auctions organized by the Ministry of Energy where qualified producers obtain the privileged producer status. The support for small producers (capacity less than 200kW) is based on a non-auction procedure (First come-First served principle) for support allocation until filling out the capacity quota. The Ministry of Energy is responsible for organizing auctions.



The EnC RED II is not transposed in the national legislation in **North Macedonia**. The draft that was approved by the Government was prepared but has not been sent to the Parliament for adoption yet. Draft RES Law envisages: fulfilment of the obligations that the Republic of North Macedonia has undertaken by signing and ratifying the Treaty establishing Energy Community by transposing the legislative package of the European Union for clean energy which has been adapted by the Ministerial Council of the Energy Community, clear determination of the interconnection, goals and content of the strategic-planning documents and by-laws in the area of RES, increasing the percentage share of renewable energy in gross final consumption by 2030, providing additional support to RES energy producers through legal regulation and other support measures, in addition to the already regulated preferential tariffs and premiums, providing more information and assistance for investors in RES by establishing an informative contact point and simplifying the procedures they initiate in terms of procedural actions, conditions and deadlines, ensuring greater legal certainty for RES investors through legal regulation of the method of selection and the rights and obligations of the energy buyer in the last resort, increased use of guarantees of origin through the possibility of granting them to preferential producers who use a support measure, as well as through enabling their trading in an organized manner through an electronic platform and encouraging consumers to participate in the production and use of RES by introducing new forms for their active participation, such as cooperatives of RES users.

In **Serbia**, EnC RED II has been transposed into national legislation. In 2023 RES Law was amended ("*Official gazette of RS*" no. 40/21 and 35/23). The most important changes are related to the calculation of maximum market premiums and maximum *feed-in tariffs* for the purpose of auctions. With this change, NRA is no longer responsible for developing the methodologies for the calculation of maximum market premiums and maximum *feed-in tariffs* and for the calculation of maximum market premiums and maximum *feed-in tariffs* for the purpose of auctions. This is the responsibility of the Government.

EnC RED II has been partially transposed in **Ukraine**. On 30th of June 2023, *Law of Ukraine on Amendments to Certain Laws of Ukraine on Restoration and Green Transformation of the Energy System of Ukraine*, No. 3220-IX was adopted, which implements: the market premium mechanism (*feed-in-premium*) – an alternative system of incentives for RES generation, for a generation that has been set a *feed-in tariff* (in this case, RES producers have the right to choose this support system) or that has acquired the right to support through an auction (producers can only receive this support system through an auction); self-generation mechanism (net-billing) – a support system for the mutual settlement of the cost of electricity supply to the grid by generating facilities of such consumers and the cost of electricity withdrawal from the grid; active consumer – is a consumer who is a customer of an energy service that consumes and produces electricity, and/or carries out energy storage activities, and/or sells surplus produced and/or stored electricity, or participates in energy efficiency and demand management activities; aggregation – is related to the association of electrical installations intended for the production (not exceeding 20 MW), consumption, and storage of electricity for buying and selling electricity and providing ancillary and balancing services, as well as the guarantees of origin for electricity from RES.



3. Support schemes applied in Contracting Parties

In the previous period, the dominant model for a supporting scheme was based on *feed-in tariffs*. As required by RED II, EnC CPs are making efforts to reform their schemes and move to market-based mechanisms. As a result, in many EnC CPs auctioning and market-based premium has been introduced. Self-consumption supporting scheme, as an important tool for promoting and utilizing RES generation by the end-consumers, has been introduced in all EnC CPs. Related to the balancing responsibility, RES producers became fully responsible for their imbalances which was not the case in the initial supporting period.

3.1 Generation support scheme

In **Albania**, the Power Purchase Agreement (PPA) is applicable as a supporting scheme. HPP with an installed capacity of up to 15 MW can have a PPA with a public supplier for 15 years. The PPA price is approved by the NRA ERE. Regarding other recourses of renewable energy, PV with an installed capacity of 2 MW can have a PPA with a public supplier for 15 years. The PPA price is approved by the ERE. Wind generators with an installed capacity of up to 3 MW can have a PPA with a public supplier for 15 years. The PPA price is approved by the ERE. The Ministry of Infrastructure and Energy is responsible for organizing auctions for awarding support rights. So far two auctions for supporting capacities were organized and were related to PV. The entity for organizing auctions is the Ministry of Infrastructure and Energy. The first auction for 140 MWp was realized in 2020 and the second auction for 100 MWp was realized in 2022. The first Auction's rules were that the participant would offer 50% of the capacity under PPA with a fixed price for public service obligation and the remaining 50% would be in the free market. The Second Auction's rule was that the participant would offer 30% of the capacity under PPA with a fixed price for a public service obligation. The remaining 70% will be in the free market. The lowest price offered in both auctions for public service obligation was the criteria for winning the auction. Achieved prices were around 26 €/MWh in the first auction and around 28 €/MWh in the second auction.

To incentivize the use of RES, **Armenia** implements *feed-in tariffs* which are revised annually by PSRC. Specificities may be provided by state-private partnership agreements according to which the guaranteed purchase is implemented. The review of tariffs is carried out every year until 1 June of the given year. Tariffs determined as a result of the adjustment by CPI and average monthly exchange rates of Armenian dram against one US dollar shall enter into force on 1 July of the given year and shall be effective until 1 July of the year preceding the given year. From the moment the first resolution of PSRC on setting the tariff produced by electric power plants comes into force, in the framework of the electric power production license, within fifteen years in the case of small hydropower plants, and within twenty years in the case of power plants using other RES, all the electricity produced in the given plant is subject to purchase (as defined by law,



electricity purchase guarantee), except for the cases of exclusively own needs or the person who has received an electric power production license waives the purchase guarantee. In case of taking advantage of the electricity purchase guarantee established by law, the licensed person has no right to refuse it later.

In **Bosnia and Herzegovina's entity FBiH**: *feed-in tariffs* were in use and are foreseen by the new law, however, technological quotas have not been defined so far and auctions have not yet been announced in order to apply the system of *feed-in tariffs*. *Feed-in premiums* are defined by the new law, but quotas are also not defined, and no auctions have yet been announced in order to apply the system of *feed-in premiums*. *Operator for RES and Efficient Cogeneration* is responsible for organizing auctions for support rights. The procedure for adopting the rules on auctions by the *Operator for RES and Efficient Cogeneration* is ongoing. A RES producer can exercise the right to one of the following types of incentives for the generation of electricity from RES:

- a) an incentive based on the *feed-in tariff* for small plants that use solar energy, wind energy, biomass or biogas energy, which is achieved by one or more of the most favorable bidders in the *feed-in tariff* auction procedure (auction for small plants)
- b) an incentive based on the premium determined by the auction process for large plants, which is achieved by one or more of the most favorable bidders in the *feed-in premium* auction process (auction for large plants)
- c) an incentive for the generation of electricity from geothermal energy.

A privileged producer is entitled to one of these types of incentives during a defined period of 12 years:

- a) by an agreement on the purchase of electricity with the *Operator for RES and Efficient Cogeneration* at a *feed-in tariff* if it is a privileged producer from the *feed-in tariff* auction procedure, and after the expiration of the contracted period, it loses the right to purchase electricity at a *feed-in tariff*.
- b) by a contract on premium with the *Operator for RES and Efficient Cogeneration* if it is a privileged producer from the *feed-in premium* auction procedure, and after the expiration of the contracted period, it loses the right to a premium.

Regarding special measures to encourage the use of RES for heating and cooling, the Government of the FBiH, on the proposal of the Federal Ministry of Energy, Mining and Industry, may introduce the following additional incentive measures:

- a) incentives for domestic production and procurement of equipment used for heating and cooling using RES, such as solar collectors for preparing hot water, heat pumps for using aerothermal, geothermal and hydrothermal energy, etc.
- b) creation of a local market for thermal energy produced from RES by introducing a registry of the guarantee of the origin of thermal energy and by introducing an obligation for large consumers of thermal energy (industrial and city heating plants) that part of the thermal energy must be produced from RES and Efficient Cogeneration,
- c) incentive measures for the use of thermal energy from geothermal sources,



- d) other incentive measures in accordance with the planning document for energy and climate in the Federation.

In **Bosnia and Herzegovina's entity RS**: the Fee for RES is calculated for every final consumer in RS in the amount defined by the Regulator, and approved by the Government. That fee is used to finance incentives, among others, calculated as the guaranteed price that producers had contracted with the Operator for the incentives system. The procedure for adopting the rules on auctions by the Operator for RES is finished. The operator for RES is responsible for organizing auctions for support rights. A RES producer can exercise the right to one of the following types of incentives for the generation of electricity from RES:

- a) an incentive based on the *feed-in tariff* (guaranteed price) for small plants that use solar energy, hydro, wind energy, biomass or biogas energy,
- b) an incentive based on the premium for consumption for own needs or for the market (as the difference between guaranteed price and reference market prices)
- c) an incentive determined by the auction process for large plants (auction for large plants)

Regarding special measures to encourage the use of RES for production and consumption, net metering, net billing and standard scheme of supply are in place.

In **Bosnia and Herzegovina's entity BD**: Law foresees the Rulebook on Incentives, which, among other things, will regulate the issues of the maximum participation of the BD in the costs of construction, i.e. the acquisition of facilities for the production of energy from RES by natural persons, the method of awarding incentives, the selection criteria and the procedure for selecting the beneficiaries of incentives. Producers of electricity from small plants are either entitled to compulsory purchase of the produced electricity in whole or in part at a guaranteed purchase price or to a premium for the produced electricity. The Government of BD BIH will decide on the implementation of the auction procedure for established technological quotas and determine the level of the market premium for encouraging the production of electricity from RES by large plants.

The auctions for supporting rights are prescribed in all BIH entities but have not been organized so far.

Currently, **Georgia** is applying two support schemes:

- 1) Government Resolution №566 - CfD auction:
The support scheme (capacity auction) includes announcing an auction based on a specified capacity, where interested parties submit bids containing territory coordinates, capacity, operation details, expected investment, and requested tariff. During the auction process, a median tariff³ is determined, and if the company's requested tariff falls within the median tariff, the project is approved unconditionally.
- 2) Government Resolution N426 - PPA:
According to this resolution, PPA is concluded with the investor.

³ The median tariff is the middle tariff selected from a list of proposed tariffs arranged by their growth rate. If an even number of tariffs is proposed, the median is the arithmetic average of the two middle tariffs.



The support scheme (resolution N556) provides a chance to get a support for innovative technologies. Innovative projects can participate in the capacity auction and, upon successful commissioning of electricity generation, receive a fixed tariff paid by the government.

The Ministry of Economy and Sustainable Development of Georgia is responsible for organizing auctions for support rights. The first auction was concluded in early 2023 (from February to March) for 300 MW capacity and the second auction was held in 2024 (January) for 800 MW capacity, which was finalised in May. In the first auction, 78 participants competed, with 27 winners. In the second auction, 147 participants competed, and 63 of them were successful. The only selection criterion for the capacity auction was the median tariff. The median tariff is the middle tariff selected from a list of proposed tariffs arranged by their growth rate. If an even number of tariffs is proposed, the median is the arithmetic average of the two middle tariffs. The technologies covered in the auctions included: hydro, wind, solar and other renewable technologies (hybrid, biomass, biogas, hydrogen and geothermal). The achieved auction prices were 60 USD/MWh for wind, 56 USD/MWh for solar and 65 USD/MWh for hydro. The price modality is based on the difference between the bid price and the imbalance electricity price. The amount corresponding to the price difference for a mixed producer in the power auction will be paid by the LLC "Commercial Operator of the Electricity System" as an addition to the balancing electricity price, only if, during the relevant accounting period, the balancing electricity price is lower than the tariff proposed in the power auction. Payment of the amount corresponding to the price difference for the mixed producer to the LLC "*Commercial Operator of the Electricity System*" occurs only if, during the relevant accounting period, the balancing electricity price is higher than the tariff proposed in the power auction.

In **Kosovo***, the support scheme is based on a competitive bidding process. Through the auction, the location of the park, if it is state-owned, is secured through a lease contract valid for 30 years or can be privately owned. Agreement for the purchase of energy with a guaranteed price is for a 15-year period is already realized for solar auction but the same is planned for wind too. In May 2024, the Government of Kosovo* has approved the Renewable Energy Law. This law stipulates in detail the competitive bidding process and support granted for beneficiaries via Articles 10 and 16-21. According to Article 15.1 of the *Administrative instruction (ME) no. 01/2023 on utilization and support of energy generation from RES*, the Privileged Producer is granted financial support in a form of guaranteed purchase price per kilowatt hour (kWh) for electricity produced from the plant delivered to the power grid, based on the PPA signed with Purchaser, who as a designated off-taker guarantees the mandatory purchase of the electricity generated by the Privileged Producer.

The Ministry of Economy is responsible for organizing auctions for support rights. The contract will be awarded to the Bidder who has offered the lowest guaranteed purchase price per MWh of delivered energy, expressed in €/MWh. The first Solar Auction in Kosovo* has been developed in accordance with Administrative Instruction no. 01/2023 on utilization and support of energy generation from RES; Articles 9 – 16. Prospective Bidders shall fulfil the eligibility and minimum qualification requirements pertaining to technical, professional, economic, and financial



requirements. The Contract will be awarded to the responsive Bidder that has offered the lowest guaranteed purchase price per MWh of delivered energy, expressed in EUR/MWh, exclusive of VAT. The auctioned capacity was 100 MW for solar PV technology. According to the *Methodology for Determining the Maximum Strike Price*, the ERO has approved a ceiling price of 75 €/MWh for the competitive bidding process for the *First Solar Auction of 100 MW* in Kosovo*. The following prices were achieved: Company 1: 48.88 €/MWh, Company 2: 48.97 €/MWh, Company 3: 49.45 €/MWh, Company 4: 53.80 €/MWh and Company 5: 56.49 €/MWh.

To promote the production and use of electricity from RES, the following support schemes are applied in **Moldova**:

- a) fixed price, established during the auction, for the large eligible producer who owns or will own a power plant/power plants with an installed/cumulative power higher than the capacity limit established by the Government. Within the auction procedures, the exercise price is established, which is used to quantify the value of the variable premium as the difference between this price and the market price of trading on the market for the next day of the electricity produced;
- b) fixed tariff, approved by the Agency for the small eligible producer who owns or will own a power plant/power plant with an installed/cumulative power that does not exceed the capacity limit established by the Government, but which is not less than 10 kW.

In accordance with law, eligible producer status has:

- a) large eligible producers who won the tender;
- b) small eligible producers, after confirmation of the status by the Agency.

In order to benefit from fixed prices or, as the case may be, fixed tariffs, eligible producers sign regulated contracts with the central electricity supplier for the purchase of electricity from RES.

The auction is organized by the Government, which appoints an auction commission for this purpose. The auction is organized in accordance with the *Regulation on the conduct of auctions for offering the status of the large eligible producer*. The auction for supporting rights has not yet been organized. The Commission for the organization of the Auction is appointed and the auction documentation is to be published at the following time, thus the actual auction will be launched. The capacity that will be requested on auction is 60 MW for solar PV and 105 MW for wind.

In **Montenegro**, two parallel support schemes are in place. The previous one based on *feed-in tariffs* is still in place until guaranteed off-taking periods expire and the current one, introduced by the new RES Law. Producers which still have privileged producer status based on the previous support scheme, are incentivized with a *feed-in tariff* and are not responsible for their imbalances until the guaranteed 12-year period expires. The new support scheme is based on auctions, market premium prices and full balancing responsibility of producers after the expiry of the transitional period. The new Law on RES introduces the auctions as a competitive tool for winning the support rights but yet, no auctions were organized. The Ministry of Energy is responsible for organizing auctions for awarding support rights.



In **North Macedonia**, the ERC (NRA) grants preferential status to the preferential producer upon individual request in accordance with the Rulebook for preferential producers that use *feed-in tariffs*. When issuing the preferential producer status, ERC checks if the producer meets the conditions and terms of the *Decree on the measures supporting the electricity generation from RES* and *Decision on the total installed capacity of preferential electricity producers*, both adopted by the Government of the Republic of North Macedonia. The Government sets the guaranteed purchase price of electricity produced by the preferential producers that applies over a period of 15 to 20 years, depending on the type of the power plant. The Electricity Market Operator is obliged to purchase the electricity generated by preferential producers at the guaranteed price, based on the PPA. The Electricity Market Operator sells the electricity to every supplier/trader who supplies the end consumers.

In 2018, market premiums were introduced for PV solar power plants only (it is expected that soon market premiums will start to apply to wind power plants too). The preferential producers entitled to market premiums have to sell the electricity on the wholesale market. However, if they cannot sell the electricity on the wholesale electricity market, there is an off-taker that guarantees the purchase of the produced electricity, in case they conclude a PPA for one year. The preferential producer eligible for a premium tariff is chosen via tender procedure with the auction, carried out by the Ministry of Economy. The premium is granted to a preferential producer as an additional fixed amount to the price realized by the sale of each kWh produced on the wholesale electricity market over a period of fifteen years. The tender procedure for awarding premiums is conducted as an open procedure with an auction in accordance with the provisions of the Decree on the measures to support electricity generation from RES and *Law on the Public Procurement*. The criterion for selecting the most favorable bid is the lowest offered fixed premium. The auction, conducted as a repetitive electronic process after the initial full evaluation of the bids, shall take place if it has been determined that there are at least two acceptable bids, whereas the ranking of bids is done by using automatic evaluation methods. The lowest of all eligible bids is set as the initial amount of the fixed premium at the auction. For a successfully conducted auction, it is necessary to have at least one gradual reversed bidding below the initial amount.

The subject of the tender is divided into four lots depending on capacity.

Upon conducting the e-auction, the commission shall determine the awarded capacities depending on the lowest premium offered for the requested capacity in the respective lot, in which case the bidder that has offered the lowest premium is entitled to the market premium. Then, the right to use a premium is granted to the bidder that has offered the next lowest bid for the installed capacity of the power plant. This rule is repeated until the determined quota for the respective lot is fulfilled. To the bidders who will not participate in the electronic auction, the requested capacity written in their bid shall not be granted. After the e-auction, the bidders whose bid was selected as the most favorable sign a contract with the Ministry of Economy. These contracts are valid for a period of three years during which the investors shall put the PV plant into operation. After 3 years, contracts for using market premiums shall be concluded between the Ministry of Economy



and the investors, after which the Ministry pays the premium to the investors upon receiving an invoice on a monthly basis, for a period of 15 years.

The Government of the Republic of North Macedonia adopted a *Decision on the total installed capacity of the preferential electricity producers*, according to which the total installed capacity of the PV power plants for which market premiums are awarded is 200 MW. So far, the Ministry of Economy has announced three public calls for awarding contracts for the right to use the market premium for electricity produced by PV plants, one on state land and two on private land. The first two announcements were published in 2019 for a total installed capacity of 60 MW, and the third in 2021 for a total installed capacity of 80 MW. The total amount of capacity from all three public calls was allocated (35 MW + 25 MW + 60 MW). There are still 60 MW for which the procedure for the right to award a premium might be conducted. In line with the Program for financial support to produce electricity from preferential producers using premiums for 2021, the maximum reference amount of the fixed premium for the PV solar power plants was set to 15 EUR/MWh. Three auctions organized so far, in 2019 for 35 MW, in 2020 for 27 MW and in 2022 for 80 MW). The criteria for selection of the most favorable bid is the lowest fixed premium. The most favorable bidder shall be the economic operator that offers the lowest fixed premium during the electronic auction.

In **Serbia**, the support scheme has three modalities: *feed-in tariff* which applies to power plants with installed capacity of up to 500 kW (all types of power plants except wind) and for wind power plants with installed capacity of up to 3 MW, market premiums which applies to power plants with installed capacity above 500 kW (all types of power plants except wind) and for wind power plants with installed capacity above 3 MW and self-consumers where net metering and net billing schemes apply. The Ministry of Mining and Energy is responsible for organizing auctions for support rights. Auctions for wind and solar power plant support were held. A total of 400 MW in onshore wind capacity was awarded across four projects and 25,2 MW in solar PV capacity was awarded among four projects. The maximum prices determined by the Government were 105 €/MWh for wind and 90 €/MWh for solar. The bided prices at auctions varied from 64 €/MWh to 79 €/MWh for wind power plants and from 88.65 €/MWh to 98.8 €/MWh for solar power plants.

In **Ukraine**, three support models are in use: *feed-in tariff*, *feed-in premium* (both, for RES with *feed-in tariff* who left the balancing group of Guaranteed Buyer and RES auction winners) and net billing. Regarding the auction preparation process, as the first step, TSO submits proposals on the size of the support quota for the upcoming year, along with indicative forecasts for the next four years, to the Ministry of Energy by 15 September each year. Upon request from the Ministry of Energy, the NEURC prepares and submits within 14 calendar days, proposals for the maximum price offer for auction participants for the next year, specified in euro cents per kWh for certain alternative energy sources.

The Ministry of Energy is responsible for preparing the auction schedule for the following year, determining the size and parameters of the annual support quota, and submitting it to the Cabinet of Ministers for approval. Only after the approval, the Guaranteed Buyer announces the start and



details of the auction. It is important to clarify that auction winners are only eligible for *feed-in premium* support.

Since October, 3 auctions for RES support were announced in Ukraine, but only one resulted in a successful outcome with a winner, while the other two had no participants.

3.2 Self-consumption support scheme

In **Albania**, the self-consumption scheme is introduced in *Law No. 43/2015 in Power Sector*. Article 3 of this law prescribes that a “*self-producer is a person producing electricity, which mainly consumes most of the produced energy for its own needs*”, while Article 37 stipulates that “*The obligation to be equipped with a license in electricity generation is not in place for: a) self-producers which are not connected to the national grid, or when the connection to the national grid is related to the maintenance of its generation unit*”. All consumers who fulfil requirements have the right to apply to become self-consumers. Based on the actual legal background, the maximum generation capacity of self-consumers is 500 kW, but self-consumers can apply for the same generation capacity that they have the connection approval by the network operator and in all cases the maximum allowed capacity is 500 kW. The total generation capacity of self-consumers is 153 MW, which represents a share in the overall generation capacity of around 5 %, and the electricity produced by self-consumers in 2023 was around 142 000 MWh which represents around 2%. in the total generation.

According to the Energy Law in **Armenia**, an “*autonomous energy generator*” is a consumer who generates electricity for his own needs using RES, who has signed an interflow contract with a person who has a guaranteed supply license and is not a person who has a production license for the given autonomous energy generation installations. According to this point, the consumption of electricity from an autonomous energy generator, and in the case of an autonomous group, of all participants of the group, regardless of the purpose of its use (domestic, production, etc.) is considered as its own need. “*Autonomous group*” is a group of autonomous energy generators or an autonomous energy generator (energy generators) and a consumer (consumers).

The retail electricity market rules approved by the PSRC’s Resolution №517-N of 25 December 2019 regulate the relationship between the autonomous energy generator and Guaranteed Supplier, as well as the calculation of electric energy flows among them.

The PSRC adopted the exemplary form of the electricity Interflow contract signed between the autonomous energy generator and the Guaranteed Supplier.

Related to capacity limitations, according to part 5 of article 56.1 of Energy Law, the installed capacity of the installations of the autonomous energy generator may not exceed the maximum permissible capacity established by the contract concluded as a consumer with the Guaranteed Supplier for each of its connection points to the distribution network, but not more than 150 kW.



In the case of an autonomous group, the total installed capacity of the installations of the autonomous energy generators involved in the group cannot exceed 1050 kW.

As of 1 August 2024, there have been 24160 autonomous energy generators with a total installed capacity of 339.78 MW, including 326 autonomous group.

In **Bosnia and Herzegovina's entity FBiH**, there is no incentive in the sense of *feed-in tariff* or *feed-in premium*, however, an incentive is defined in the form of the *Program on co-financing of prosumers from the category of households*, which is adopted by the *Operator for RES and Efficient Cogeneration* with the consent of the FBiH Government (Article 17 (Jurisdictions of the *Operator for RES and Efficient Cogeneration*) of *Law on the use of RES and Efficient Cogeneration*).

The very concept of self-consumption is defined in Article 46 of *Law on the use of RES and Efficient Cogeneration*:

(Prosumer supply schemes)

(1) The end customer has the right to connect a power plant that uses RES to the internal electrical installations of its facility for its own consumption.

(2) The installed capacity of the power plant, in case of application of net metering or net billing supply schemes, cannot be greater than the approved connection capacity of the end customer's facility, and the maximum installed capacity per individual plant is limited to 150 kW.

(3) The end customer obtains the status of prosumer by connecting the power plant referred to in paragraph (1) of this Article to the internal electrical installations of its facility and by regulating contractual relations with the competent DSO and supplier, and it has rights and obligations from this law and law governing the field of electricity.

(4) Prosumers have the right to use the net billing supply scheme.

(5) Prosumers from the category of households with approved connection capacity up to 10.8 kW have the right to:

- a) to choose a net metering supply scheme for a period of 10 years, after which they exercise the right to a net billing supply scheme, or*
- b) the right to use the net billing supply scheme.*

(6) The owner of the power plant for the prosumer's own needs can also be a third party, with the signing of a special agreement with the end customer for whose needs the power plant is connected.

In **Bosnia and Herzegovina's entity BD**, different schemes apply depending on the installed capacity, i.e.:

- a) net metering schemes apply to plants with an installed power of up to and including 10.8 kW (including 10.8 kW);



- b) net billing schemes apply to plants with installed power in the range from 10.8 kW to 50 kW (including 50 kW);
- c) standard supply schemes apply to plants with an installed capacity of over 50 kW.

Self-consumption has been introduced in **Georgia** since 2016. According to *Law on Energy and Water Supply*, a final consumer or a group of final consumers have the right to own and operate a micro power plant with an installed capacity of no more than 500 kW, however, the law grants GNERC the right to decrease this threshold. Even though the maximum allowed installed capacity is 500 kW, it should not exceed the final consumer's network connection capacity. In addition, to ensure grid stability, the total installed capacity of micro power plants connected to the grid may not exceed 14% of the peak load in the relevant distribution network.

As for the remuneration scheme, final consumers operating micro power plants may benefit from a net metering scheme, meaning that volumes fed into the grid and consumed from the grid are netted monthly. Excess volume is credited to the next billing period. The operation of the micro power plant by the final consumer is not considered a commercial activity under *Law of Georgia on Entrepreneurs*, and the netted electricity is exempt from Value Added Tax.

A virtual micro power plant has also been introduced, allowing final consumers to own a power plant in one location while consuming electricity in another, provided that both the power plant and the consumer are connected to the same DSO network. In this scheme, the remuneration structure is similar to the traditional self-consumption scheme described above.

At the same time, GNERC approved a standardized network connection fee and established strict timeframes for the connection process. Compliance with these timeframes is closely monitored, and compensation is provided to applicants if the DSO fails to meet the deadlines (see the details in chapter 3.4).

In 2023, the total installed capacity of micro-power plants engaged in the net metering scheme was 30.217 kW. Although the electricity produced but not fed into the grid is not separately metered, the approximate yearly production is estimated to be 95 million kWh.

In **Kosovo***, Article 30 of RES Law prescribes the self-consumption scheme. The regulator, through legislation, determines the schemes for net billing available to Self-Consumers from RES, including the threshold. Suppliers who supply Self-Consumers from RES are obliged to enter into a supply contract in accordance with the criteria and conditions defined by the by-laws and receive all excess electricity from self-consumers with RES. Self-Consumers with RES have the right to compensation for the excess electricity through a monetary credit in euros calculated on the basis of the net value of the energy electricity withdrawn from the network and the value of electricity injected into the network within a period billing that is taken into account when preparing electricity bills from the Supplier. If the monetary credit is greater than the value of the component of the energy drawn from the network for the same billing period, the credit amount in euros is carried over to the next billing period.



Electricity consumers connected to the low voltage distribution network (0.4kV) that, based on the Electricity consent, do not exceed 7 kW for households and for non-household consumers up to 200 kW. Also, electricity consumers connected to the medium voltage of the distribution network (6 kV, 10 kV, 20 kV and 35 kV) and in the transmission network, who are non-household consumers have that do not exceed the threshold of 200 kW.

The total installed capacity of self-consumers until the end of 2023 is around 13 MW or 1.05% of overall production capacity. There is no data for electricity produced by self-consumers, however, according to the application submitted, there are around 17082 MWh which is around 0.34% of overall electricity generation.

In **Moldova**, until December 31, 2023, universal service providers were concluding contracts for the application of the net metering mechanism, within the limits of the established capacity, based on the decisions of the ANRE until the entry into force of this law. Starting from 1 January 2024, final consumers, including the beneficiaries of the net metering mechanism, can take the necessary actions in order to obtain the status of the prosumer of electricity from RES under the conditions of this law. Also, starting from January 1, 2024, final consumers living in residential blocks can take the necessary actions in order to obtain the status of prosumers of electricity from RES. The net metering mechanism of electricity is applied until December 31, 2027. On January 1, 2028, all beneficiaries of the net metering mechanism became prosumers of electricity from RES.

The implementation of the support scheme for electricity prosumers from RES is based on the following principles:

- a) electricity suppliers who supply electricity to prosumers, in their primary capacity as final consumers, at the price set in the electricity supply contract are obliged to conclude prosumer contracts for electricity from RES with prosumers, in accordance with the criteria and conditions established by this law, and to purchase the surplus electricity generated by the respective prosumers;
- b) electricity prosumers from RES, provided that the individual capacity ceilings, established by the Government in accordance with art. 10 lit. e1), have the right to remuneration for the amount of electricity delivered in the electricity distribution network, expressed in a monetary equivalent and accumulated in an account of the prosumer of electricity from RES. The account reflects the value of the electricity delivered to the electricity distribution network and the value of the electricity consumed from the electricity distribution network in a billing period (according to the net billing mechanism). The equivalent value of the electricity delivered in the electrical distribution network and the equivalent value of the electricity consumed from the electrical distribution network are taken into account when issuing the electricity bill by the supplier and allow the determination of the monetary balance related to the prosumer. The price and/or method of setting the price applied to determine the counter value of the quantity of electricity delivered in the electrical distribution network is indicated in the annex to the electricity supply-sale contract;



- c) if the monetary balance between the value of the electricity delivered in the electrical distribution network and that consumed in the electrical distribution network is positive, it is transferred to be taken into account in the next billing period. The monetary balance is used for the purchase of electricity for the billing period by the prosumer of electricity from RES in a period of time not exceeding 12 months. The 12-month period begins on 1 January or another date established by the ANRE. If, at the end of the 12-month period, the monetary balance of the prosumer of electricity from RES is positive, at the request of the prosumer of electricity from RES, it is transferred to the bank account indicated by the prosumer or is transferred for use in the next period.

In order to apply the support scheme for prosumers of electricity from RES, universal service providers and suppliers of last resort who have signed prosumer contracts for electricity from RES procure the electricity delivered by prosumers in the electrical distribution network at the average market closing price for the next day in the billing period. Until a liquid day-ahead market is established, universal service providers and providers of last resort will apply the average electricity procurement price for the billing period from all sources, except for quantities of electricity procured from the central electricity supplier. The price for electricity delivered to the electricity network by prosumers of electricity from RES who have signed supply contracts with the supplier providing electricity at negotiated prices is set in the contract, following negotiations between the supplier and the prosumer of electricity from RES.

The total installed capacity of the prosumer's power plant(s) is equal to or less than the power contracted with its own electricity supplier for the respective place of consumption and falls within the individual capacity ceiling established by the Government, but does not exceed 200 kW. The individual capacity ceiling is established by the Government and is determined individually for each final consumer of electricity according to the defined formula.

The total installed capacity of self-consumers under the net metering scheme is 115.831 MW and under net billing is 23 MW. The estimation of electricity produced by self-consumers in 2023 is 138.997 GWh. The quantity supplied to the electricity grid is 56 GWh.

Self-consumption scheme in **Montenegro** was introduced in primary legislation in 2016. Consumers with installed RES production capacity, who dominantly consume all generated electricity and sell exceeding electricity, could join the self-consumption support scheme. Households and small consumers are entitled to join the self-consumption scheme. The limitation is the current installed (connection) capacity. The support scheme is based on: net-metering for prosumers with installed capacity of up to 16 kW, net billing for installed capacity from 16 kW up to 50 kW, and commercial scheme for installed capacity of more than 50 kW.

The total installed generation capacity of customers participating in the self-consumption scheme is around 13.77 MW (end of 2023) which is 1.3% of overall production capacity in the country. In 2023, the production of customers participating in the self-consumption scheme was 13.67 GWh which was 0.34% of overall production in Montenegro.



In **North Macedonia**, national legislation introduced prosumers that are consumers that have installed RES generation capacity and can deliver electricity into the grid without a license issued by ERC. The right to participate in the scheme has households, communities of households, small consumers, and budget users, that can generate electricity for their own consumption and excess of produced electricity delivered into the grid.

The estimated generation capacity of consumers participating in the self-consumption scheme in 2023 was around 14.11 MW which is 0.5% of overall generation capacity in the country and their estimated production in 2023 was around 6.54 GWh which represents 0.1% of overall production in the country.

The self-consumption scheme has been introduced in legislation in **Serbia**. The support scheme is based on net metering for households and small enterprises (small customers) and net billing for all other groups of consumers⁴. All consumers connected to the distribution and transmission network are eligible to participate in a self-consumption scheme with some capacity limitations. The installed power of the production facility of a self-consumer may not be higher than the installed power of the connection of the end-user. In addition to these requirements, the installed power of the production facility self-consumer may not be greater than:

- 1) the equivalent power that corresponds to the current of 10 A, if the connection to the system is not three-phase;
- 2) 10.8 kW where the prosumer is a household;
- 3) 150 kW where the prosumer is not a household.

In 2023, the total installed capacity in the self-consumption scheme was 36.9 MW (the share of 0.45% in overall generation capacity connected to low voltage) at low voltage and 22.5 MW (the share of 0.27% in overall generation capacity connected to medium voltage) at medium voltage. The total production of consumers participating in the self-consumption scheme in 2023 was 12.83 GWh which represents 0.034% of overall production in the country.

In **Ukraine**, the self-generation (self-consumption) mechanism is introduced by *Law of Ukraine on Amendments to Certain Laws of Ukraine on Restoration and Green Transformation of the Energy System of Ukraine No. 3220-IX*.

Self-consumption scheme is established for consumers whose generating facilities are connected to consumption facilities, provided that the installed capacity of such facilities does not exceed the permitted (contractual) capacity of the consumption (demand) facilities of a consumer, namely:

- solar and wind generating facilities of private households with an installed capacity of up to 30 kW;
- solar and wind-generating installations of small non-household consumers with an installed capacity of up to 50 kW;

⁴ Amendments of Energy law ("Official gazette of RS", no. 94/2024) defines that net metering shall cease to be applicable on prosumers requesting connection after 31.12.2026.



- installations of other non-household consumers generating electricity from solar, wind, biomass, biogas, hydropower, and geothermal energy, provided that their installed capacity does not exceed the permitted (contractual) capacity of such consumer's electrical installations intended for electricity consumption;
- generating installations of other non-household consumers commissioned before 31 December 2029, provided that their installed capacity does not exceed the permitted (contractual) capacity of such consumer's electrical installations intended for electricity consumption.

In 2023, the installed generation capacity in household facilities participating in self-consumption scheme was 1820 MW which produced 1604.5 GWh of electricity.



3.3 Balancing responsibility

In **Albania**, all RES generators are responsible for the imbalances they cause. However, RES generators who participate in support scheme have a different treatment. These generators are members of the balancing Group managed by the Public supplier that has the PPA with these producers under the supporting scheme.

RES generators out of the supporting scheme are fully responsible for their imbalances. Universal (Guaranteed) supplier in **Armenia** takes responsibility for imbalances caused by market participants having electricity purchase guarantee. Small HPPs (up to 30 MW installed capacity) and other electricity producers using RES, whose electricity purchase guarantee according to energy law has not expired sign PPA with the Universal (Guaranteed) supplier, whose exemplary form is approved by the PSRC's Resolution №456-N of 12 December 2018 (if the plant installed capacity less than 30 MW) or approved by the PSRC's Resolution №543-N of 13 December 2017 (if the plant installed capacity more than 30 MW).

In **Bosnia and Herzegovina's entity FBiH**, Article 35 of *Law on Electricity in FBiH* defines the rights and obligations of all generators, including RES producers, in terms of balancing.

The power generator has the obligation to:

- a) assume balance responsibility or conclude a contract with the balance responsible party,
- b) bear the costs of the imbalances, unless otherwise defined by a special regulation.

Law on the use of RES and Efficient Cogeneration defines the rights and obligations of RES producers who are incentivized and defines the balance group of RES. The above is defined, among other things, in Article 55 (Balancing) and Article 56 (Balancing Group of RES).

In **Bosnia and Herzegovina's entity RS**, Article 17 of *Law on Electricity in Republika Srpska* defines the rights and obligations of all generators, including RES producers, in terms of balancing:

“Obligations of the generator who produces in the incentive system and whose installed capacity is over 150 kW has the obligation to assume balance responsibility or conclude a contract with the balance responsible party and bear the costs of the imbalance. The operator for RES is balance responsible for RES producers who formed the balance group of RES”

In **Bosnia and Herzegovina's entity BD**, it is defined that if the installed power of the plant exceeds 150 kW, the manufacturer is obliged to report the work schedule and bear the costs of the imbalance in case of responsibility for the imbalance.



According to the targeted balancing market model, RES producers in **Georgia**, including those participating in the support schemes, will not receive any special treatment and will be fully responsible for managing their imbalances.⁵

All RES producers in **Kosovo*** are fully responsible for their imbalances in accordance with *Law on Electricity*, market rules and other procedures approved by the ERO. Each balance responsible party is financially responsible for its imbalances. In case the volume of the imbalance is higher than 10% for the technology of wind and 5% for solar technology, the volume of the imbalance falling above this threshold is charged or equated with the Privileged Producer in accordance with the Market Rules and other procedures approved by the Regulator.

In **Moldova**, each producer is responsible for imbalances and has the possibility to transfer this responsibility to a balancing group. Related to the eligible producers, when calculating electricity imbalances for the calculation period, the measured net position (PNM), determined according to the Electricity Market Rules, is adjusted to the contractual net position (PNC) if it is within +/- 8%, for wind power plants, and +/- 4%, for solar PV. The positive imbalance price for the amount of electricity produced by the eligible producer in excess of the established upper limit is limited to less than 50% of the fixed tariff or the fixed price, or, as the case may be, the exercise price of the eligible producer. The price of the negative imbalance for the amount of electricity that must be purchased by the eligible producer as a deficit compared to the established lower limit is limited at 200% of the fixed tariff or the fixed price, or, as the case may be, the exercise price of the eligible producer. The costs of the imbalances of the eligible producers that use the wind source or the PV source in the established intervals are borne by the central electricity supplier and transferred to the final consumer suppliers through the regulated price for electricity from RES. The provisions given apply to all eligible producers until the launch of a liquid IDM.

In **Montenegro**, privileged producers that obtained status in line with previous Energy Law are still incentivized with the possibility to transfer balancing responsibility to the market operator who is financially responsible for all their imbalances. On the other hand, privileged producers who will obtain status in line with the new RES Law will be balance responsible. In the initial transitional period, imbalances will still be covered by market operators and privileged producers will have to pay a fixed fee set by the Government but when the transitional period expires, privileged producers will be fully balancing responsible. All other RES producers that are out of the support schemes are fully responsible for their imbalances.

The preferential producers that use *feed-in tariffs* are not balancing responsible parties in **North Macedonia** and do not have financial obligations for their imbalances. The electricity market operator takes balancing responsibility for preferential producers. Other RES producers, including preferential producers that use *feed-in premiums*, are responsible for their imbalances and can choose to be balancing responsible party or to transfer the responsibility to another balancing responsible party.

⁵ Currently balancing market is not operational in Georgia. According to the *Resolution of the Government of Georgia №246 on approving the electricity market model concept*, the balancing market is supposed to go live on July 1st, 2025.



In **Serbia**, based on the provisions of the RES Law, the RES with incentives (market premium or *feed-in tariff*) will become balance responsible parties when certain preconditions are met. The main precondition is the establishment of a liquid organized intraday market.

Currently, those RES producers with incentives (market premium or *feed-in tariff*) are in the balance group of the public supplier.

In **Ukraine**, pursuant to *Law of Ukraine on the Electricity Market*, producers of electricity with a "green" tariff must be included in the balancing group of producers under the "green" tariff on the basis of a corresponding bilateral contract with a guaranteed buyer. In such a case, the guaranteed buyer is the party responsible for the balancing for such balancing group. Unlike other balancing groups, the rules of operation of the balancing group of producers under the "green" tariff are determined by the NEURC. The guaranteed buyer bears financial responsibility to the TSO for the electricity imbalances of the electricity producers that are part of its balancing group, only for generating units for which a "green" tariff has been established or for which the winner of the auction has acquired the right to support.

3.4 Connection and access

In order to facilitate integration of RES producers, the undue barriers related to connection and access to the grid should be removed. In that respect, simplified procedures, lower connection charges, priority access, etc. could be applied. This survey showed that approaches between countries differ.

In **Albania, Armenia, Kosovo*** and **Ukraine**, RES producers have no special treatment compared to other electricity producers.

On the other hand, in **Bosnia and Herzegovina**, related to connection to the transmission network, facilities that use RES for electricity generation pay 50% of the fixed part of the connection fee. Facilities that use hydropower can use this privilege if their installed capacity does not exceed 10 MW.

In **Bosnia and Herzegovina's entity FBiH**, *Law on the Use of RES and Efficient Cogeneration* defines that the producers from RES have priority when resolving requests for connection. Electricity producers that use RES have an advantage in solving requests for connection to the electricity network, compared to plants that do not use RES, and in accordance with the current regulations and rules governing connection to the distribution network, have the advantage of delivering electricity produced from RES and Efficient Cogeneration into the network, or priority in dispatching, in accordance with the applicable regulations and rules governing the operation of the power system of Bosnia and Herzegovina.

DSOs prescribe simplified procedures for connecting a RES power plant to prosumer internal installations and acquiring prosumer status with the aim of simplifying the procedures.



In **Bosnia and Herzegovina's entity BD**, special treatment is prescribed in *Regulations on the conditions for connecting power plants to the electricity distribution network*, which was adopted by Power utility.

In **Georgia**, to support the scaling up of RES technology, GNERC introduced simplified network connection rules and procedures for final consumers operating renewable micro-power plants or power plants with an installed capacity of up to 500 kW. The rules ensure the implementation of a one-stop-shop principle. This principle is realized through a micro power plant connection application form approved by GNERC. The form requires applicants to provide all necessary data to the DSO, minimizing the need for multiple physical interactions. The full cycle of network connection works is done by the DSO, including obtaining all permits.

Simultaneously, Georgia has implemented a network connection fee and established timeframes based on voltage levels and connection capacity. The connection process is closely monitored, and if the DSO fails to meet the deadlines, the applicant is compensated as follows:

- a. for the first missed deadline, the fee is reduced by 50%;
- b. for the second missed deadline within the same term, the fee is fully waived;
- c. for the third or any subsequent missed deadlines within the same term, the applicant is compensated with an amount equal to 50% of the fee for each instance.

In **Montenegro**, there is no special treatment of RES producers related to connection except in the case of small solar power plants by simplified permitting procedure. Related to the access, Energy Law prescribes that energy produced from RES has priority in off-taking by the grid.

In **North Macedonia**, there are special provisions for RES generator for connection in the *Methodology for setting the connection fee for connection to the distribution network*. In this Methodology, RES producers do not pay for creating technical conditions in the network for the purposes of connection.

In **Serbia**, Article 11. of Law on RES, provides special treatment for access to transmission and distribution grid for electricity produced from RES in demonstration projects, in power plants with an approved power of less than 400 kW, and for power plants connected to the grid after 1 January 2026 with approved power of less than 200 kW, regardless of whether it is in the incentive scheme system, except in the case when the operational safety is threatened. Also, in line with Article 68 of this law, the distribution and closed distribution system operators are obliged to establish a simplified connection procedure for the power plant of the end customer that produces electricity for its own needs and for the power plant that is part of the demonstration project, with an installed power of 10.8 kW or less, or an equivalent connection power that it is not three-phase.

4. The role of the Regulatory Authorities in support schemes

Based on law, the regulatory authority in **Albania** approves the standard PPA agreement and CfD agreement that are used as RES supporting scheme. The regulator also approves the



electricity price that will apply to the PPA. Regarding the self-consumption scheme, the role of the Regulator is to be established with the Government Decree that is under preparation.

The PSRC of **Armenia** approves the methodology for calculating and revising the *feed-in tariffs* for the sale of electricity delivered from RES producers. Related to the self-consumption scheme, the retail electricity market rules approved by the PSRC's Resolution №517-N of 25 December 2019 regulate the relationship between the autonomous energy generator and Guaranteed Supplier, as well as the calculation of electricity flows among them. The PSRC adopted the exemplary form of the electricity Interflow contract signed between the autonomous energy generator and the Guaranteed Supplier.

In **Bosnia and Herzegovina's entity FBiH**, the responsibilities of regulatory authority related to support schemes are licensing and determination of the status of an eligible producer for plants with an installed capacity of more than 1 MW, adoption of regulations for prosumers, adoption of regulations for residual mix and its calculation, determination of reference prices, *feed-in tariffs*, *feed-in premiums*, lower- and upper-income caps as well as lower and upper prices, monitoring. FERK adopts the Rulebook on the methodology for determining the maximum values of *feed-in tariffs*, replacement market prices and cap values of *feed-in premiums*, and based on this rulebook, FERK submits to the Federal Ministry of Energy, Mining and Industry a proposal for the calculation and values of the maximum *feed-in tariffs* and cap values of *feed-in premiums*, upper and lower income caps for incentives, upper and lower cap purchase prices, and the Government of the Federation of Bosnia and Herzegovina, on the proposal of that ministry, passes a Decision on the values of maximum *feed-in tariffs*, cap *feed-in premiums*, upper and lower income caps for incentives, upper and lower purchase price caps.

In **Bosnia and Herzegovina's entity RS**, responsibilities are licensing and determination of the status of an eligible producer for small plants, adoption of regulations for prosumers, determination of reference market prices, *feed-in tariffs*, *feed-in premiums*, and monitoring. RERS determines the value RES fee that is calculated on each customer receipt and passes that decision on Government for approval. The regulatory commission also participates in the auction process, and in general, oversees the work of the Operator for RES.

In **Bosnia and Herzegovina's entity BD**, according to *Law on RES and Efficient Cogeneration*, the BD BIH regulator (SERC) issues a license for power plants with an installed power of more than 1 MW.

According to the RES law, the regulatory authority in **Georgia** does not have any authority or decision-making role regarding the RES support scheme. Related to self-consumption, regulatory authority has the right, conferred by *Law on Energy and Water Supply* to define the scheme (net metering) under which final consumers operating micro power plant should be remunerated.

In **Kosovo***, the regulator drafts and adopts the methodology for determining the maximum fixed premium or maximum strike price, adopts the methodology to ensure liquidity instruments in order to secure necessary funds for the normal financial operation of the *Renewable Energy Support Fund* and sets the maximum guaranteed purchase price for each competitive bidding process.



Related to the self-consumption scheme, the regulator determines the threshold, determines the prices and/or methodology for determination of the monetary value of the excess electricity fed into the network for each tariff period (such prices and/or methodology shall be revised periodically, at least every two years), defines the duration of the period in which the monetary credit can be utilized by the RES self-consumers, defines the procedures for applying the net-billing scheme and defines the period during which the RES self-consumers will be entitled to benefit from the net-billing scheme.

In **Moldova**, related to the RES support scheme, regulatory authority:

- confirms, according to *ANRE's Regulation on the confirmation of the status of small eligible producer*, the status of small eligible producer for persons who own or will own a power plant/power plants with an installed/cumulative power that does not exceed the capacity limit established by the Government;
- establishes and keeps the register of eligible producers;
- develops and approves the contract model for difference - CfD, the regulated contract model for the purchase of electricity from RES - PPA;
- establishes, in the Electricity Market Rules, the method of distribution among electricity suppliers of the energy purchased by the central electricity supplier and/or of the financial obligations resulting from the difference between the wholesale electricity market price and the established fixed prices/tariffs in accordance with this law;
- calculates and approves the fixed rates for the implementation of the support scheme (*feed-in*);
- calculates, approves and proposes to the Government the ceiling prices for electricity from RES that will be used for the organization of tenders, as well as the related calculations, performed according to the production technology;
- delegates a representative to participate as a member in the tender committee.

ANRE, starting from 1 January 2024, evaluates the impact of prosumers of electricity from RES on the financial sustainability of the DSO, at the same time aiming to maximize support for the electricity distribution network by promoting the production of electricity closer to the place of consumption, on the one hand, and the exclusion of cross-subsidization between system users, the recovery of costs incurred by DSOs in relation to the development, maintenance and operation of electricity distribution networks, on the other hand. The results of the impact analysis are published on the official website of ANRE.

Compared to the previous support scheme, the number of REGAGEN's (**Montenegro**) responsibilities in the RES support scheme decreased after the adoption of the new RES Law. Almost all responsibilities are now in the hands of the Ministry of Energy, Government and Market operator. REGAGEN is responsible for adopting a substitutional price in the market premium mechanism when the market price is negative and for investigating the impact of the support scheme on the market and tariffs. Also, REGAGEN approves rules on the functioning of transmission and distribution systems which prescribe connection procedures of new network



users in more detail. Related to the self-consumer scheme, REGAGEN approves a simplified procedure for prosumers' connection to the grid as part of the above-mentioned rules.

In **North Macedonia**, the regulator has a role in the *feed-in tariffs* procedure. It grants the status of a preferential producer and adopts a decision for the *feed-in tariff*. The conditions for issuing status for preferential producer and the level of *feed-in tariffs* are set by the Government.

For prosumers, there is no specific role for the regulator.

The Regulator in **Serbia** does not have jurisdiction over RES support schemes (self-consumers, *feed-in tariff* and market premium) starting from 2023.

In **Ukraine**, the regulatory authority, NEURC, is responsible for determining the *feed-in tariffs* for electricity generated from RES, establishing rules and procedures for grid access, and ensuring that RES producers can connect to the national grid.

Also, *Law of Ukraine on Alternative Energy Sources* provides for a surcharge to the "green" tariff, the auction price for compliance with the level of use of Ukrainian-made equipment, which is set by the NEURC in monetary terms for each date of recalculation of the fixed minimum size of the "green" tariff. Compliance of the level of use of Ukrainian-made equipment with the requirements established by Law is determined by NEURC, based on the calculation submitted by the business entity and supporting documents. The special duties incumbent on participants of the electric energy market in accordance with this Law to ensure public interests in the process of functioning of the electric energy market include, in particular, ensuring an increase in the share of electric energy production from alternative energy sources. In accordance with Article 65 of *Law of Ukraine on the Electric Energy Market*, the amount of the cost of the service to ensure an increase in the share of electricity production from alternative energy sources is approved by the Regulator.

In compliance with the requirements of Law, the Regulator includes in the structure of the tariff for the transmission of electric energy the costs for the performance of special duties to ensure the public interests of ensuring an increase in the share of electric energy production from alternative sources. Therefore, in accordance with the imposition of special obligations, the Guaranteed buyer is obliged to purchase all released electric energy produced on electricity facilities from alternative energy sources (and with the use of hydropower - produced only by micro-, mini- and small hydroelectric power plants), according to the "green" tariff set by them, the auction price, taking into account the surcharge to him/her during the entire period of application of the "green" the tariff or the period of validity of the support if such business entities are part of the balancing group of the guaranteed buyer. The purchase and sale of such electric energy at the "green" tariff, taking into account the surcharge to it, is carried out on the basis of a bilateral contract between the producer or consumer, who has a "green" tariff, and the guaranteed buyer, the standard form of which is approved by the Regulator. The procedure for the purchase of electricity by a guaranteed buyer at the "green" tariff and at the auction price, the rules for the functioning of the balancing group of the guaranteed buyer are determined by the procedure for the purchase by the guaranteed buyer of electricity produced from alternative energy sources, which is approved by the Regulator.



The regulator establishes a "green" tariff for electricity produced at electric power facilities, including at the commissioned phases of the construction of electric stations (start-up complexes), generating units of private households, consumers, including energy cooperatives, from alternative sources of energy (except blast furnace and coke gases, and using hydropower - produced only by micro-, mini- and small hydropower plants).

5. Flexibility

Flexibility schemes and services, as a tool to efficiently manage energy systems and involve all market participants (even end-consumers), are still not well developed in observed countries.

Flexibility schemes are already introduced in national legislation in Bosnia and Herzegovina, Serbia and Ukraine. New energy laws, which are in the final drafting phase in Albania and Montenegro, will soon incorporate flexibility aspects in their national legislation too. In other countries, primary legislation doesn't explicitly contain provisions related to flexibility but there are many cases where flexibility aspects, such as demand response for larger consumers connected to transmission network, storage and aggregation, are already introduced in national bylaws. In North Macedonia, starting from 1 July 2024, the first group consisting of suppliers, generation facilities and consumers is established to provide flexibility services to the system.

So, legislation prerequisite already exists in some EnC CPs, at least to a certain extent, but actual implementation is still missing in many EnC CPs.

The first license for a storage facility in Ukraine has been issued. In Bosnia and Herzegovina, no license has been issued for energy storage facility over 500 kW capacity but there is no data related to storage with smaller capacity. In Kosovo*, the initial stage of the project for the installation of 170 MW capacity of battery storage has started. The objective of the Battery Energy Storage System (BESS) project is to support energy security in Kosovo* and transition to a cleaner energy future through the usage of energy storage systems for reserves, availability of the storage systems, and reduced cost of securing adequate electricity for Kosovo*. BESS will provide the flexibility necessary for Kosovo* to enable the integration of RES. The Energy Storage Project consists of three activities: Frequency Restoration Response Activity, Multi-Functional Energy Storage Activity ("MFES Activity"), and Energy and Climate Policy Support Activity. The Frequency Restoration Response Activity aims to support KOSTT to own and operate approximately 45 megawatts (MW) (or 90 MWh) of energy reserves to cost-effectively smooth out imbalances in the electricity grid, ensuring the security of the interconnected power system while enabling the integration of electricity generated from RES. The rest of the capacity of 125 MW will be used for any other energy purposes.

Regarding the aggregators, the first license for aggregation in Ukraine has been issued. In Bosnia and Herzegovina's entity FBiH, aggregation of distributed energy sources exists in the form of "virtual power plants" (aggregation of production). The model was defined and realized within ISO BiH. Regulator FERK does not have accurate data. Until now, not a single independent



aggregator, which is required to obtain a license from the Regulatory Commission to perform activities, has obtained a license.

There is no data on demand-side response utilization in EnC CPs and Armenia although it has been introduced by primary or secondary legislation. Demand side response may be individually organized in Bosnia and Herzegovina's entity FBiH, according to agreements between legal entities. The only registered case of usage in the previous period was in Montenegro where one large consumer connected to the transmission network (aluminium plant) provided load reduction reserve as an ancillary service.

This survey investigated the level of smart meter deployment as a very important prerequisite for utilizing demand side response, even at low voltage level. Deployment varies, from 77% in Montenegro to below 3% in Moldova.



III SUMMARY

This survey demonstrated the diversity of energy sources exploitation where dominant generation technologies are coal-fired power plants, hydropower plants and nuclear power plants. Penetration of RES technologies, namely PV and wind is evident. Their uncontrollability and intermittency have brought new challenges that face, not only transmission system but distribution systems as well.

The transposition of EnC RED II is still ongoing. Albania, Bosnia and Herzegovina, Kosovo*, Montenegro, Serbia and Ukraine have already adopted RES Laws or amended existing ones, while RES Laws in Armenia, Georgia and North Macedonia are in the drafting phase.

The initial support scheme based on *feed-in tariff* has been replaced with a market premium support scheme in all countries except Armenia, although auctions were so far organized in Albania, Georgia, Kosovo*, North Macedonia and Serbia only.

The self-consumption scheme has been introduced in national legislation in all countries except Armenia. Generation capacity limitation varies from country to country but generally, generation capacity may not be greater than the prescribed fixed value (except in the case of Moldova where a complex formula has been used) or allowed connection capacity. Significant generation capacity has already been installed, varying from 1% to 5% of the share in overall generation capacity.

The flexibility of the power system represents the ability of the system to accommodate large volumes of errors between forecast and output. In order to maintain and restore system stability, power systems have to rely on flexible generation, energy storage and flexible demand. Flexibility has been introduced in legislation in many EnC CPs but is yet to be amended in a considerable number of countries in order to utilize energy storage and aggregation.