



Generating Electricity from Renewable Sources in CEE & SEE

Energy Industry Group

Wolf Theiss



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Foreword

Wolf Theiss is pleased to publish this updated tenth (10th) edition of The Wolf Theiss Guide to: Generating Electricity from Renewable Sources in Central, Eastern & Southeastern Europe for 2024 (the “Guide”), which supersedes the prior Guide published in 2022.

Over the last four years, following EU Member States’ adoption of their ambitious targets for 2030, we have witnessed significant investment in the development of renewable energy projects (both generation and storage) in our region.

The ongoing conflict in Ukraine, which has now entered its third year, continues to emphasise the need for energy security for all European countries. Accordingly, the transition away from imported Russian oil and gas and towards clean renewable energy sources has continued apace throughout Europe, and indeed has accelerated since the publication of the last edition of our Guide in 2022.

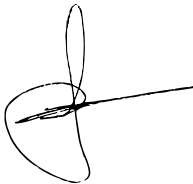
We are confident that these developments, together with technological improvements in the generation and storage of electricity from renewable energy sources (RES-Electricity), will drive increased regional investments into this sector within the CEE/SEE region. The laws and regulations governing the generation of RES-Electricity in Central, Eastern & Southeastern Europe therefore remain of significant interest to those companies and individuals who are focused on this dynamic and increasingly important sector.

This new edition of our Guide reflects some notable modifications to the RES-Electricity legislation in 13 countries from the region since our last publication in 2022. We have also added a new section to the Guide on Power Purchase Agreements, as we anticipate increased use of such PPAs to ensure the bankability of RES-Electricity projects in the CEE/SEE region. Along with the recent introduction

of Contracts for Difference schemes in some of our surveyed countries (e.g. Romania), PPAs will allow countries to move away from prior subsidy schemes that were used to attract private investment into renewables (like Green Certificates and/or Feed in Tariffs), but led to market distortions.

To facilitate cross-referencing, all country chapters in the Guide follow a uniform structure. Please note that defined terms in the country chapters apply only to that specific country.

Many thanks to all of the teams at Wolf Theiss who's contributions enabled us to produce this tenth (10th) edition of the highly successful RES Guide for 2024. For the reader's benefit, these contributors are all identified (with their contact details) at the end of each chapter.

A handwritten signature in black ink, appearing to be 'Bryan W. Jardine', written over a horizontal line.

Bryan W. Jardine

Partner, co-head of Energy Industry Group, Wolf Theiss

This 2024 Wolf Theiss Guide is intended as a practical guide to the general principles and features of the basic legislation and procedures in countries included in the publication.

While every effort has been made to ensure that the content is accurate when finalised, it should be used only as a general reference guide and should not be relied upon as definitive for planning or making definitive legal decisions. In these rapidly changing legal markets, the laws and regulations are frequently revised, either by amended legislation or by administrative interpretation.

Status of information: Current as of May 2024

Conception, design, and editing:
Wolf Theiss Rechtsanwälte GmbH & Co KG
Schubertring 6, 1010 Vienna, Austria
www.wolftheiss.com

Brief description of Power Purchase Agreement structures

Power Purchase Agreements are one of the most discussed topics in the current electricity market. They can provide the certainty of revenue income that a RES developer needs, in order to secure lending to build a RES project.

This brief description is intended to highlight the types of power purchase agreements (hereinafter “PPA”) currently available in the CEE/SEE region. In our country chapters, we will outline the current status of the PPA market and the expectations going forward.

The first criteria used for the differentiation of PPAs is the method for the delivery of electricity, specifically if the PPA involves physical delivery of electricity or not (thus being a pure financial hedge in the form of a virtual PPA).

1. Physical delivery of electricity PPAs can be further differentiated in two sub-types:

(a) On-site Physical delivery PPA and (b) Sleeved PPA

a. On-site Physical delivery PPA

An on-site physical delivery PPA is an agreement concluded between a power generator and a power purchaser in which electricity is generated and consumed at the same site. This type of PPA is often used for small-scale renewable energy projects, such as rooftop solar panels installed on supermarkets or factories. Such PPA could also be used for generation facilities that are connected to nearby off-takers by means of private/direct wire, without using public electricity grids.

b. Sleeved PPA

The Sleeved PPA is an off-site PPA that involves the delivery of electricity to the end customer through public grids and through the use of an energy supplier that acts as an intermediary.

The Sleeved PPA is mostly used in jurisdictions where the generator cannot directly enter into a direct agreement with the end customer due to restrictions on the sale of electricity to end customers, which are not directly connected to the electricity generator by private wire. In this scenario, a service provider, like an electricity supplier, is employed to

facilitate the “sleeving” process of electricity. This involves managing the transfer of electricity, guarantees of origin, and monetary transactions between the power generator and the end consumer. For providing this service, the supplier receives a fee, known as the “sleeving fee”.

2. Virtual PPA

A virtual PPA is a purely financial contract in which no physical flow of electricity occurs from the power generator to the off-taker. The virtual PPA is a hedging instrument modelled on the contract for difference, meaning that the physical flows of electricity are not connected to the financial flows resulting from the virtual PPA.

Considering that the virtual PPA does not involve a transfer of electricity, the off-taker still needs to meet its electricity consumption through traditional channels—therefore, the relationship of the off-taker with its supplier remains unchanged.

The basis of the virtual PPA is the “strike price” – (i.e., guaranteed price for the agreed volume of power output generated by the producer). The equation is as follows:

- a. if the price achieved by the generator following the sale of the electricity on the competitive market is greater than the strike price, the generator pays the positive difference between the sale price and the strike price to the off-taker.
- b. If the price achieved by the generator following the sale of the electricity on the competitive market is lower than the strike price, the off-taker will pay to the generator the difference between the strike price and sale price.

Power generators will often sell the electricity they produce to purely corporate buyers such as telecoms, retail chains, data centre operators or similar, thus creating a so-called corporate PPA. Alternatively, they will sell the electricity they produce to large utilities or traders, creating a so-called utility PPA.

Finally, in some jurisdictions, the producer may sell the electricity it produces to a government entity under the market-premium model (also a contract for difference similar to a PPA), thus creating a so-called governmental PPA.

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Austria

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Country General Information

Capital: Vienna

Location: Austria is a landlocked country in the southern part of Central Europe. It shares its borders with Germany, Czech Republic, Slovak Republic, Hungary, Slovenia, Italy, Switzerland and Liechtenstein and lies between the latitudes 46° and 49° N and longitudes 9° and 18° E.

Surface: 83,879 km²

Population: 9,104,772

Climate: Predominantly alpine climate with continental features in the eastern areas and four (4) distinct seasons.

Resources: Minerals are one of Austria's most important natural resources. They include magnesite, iron ore, lignite and non-ferrous metals. Further important resources are Austria's rich farmlands, forests, water, wind and sun. Austria has its own petroleum and natural gas resources. However, the constant growth of the industrial sector increasingly requires supplementary imports. The generation of hydroelectric power has been very strong historically and is still being expanded, which makes Austria the leader in the field of hydroelectric power within the European Union. Due to its mountainous landscape, the country is particularly strong in storage power plants including pumped storage power plants.

Electricity Grid: The total length of the Austrian electricity grid is approximately 258,907 km. The grid comprises overhead high-voltage power lines with a nominal voltage of 220 kV to 380 kV (6,728 km), a mid-voltage distribution grid with a nominal voltage between 1 kV and 110 kV (80.287 km) and a low-voltage supply grid with a nominal voltage below 1 kV (171,892 km).

Electricity Transmission, Distribution and Supply: Electricity transmission is a regulated natural monopoly and is provided by Austrian Power Grid AG. Within the electricity distribution market, there are currently 122 grid operators. The electricity supply is provided by around 150 private and state-owned providers. Electricity is also traded on the Austrian electricity and gas exchange market platforms.

Official EU Language(s): German. Other regionally recognised languages are Hungarian, Slovene and Croatian.

EU Member: since 1 January 1995.

NATO Member: no

United Nations Member: since 14 December 1955.

Currency: Euro (EUR)

Schengen: Austria is a member of the Schengen area.

Political System, Administrative Organisation and Economy: Austria is a parliamentary representative democracy with a directly elected Federal President as head of state and a Chancellor as head of the federal government. The country is divided into nine (9) federal provinces, one of which is the capital city Vienna. Austria's economy consistently ranks high in terms of GDP per capita. Next to a highly developed services and exporting industry, international tourism is one of the most important parts of the national economy.

1. Defined Terms for the Main Permits Required for RES-Electricity Generation Facilities

Authorisation Under Energy Law/Right (Concession) to Exploit Natural Resources

Provincial electricity statutes generally provide for permitting procedures for the construction and operation of power plants, including a facilitated procedure for those power plants generating electricity from RES. The exploitation of certain natural resources (e.g., hydrocarbons) requires a concession granted by the competent Federal Minister. There is, however, no Austrian legislation requiring participation in a prior tender procedure to be granted the right to exploit natural resources.

Balancing Group System

In order to generate or to supply consumers with electricity in Austria, membership in a balance group (Bilanzgruppe) is required. This membership guarantees the right to use the grid and to physically transport electricity to wholesale and retail customers. Every balance group is represented by a Balance Responsible Party (BRP; Bilanzgruppenverantwortlicher) vis-à-vis the Imbalance Settlement Responsible (ISR; Bilanzgruppenkoordinator) and the Control Area Operator (CAO; Regelzonenführer).

In order to join the Balancing Group System, there are two options: (i) getting licensed as a balance responsible party (i.e., forming a new balance group); or (ii) getting affiliated with an already existing balance group. While option (ii) is less complicated and expensive than option (i), joining an already existing balance group leads to dependence on a third-party BRP who will thereby gain insight into the business activities (procurement channels, quantities, etc.). Existing balance responsible parties are not legally required to accept new members into their balance group.

Building Permit	<p>Building permits may be required under provincial building statutes for the construction and operation of RES facilities. The permitting procedure is usually comprised of three stages: (i) issuance of a declaration declaring the relevant plot as a construction site (<i>Bauplatzerklärung</i>); (ii) issuance of a building permit prior to commencement of the construction works (<i>Baubewilligung</i>); and (iii) issuance of a usage permit upon completion of the construction works (<i>Benutzungsbewilligung</i>).</p> <p>The competent authority for the permitting procedure is the mayor of the relevant municipality or – upon a delegation act – the District Administrative Authority (<i>Bezirksverwaltungsbehörde</i>), based upon provincial statutes.</p>
Environmental Permit	<p>An Environmental Impact Assessment (EIA; <i>Umweltverträglichkeitsprüfung</i>) is required for (i) wind power projects with a total capacity of at least 30 MW or 20 wind turbines each with a nominal output of at least 0.5 MW (or, under specific circumstances, wind power projects with a total capacity of at least 15 MW, or 10 wind turbines, each with a nominal output of at least 0.5 MW); (ii) hydro power plants with a maximum capacity of at least 15 MW (or, under specific circumstances, 10 MW, or in the case of power plant chains, 2 MW); and (iii) certain facilities combining waste management with power generation. The competent authority is the respective provincial government. Even if no EIA is required, a water use permit, issued by the relevant district authority or, (under specific circumstances), the relevant provincial governor, may be necessary.</p>
E-Control	<p>E-Control is the Austrian energy market regulating authority. Its responsibilities include monitoring the compliance of market participants with all their obligations under energy law and competition supervision - in particular, regarding equal treatment by grid operators, monitoring unbundling and monitoring trade in wholesale energy products.</p>

Feed-in Tariffs	Following the expiration of the RES Support Scheme, producers of RES Electricity could apply for subsidies in the form of feed-in tariffs. These have been paid out by the Green Power Clearing and Settlement Agency (OeMAG ; <i>OeMAG Abwicklungsstelle für Ökostrom AG</i>). The tariffs themselves have been set forth in the Feed-in Tariff Ordinance (<i>Ökostrom-Einspeisetarifverordnung 2018 ÖSET-VO 2018</i>) and the actual rate depends mainly on the type of generating facility.
Grid Connection	Grid operators are obligated by provincial electricity statutes to grant grid access on the basis of the approved general terms and conditions and certain system usage fees. Priority access is provided for the transport of RES-Electricity, including electricity deriving from Combined Heat and Power (CHP) plants, for the purpose of supplying such electricity to customers but only in the event the system lacks sufficient capacity.
Liability and Responsibility for Grid Connection and/or Capacity Upgrades, Improvements or Expansion of Grid	Grid operators must provide their services to all users of the electricity grid in a transparent and non-discriminatory manner, ensuring access to the electricity grid in accordance with the law and with the grid's capacity to take over the output. The costs of the grid connection are borne by the grid user in the form of a one-off payment to the distribution grid operator. The costs of grid reinforcements, improvements, upgrades and other similar costs are borne by grid users and fixed in an ordinance issued by E-Control on an annual basis.
Market Premium	Under the current RES Support Scheme, producers of RES Electricity (for which guarantees of origin have been issued and that is fed into the grid) may receive subsidies in the form of a Market Premium (<i>Marktprämie</i>). The Market Premium compensates for the costs of the production of RES-Electricity and the average market price on the electricity exchange. Market Premiums are paid based on agreements concluded with Ökostrom AG as the responsible Renewables Support Management Entity (<i>EAG Abwicklungsstelle</i>) in accordance with the Renewable Energy Expansion Act (<i>Erneuerbaren Ausbau-Gesetz</i>) and the ordinances passed thereunder (e.g., <i>EAG Marktprämienverordnung</i>).

RES Support Scheme	<p>For certain RES-Electricity facilities recognised under the Green Electricity Act (<i>Ökostromgesetz 2012 – ÖSG 2012</i>), the purchase of RES-Electricity generated at subsidised feed-in tariffs has been guaranteed. Facilities eligible for official recognition have included (i) facilities that run exclusively on the basis of RES; (ii) specific hybrid plants; and (iii) specific mixed combustion plants.</p> <p>Under the Renewable Energy Expansion Act (<i>Erneuerbaren Ausbau-Gesetz</i>), operators of various kinds of RES-Electricity facilities connected to the Austrian grid may apply for a market premium aimed at compensating the difference between the production costs of RES-Electricity and the average market price for electricity during a certain period of time. This is granted as a subsidy for the RES-Electricity marketed and fed into the public electricity grid for which guarantees of origin have been issued. In addition, investment grants are possible for constructing/renovating certain PV, hydro power, wind power, biomass and renewable gas plants.</p> <p>Additional RES support may be available for companies and private households under relevant provincial laws or by private funders (e.g., Kommunal Kredit Austria AG).</p>
RES-Electricity	Electricity obtained from RES sources such as wind, solar, aerothermal, geothermal, hydrothermal and oceanic waves, hydraulic, biomass and biogas.
Trade License	Electricity traders who do not generate and/or transmit electricity (e.g., trading of non-self-produced electricity) require a trade license (<i>Gewerbeberechtigung</i>). In order to obtain a trade license, the respective entity must have at least a branch office in Austria and appoint a responsible individual as trade representative (<i>gewerberechtllicher Geschäftsführer</i>).

2. Envisaged Need for Investments

At the end of 2019, the Austrian Federal Government submitted to the EU Commission a comprehensive plan to achieve several climate protection targets by 2030 (**#mission2030**), as required by the new EU framework. In its plan, Austria has set itself the goal of increasing the share of energy from RES as part of gross energy consumption to 46–50% by 2030. Another ambitious goal is to cover 100% of Austria's total electricity consumption from RES by 2030.

To this end, it is expected that a number of adaptations to the Austrian legal framework will occur in the years to come, which may include:

- strengthening of financial support for the expansion of renewable energies by increasing subsidies (such as the new Renewable Energies Expansion Act, which entered into force in late July 2021),
- digitisation of the energy system, including the transport and distribution networks.

Moreover, the current geopolitical situation with Russia's aggression against the Ukraine has led to an extraordinary situation that requires comprehensive measures to permanently replace natural gas imports from Russia. This is primarily due to the current high gas prices and the highly uncertain future of natural gas supplies. Against this background, there are significant economic incentives to reduce the overall gas consumption and substitute natural gas with domestic renewable energy sources. In general, Austria intends to avoid gas supplies from Russia by 2027. However, according to the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology, which is responsible for energy matters, this will require efforts on three levels:

- reduction of gas consumption in Austria;
- expansion of the domestic production of biogas and green hydrogen;
- coverage of the remaining consumption of natural gas by alternative routes.

Consequently, it is estimated that in the years to come, solar and photovoltaic capacities as well as investments in wind, biomass and other RES will increase. Furthermore, Austria is an interesting market for investors and project developers because of a guaranteed Feed-in Tariff encouraging RES project development.

3. Executive Summary – RES Market Status and Development of RES-Electricity Facilities

3.1 Market Overview – Factsheets

- Comprehensive RES Support Schemes have been available in Austria for almost twenty years and are constantly being expanded.
- Since 2001, Austrian end-customers may freely choose their electricity supplier.
- The Austrian government has set ambitious climate protection targets, which are defined by the previous government's #mission2030 plan and have been amended by the current government's plan to reach climate neutrality by 2040.
- The first big target of #mission2030 (increasing the share of energy from RES as part of gross energy consumption to 46–50% by 2030) is likely to be achieved, as 36.4% of total energy consumption (and 76.2 % of electricity consumption) was already produced from RES by 2021.
- Under the new Renewable Energies Expansion Act, operators of various kinds of RES-Electricity facilities can be eligible for subsidies and market premiums, for which the Austrian federal government will allocate EUR 1 billion until 2030.
- Since November 2023, in reaction to the conflict between Ukraine and Russia, the Market Area Manager is obligated to retain a strategic natural gas reserve. Currently, the reserve amounts to approximately 20 TWh.
- RES-Electricity certified by a guarantee of origin is traded on the markets and monitored and administrated by E Control. The operator of the grid system to which recognised RES-Electricity facilities are connected is obligated to issue a certificate of origin in relation to the quantities of RES-Electricity that have been fed into the grid, upon the request of the facility operator.
- Generation from CHP plants is an important pillar of bioenergy use in Austria. More than 6% of Austria's electricity consumption volume and around 20% of the total district heating is produced in CHP plants.

3.2 RES Market Status, Permitting, Grid Connection, Licensing of RES-Electricity Facilities

General Market Data

Overall Installed General Capacity including RES (Overall Production) In 2021, overall electricity production was 74.5 TWh.

Installed Capacity by Technology

Biomass – 3.52 TWh;
Wind power – 7.17 TWh;
PV – 2.78 TWh;
Hydro – 42.32 TWh.

RES Support Scheme

RES Support Scheme and beneficiaries

- Feed-in Tariffs (only existing subsidies but no new subsidies).
- Market premiums

Beneficiaries include operators of RES-Electricity facilities recognised under the Green Electricity Act or the Renewable Energy Expansion Act.

Priority and guaranteed off-take into the grid

- Only the expiring Support Scheme of the Green Electricity Act provides for a guaranteed off-take of electricity generated in officially recognised RES-Electricity facilities by OeMAG.

- In contrast, due to the current RES Support Scheme under the Renewable Energy Expansion Act, RES Electricity must be sold on the electricity market by the producers themselves. However, operators of RES Electricity generation installations who (i) can prove that three electricity traders authorised to carry out this activity in Austria have refused to conclude an off-take agreement for RES-Electricity from an installation subsidised under the Renewable Energy Expansion Act on normal market terms, or (ii) operate an RES Electricity generation installation with a bottleneck capacity of less than 500 kW, may claim the right to be assigned an electricity trader for this installation from E-Control.
- Priority access to the grid is provided for the transport of RES-Electricity, including CHP plants for the purpose of supplying such electricity to customers, *but only in cases of insufficient system capacity.*

Other Incentives

- Federal provinces may enact individual incentive mechanisms within their legislative competence. Such investment incentives usually relate to the construction of photovoltaic and biogas facilities operated at a private level.
- Investment allowances are available for constructing/renovating certain hydro power plants and CHP plants, amounting to a certain percentage of the investment costs.

Other Conditions

- Facilities eligible for official recognition regarding Feed-in Tariffs are (i) power generating facilities that are run exclusively on the basis of RES; (ii) specific hybrid plants; and (iii) specific mixed combustion plants.
- The guaranteed Feed-in Tariffs for RES-Electricity from recognised facilities depend on the prices at the time of application and the type of facility.

- Allowances for recognised RES-Electricity facilities are based on the electricity produced and fed into the public electricity grid system and the type of facility.
- Market Premiums are only paid if the production costs of RES-Electricity are higher than the average market price. They are granted as subsidies for marketed renewable electricity that is actually fed into the grid, and for which guarantees of origin have been issued.

Grid Connection Specifics

Approvals

Grid operators are obligated by provincial electricity statutes to grant grid access on the basis of the approved general terms and conditions and certain system usage fees.

Permitting

Connection works to the grid may fall within the licensing requirements as set out below.

Timing:
Mainly Depending
on Licensing Procedure
(see below).

Licensing

Procedure

- EIA required for wind power, hydro power plants reaching certain thresholds as well as for certain facilities combining waste management with power generation.
- Possibly required building permissions may include (i) issuance of a declaration proclaiming the relevant plot as a construction site (*Bauplatzerklärung*); (ii) issuance of a building permit prior to commencement of the construction works (*Baubewilligung*); and (iii) issuance of a usage permit upon completion of the construction works (*Benutzungsbewilligung*).

- Wind turbines and photovoltaic systems located on greenfield areas may only be constructed on areas expressly designated for this purpose in the spatial planning regulations of the Austrian Federal States, and in the zoning plans of the municipalities.
- Provincial electricity statutes generally provide for permitting procedures for the construction and operation of power plants, including a facilitated procedure for power plants generating RES-Electricity.
- RES-Electricity producers must be part of the Balancing Group System.
- Electricity traders who do not generate and/or transmit electricity (e.g., trading of non-self-produced electricity) require a Trade License.

Duration of Administrative Procedure

Generally, authorities must issue a decision within six (6) months after the submission of a full and complete application. However, provincial electricity statutes may stipulate a facilitated administrative procedure to grant permission for the construction and operation of RES-Electricity facilities as a statutory privilege. Said facilitated procedure usually grants the authority a period of three (3) months for a decision on the application. Other – and much longer – time frames may apply according to specific procedural rules (e.g., in the EIA procedures).

Licence's Validity

The above-mentioned permits do not have a specific expiry date. However, it may be required to obtain new permits when changes reaching a certain threshold have been made to the RES facility.

If specific permits regarding water usage are required, those may be limited in time under the Federal Water Act.

4. RES Support Scheme since 2022

With #mission2030, the Austrian government goes one step beyond EU targets and is aiming for 100% of Austria's total electricity consumption to come from RES. The most recent Coalition Agreement of the new Austrian Federal Government, formed by the People's Party and the Green Party, confirmed the goal set by the Austrian climate and energy strategy #mission2030. As one of the main milestones in that regard, the Renewable Energies Expansion Act was officially published and entered into force in late July 2021. Since October 2022, Market Premiums can be granted for operators of various kinds of RES Electricity installations, in accordance with the Market Premium Ordinance (*Marktprämienverordnung*).

4.1 Market Premium Scheme for RES-Electricity

4.1.1 General Remarks

In contrast to the former support scheme under the Green Energy Act, there are no longer fixed feed-in tariffs for RES-Electricity fed into the grid (defined by the Federal Green Electricity Feed-in Tariff Ordinance – *Ökostrom-Einspeisetarifverordnung*), but only Market Premiums.

The amount of the Market Premium is to be determined in cents per kWh. The Market Premium is calculated based on the difference between the value to be applied in cent/kWh, determined by way of a RES-Electricity auction (*anzulegender Wert*), and the respective reference market value (*Referenzmarktpreis*) in cent/kWh. The amount of the applied value is limited by the Market Premium Ordinance which sets a ceiling price that producers are allowed to offer in the renewable energy auctions. Further, a correction factor is applied to the bid value for RES installations to reflect the different electricity yields of an installation due to its location. The correction factors are also determined by the Market Premium Ordinance and provide for additional premiums or discounts on the bid value.

The reference market value is in turn determined by the result for the hourly price of the uniform day-ahead market coupling. If no result of the uniform day-ahead market coupling is available, the reference market value will be calculated based on the day-ahead hourly prices published as a substitute by the nominated electricity market operator with the highest trading volume (EPEX Spot). For each hour of a

month, the hourly price of the uniform day-ahead market coupling will be multiplied by the quantity of electricity generated in that hour. The sum of these calculations will then be divided by the amount of electricity generated in the whole month. At the beginning of each month, E-Control calculates and publishes the reference market value of the previous month for each technology (i.e. hydro power, wind power and photovoltaic etc.).

If the hourly price on the relevant reference market is negative for at least six consecutive hours, the Market Premium for the entire period in which the hourly price is negative will be reduced to zero. This rule does not apply if a uniform Austrian intraday price index is positive in at least those six consecutive hours, which were negative in the previous day's uniform day-ahead trading.

In summary, under the new support regime of the Renewable Energy Expansion Act, producers of RES-Electricity must sell their electricity on the market, (e.g. via PPAs), and may receive a subsidy in the form of a Market Premium if the applied value (bid price) is higher than the price on the reference market. This means in turn that if the price of the reference market is higher than the applied value (bid price), no market premium will be paid

4.1.2 Repayment Obligations

If the calculated Market premium is less than zero, which is the case when the reference market value becomes higher than the producer's bid value, operators of (i) wind power plants with a bottleneck capacity of 20 MW or more, (ii) hydropower plants with a bottleneck capacity of 20 MW or more and (iii) photovoltaic plants with a bottleneck capacity of 5 MW or more are obligated to partially pay back Market Premiums that were previously received. Specifically, operators must refund previous premiums to OeMAG, if the reference market value exceeds the bid value by more than 40%. The refund obligation is however limited to 66% of the excess amount. According to the FAQs on the Market Premium Scheme provided by the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology and the General Funding Conditions provided by OeMAG, the refund quota of 66% refers to the total excess, (i.e. 66% of the amount exceeding the bid value).

In contrast, if the calculation of the market premium results in a value less than zero for any other wind power plant, hydropower plant or photovoltaic plant, the Market Premium will be set at zero. This means that these plants are not subject to any

repayment obligations and are thus allowed to keep those profits generated as a result of higher prices on the reference market

4.2 Subsidies for RES-Electricity

The possible subsidies for each of the RES-Electricity plants under the Renewable Energies Expansion Act can briefly be summarized as follows:

RES-Production	Subsidy Scheme
Hydropower	<p>Newly constructed and expanded hydropower plants with a bottleneck capacity (after expansion) of up to 25 MW, or the first 25 MW of plants with a bottleneck capacity exceeding 25 MW, are eligible for a market premium.</p> <p>Constructions and revitalisations of hydropower plants with a bottleneck capacity of up to 1 MW are eligible for an investment grant.</p> <p>Projects in high-value watercourses or that affect the preservation status of protected resources are not eligible for subsidies.</p> <p>The tender volume is at least 90 MW per year for Market Premiums and at least EUR 5 million per year for investment grants.</p>
Wind Power:	<ul style="list-style-type: none"> ○ Newly constructed and expanded wind power plants are eligible for a market premium. ○ Constructions of small wind power plants (i.e. with a bottleneck capacity of 20 KW to 1 MW) are eligible for an investment grant. ○ The tender volume is at least 390 MW per year for Market Premiums and at least EUR 1 million per year for investment grants

- All newly constructed photovoltaic plants over 10 KW_{peak} and expansions of photovoltaic plants over 10 KW_{peak} are eligible for a market premium. For photovoltaic plants on areas of agricultural use or grassland, the premium amount will be reduced by 25%. This reduction will not apply, in full or in part, if the photovoltaic plant is constructed on (i) land which is zoned for both agricultural use and for the construction of photovoltaic plants ("Agri-PV-Fläche"), where the agricultural use is only slightly affected, (ii) a building or another construction, (iii) a water body, (iv) a landfill or a contaminated site, (v) a mining or infrastructure site or (vi) military areas.
- Constructions and expansions of photovoltaic plants with a bottleneck capacity of up to 1,000 KW_{peak} are eligible for an investment grant. The reduction for plants on areas for agricultural use or grassland applies here as well. For innovative photovoltaic plants, a top-up of up to 30% may be granted.
- The tender volume is at least 700 MW_{peak} per year for Market Premiums and at least EUR 60 million per year for investment grants.

Biomass

- Newly constructed and repowered biomass-based plants with a bottleneck capacity of up to 5 MW_{el}, and newly constructed and repowered biomass-based plants with a bottleneck capacity of more than 5 MW_{el}, are eligible for a subsidy on their first 5 MW_{el}.
 - Subsidies may also be granted to existing biomass-based plants after the expiry of the subsidy period provided for under the ÖSG 2012.
 - Constructions of biomass-based plants with a bottleneck capacity of up to 50 KW_{el} are eligible for an investment grant.
 - The tender volume is at least 7500 KW per year for Market Premiums and at least EUR 4 million per year for investment grants.
-

Biogas	<ul style="list-style-type: none">○ New plants with a bottleneck capacity of up to 250 KWeI are eligible for a market premium.○ Existing plants are also eligible for subsidies after the expiry of the subsidy period provided for under the ÖSG 2012.○ Constructions or modernisations of existing biogas plants for the production and processing of renewable gas are also eligible for an investment grant.○ The tender volume is at least 7,500 KW per year for Market Premiums. Investment grants for the modernisation of existing biogas plants are available up to EUR 15 million per year.
Hydrogen	<ul style="list-style-type: none">○ Construction of plants for the conversion of electricity into hydrogen or synthetic gas with a minimum capacity of 1 MW are eligible for an investment grant if the plants are used exclusively to produce renewable gases and if they only use renewable electricity.○ Investment grants are awarded up to EUR 40 million per year.

To that end, the Austrian federal government will allocate EUR 1 billion until 2030.

4.3 Support scheme for cogeneration

The CHP Act (*KWK-Gesetz*) provides for a support scheme specifically for the operation and modernisation of existing CHP-plants. Furthermore, the Green Electricity Act provides for investment allowances granted to the operators of CHP-plants based on waste to energy under certain conditions. The operators of existing and modernised CHP-plants are compensated for the costs arising from the maintenance of the on-going operation of CHP-plants.

The generation from CHP plants is an important pillar of bioenergy use in Austria. More than 6% of Austria's electricity consumption volume is produced in close to 160 power plants and CHP plants based on solid biomass, in close to 270 biogas plants, as well as in the paper industry's lye combustion CHP plants. Almost half of biomass district heating generation comes from CHP plants. In total, biomass CHP plants provide approximately 20% of district heating generated in Austria.

5. Power Purchase Agreements (PPA)

Power Purchase Agreements ("PPAs") are agreements for the purchase of electricity entered into between a producer (seller) and a customer ("purchaser"). There are different types of PPAs depending on how the contract is structured:

- **Green PPA:** Green PPAs involve electricity generated from renewable energy sources.
- **Corporate PPAs:** PPAs that are concluded directly between the producer and the purchasing company,
- **Merchant PPA:** If the electricity generated is sold to an electricity trader, the PPA is a merchant PPA.
- **Physical PPA:** A physical PPA means that a physical supply of electricity is owed.
- **On-site PPA:** The electricity generated is not fed into the public grid by the producer but is supplied directly to the consuming company. In this case, the electricity generation installation is usually located in the immediate vicinity of the purchaser.
- **Off-site PPA:** In this case, the purchase of a physical quantity of electricity is agreed to, but this is purchased via the public grid. The purchase takes place via balance groups.
- **Sleeved PPA:** This is an off-site PPA in which an intermediate energy company is involved. It enables producers to market their energy without having to comply with the complex balance group regulations and the obligations associated with them.

The pricing structure plays a crucial role in PPAs and depends primarily on the individual situation of the parties. In principle, a distinction can be made between fixed prices, variable prices, and intermediate solutions. If fixed prices are agreed to, (e.g., x c/kWh or y €/MWh), the PPA reflects the current subsidy system for renewable energies. If variable prices are agreed to, (e.g., market prices), the PPA loses part of its hedging function, which is why this type of arrangement is quite unusual. Besides the pricing mechanisms for the purchase of electricity, it is also important to agree on the cost allocation, in other words who bears the costs for balancing energy, grid costs, levies, fees, taxes, and costs for balance group management.

In addition to the pricing, the PPAs must also include provisions on production and purchase quantities. In practice, so-called "as-produced" clauses (i.e., the obligation to supply the generated electricity to the purchaser) and "take-or-pay" obligations (i.e., the purchaser does not have to take certain quantities, but must pay for them in any case) are common.

Finally, the duration of the PPA must be agreed. In Austria, there is currently a tendency to conclude PPAs with shorter terms (e.g., five years).

6. Electricity Storage and Hybrid Projects

RES-Electricity facilities are usually fluctuating generation plants, (i.e., they do not generate electricity consistently). As a consequence, Austrian grids must become more flexible, so that more RES-Electricity can flow through them. In this regard, storage facilities for electrical energy are considered to be one of the key technologies for the transformation of the energy system, as required by the new EU framework and the Austrian #mission2030.

Storage facilities enable a temporal decoupling of supply and demand and thus contribute to the further integration of RES like wind and solar power. So called "hybrid projects" combine multiple RES and storage technologies to increase efficiency and ensure greater stability in energy supply. In Austria, hybrid projects are often aimed at combining wind and solar power as well as energy storage solutions in the most efficient and grid-protecting way.

However, the construction of large-scale storage facilities is associated with uncertainties and possible risks. In addition, storage facilities are always associated with conversion losses and therefore, are an expensive option for integrating RES-Electricity facilities. Hence, the economic operation of new storage facilities is currently only possible to a limited extent.

In principle, four technologies are available for electricity storage: mechanical, electrochemical (e.g., batteries), electrical, and chemical storage. The actual demand for (specific types of) storage facilities in the Austrian electricity system is hard to predict and depends on many other factors. However, the greatest demand in the future is expected to be in the area of long-term storage.

Apart from long-term storage, battery storage systems have long been used internationally to stabilise electricity grids and are often used to stabilise electricity systems in individual households. While there are mainly two technologies available for batterie storage (lead and lithium-ion), improved technical properties combined with a sharp drop in manufacturing costs have led to lithium-ion cells being considered for many applications today. For such battery types, analysts forecast a very strong global growth in the coming years. This is expected to be also true for Austria. The risks related to this technology arise in the various life cycle phases (provision of raw materials, recycling and disposal, etc.). To this end, Austrian research institutions and companies have already built-up significant know-how in these fields.

7. Green Hydrogen

The Austrian government's strategy on green hydrogen is aimed at supporting #mission2030, the 2040 climate neutrality target. Hydrogen shall be produced with climate-neutral methods and primarily be used in sectors which would, otherwise, be difficult to decarbonise (e.g., chemical industry, steel industry, aviation, and shipping). In addition, hydrogen also shall be used for balancing peak loads within the Austrian energy grid.

Current hydrogen-related targets include:

- substitution of fossil hydrogen with green hydrogen in the energy-intensive industry sectors to the greatest possible extent;
- establishment of a support scheme for the production of green hydrogen;
- capacity of at least 1 GW for electrolysis of green hydrogen by 2023; and
- green hydrogen production as an integral part of the Austrian energy system.

The transmission of hydrogen will be handled by transforming parts of the current natural gas infrastructure into a hydrogen transmission system. While the national production of green hydrogen will likely increase, it is expected that it will not suffice to reach the 2040 target. Therefore, import of green hydrogen will gain importance, which shall be accomplished by coordinating hydrogen systems throughout the EU.

8. Foreign Direct Investment control

Under the Austrian Investment Control Act (Investitionskontrollgesetz), certain acquisitions in relevant industry sectors – including energy infrastructure and supply – are subject to approval by the Austrian Minister of Labour and Economics (Bundesminister für Arbeit und Wirtschaft).

Relevant types of acquisitions are the direct or indirect acquisition by one or more foreign persons of

- an Austrian undertaking;
- voting rights in an Austrian undertaking (reaching certain thresholds);
- a dominant influence on an Austrian undertaking; or
- an essential part of the assets of an Austrian undertaking.

For that purpose, "foreign persons" are defined as any individual who is not an EU/EEA/Swiss citizen and any legal entity having its registered seat or main administrative offices outside the EU/EEA/Switzerland.

The minimum thresholds of voting rights which trigger approval obligation are 25% and 50%. For certain particularly sensitive sectors – such as the operation of critical energy infrastructure –, an additional 10% threshold applies.

Transactions subject to the approval requirement are deemed concluded under a statutory condition precedent until such approval is granted. Implementing a transaction without prior approval is punishable under criminal law.

9. Up-Coming Legislation

9.1 New Electricity Industry Act

On 12 January 2024, a draft of the new Electricity Industry Act (*Elektrizitätswirtschaftsgesetz - ElWVG*), which will replace the outdated Austrian Electricity Act (*Elektrizitätswirtschafts- und -organisationsgesetz 2010 – ElWOG 2010*) was submitted for review and will provide the following rules especially relevant for the sale of RES-Electricity:

The draft Electricity Industry Act will introduce a new form of trading as peer-to-peer trading. That means contracts will be entered into between self-suppliers and end users for the sale of self-generated RES-Electricity. Peer to peer trading will make it feasible to sell RES-Electricity that is not self-consumed on the electricity market, at a profit, without becoming a supplier (e.g., long-term PPA for surplus electricity generated by a large ground-mounted PV plant of a commercial enterprise). However, it should be noted that peer-to-peer trading will only be permitted for self-suppliers. Furthermore, peer-to-peer contracts may only be concluded in addition to a regular supply contract, as the statutory required balance group membership is ensured by means of regular supply contracts.

Furthermore, under the new Electricity Industry Act it shall be possible for RES-Electricity to be transported from the electricity generation installation via a direct line (i.e., a line that connects an individual RES-Electricity producer with an individual customer, or a line that connects a producer and supplier for the direct supply of electricity with its own operating sites) to a customer or a consumption installation, allowing surplus electricity to be fed into the public power system from there, provided that necessary measures are taken to prevent loop flows. Thus, the operator of the generation installation can market the surplus electricity itself by concluding corresponding purchase agreements and will be able use the grid connection and grid access of the contractual partner for this purpose. In this context it should be highlighted that according to the new Electricity Industry Act, it will be permissible to use the metering point of a third party to inject electricity into the public power grid. Under the current Electricity Act, feed-in via the metering point of a third party is only possible via arrangements under civil law. A third party cannot currently feed in due to the lack of its own grid connection, and an indirect connection via an existing grid connection as this would undermine the connection monopoly of the distribution system operator.

Attention will have to be paid in the future to the fact that operators of distribution systems will have the possibility to limit access to their grid in the event of a shortage of grid capacity. Electricity suppliers will therefore have the option of connecting to the grid ahead of time but will have to accept temporary power restrictions imposed by the grid operator, which specifies the maximum grid capacity statically or dynamically. The limited grid effective capacity for photovoltaic and wind energy installations, including power plant parks connected to grid levels 4 to 7, may not fall below the following values:

- photovoltaic systems below 80% of the maximum capacity and
- wind energy installations below 90 % of the maximum capacity.

However, this restriction only applies so long as grid access cannot be granted in full for the requested grid active power. Depending on the grid level, the following periods apply from the conclusion of the contract:

- grid level 3 18 months;
- grid levels 4 and 5 12 months;
- grid levels 6 and 7 6 months.

Provided that the review period does not delay the enactment of the law significantly, the draft provides for the provisions to come into force on 1 July 2024.

9.2 Renewable Gas Act

Since February 2024, the Austrian National Council began debating the Renewable Gas Act. This law requires that from 1 January 2024, suppliers who supply end consumers in Austria against payment must substitute at least the following proportions of the fossil gas volumes they sold to end consumers in Austria with nationally produced renewable gases:

Year	2024	2025	2026	2027	2028	2029	2030
	0,35%	0,95%	1,70%	3,05%	4,84%	7,10%	9 , 7 5 % At least 7,5 TWh

Suppliers will have to provide E-Control with evidence of the quantities of gas they have substituted in the previous year, exclusively by means of guarantees of origin with a green gas label or green certificates with a green gas label, by the last day of March each year. If the substitution obligation is not fulfilled in any given year, the shortfall must be substituted by December 31 of the following year with corresponding additional quantities of gas.

Operators of plants that produce and process renewable gases to natural gas quality that feed into the public natural gas grid will have the right to guaranteed off-take of the quantities of gas produced (including the associated guarantees of origin) by OeMAG for one year if they prove: (i) the existence of an offtake agreement with a term of at least five years and a contract start date before December 31, 2028; and (ii) that at least three suppliers who are permitted to carry out this activity in Austria have refused to conclude an offtake agreement.

Authors:



Kurt Retter

Partner

E kurt.retter@wolftheiss.com

T +43 1 51510 5240



Harald Strahberger

Counsel

E harald.strahberger@wolftheiss.com

T +43 1 51510 5244



Dominik Engel

Senior Associate

E dominik.engel@wolftheiss.com

T +43 1 51510 5248

Wolf Theiss Schubertring 6, 1010 Vienna, Austria

T +43 1 51510 E vienna@wolftheiss.com

**Generating Electricity
from Renewable Sources
in CEE & SEE**

Energy Industry Group

Bosnia & Herzegovina

Wolf Theiss

Country General Information

Capital: Sarajevo

Location: Bosnia and Herzegovina ("BiH") is a South-Eastern European country situated on the north-western part of the Balkan peninsula. It borders on the north, west and south with Croatia, and on the east and south with Serbia and Montenegro.

Surface: 51,197 km²

Population: 9,104,772

Climate: There are three types of climate: continental and moderate-continental, mountain and mountain-basin and Mediterranean.

Resources: BiH is rich in water resources, forests (approximately 53% of the total surface area), various minerals such as zinc, lead, bauxite, and manganese, coal (more than 60% is lignite and the rest is brown coal), metal resources (ore, stone salt, asbestos, gypsum, etc.), and fertile land. BiH rivers have great hydropotential estimated at 18,600 GWh annually, however, only 40% of this hydropotential is currently in use. Considering its surface area, BiH is one of the richest countries in Europe when it comes to forests. Furthermore, BiH also has significant wind power potential, especially in the south of the country.

Electricity Grid: The total length of the national electricity transmission grid is 6,458.78 km. The grid is comprised of overhead power lines with a nominal voltage of 400 kV, 220 kV and 110 kV, electrical power stations with a voltage of 400 kV, 220 kV, 110 kV and 35 kV, as well as underground 110 kV cables. The BiH power system comprises 153 high voltage power stations and four (4) middle voltage power stations.

Electricity Transmission, Distribution and Supply: Electricity transmission is a regulated natural monopoly and is provided by the joint stock company Elektroprijenos BiH ("**Transco**"). Transco performs all activities relating to electricity transmission in BiH, including, inter alia, construction, maintenance and extension of the transmission grid. Electricity distribution in BiH is performed by four (4) public enterprises, i.e. Elektroprivreda of BiH d.d.- Sarajevo and Elektroprivreda Hrvatske zajednice Herceg Bosne d.d. Mostar in the Federation of Bosnia and Herzegovina ("**FBiH**"), Mješoviti holding ERS Trebinje in the Republic of Srpska ("**RS**") and Komunalno Brčko d.o.o. Brčko in the Brčko District of BiH ("**Brčko District**"). The electricity market is based on bilateral transactions between licensed participants, since the country has not yet established an electricity stock exchange. The supply of electricity within the territory of BiH is performed by thirty (30) licensed companies out of which,

eight (8) are licensed by the RS Regulatory Commission for Energetics ("RERS"), twenty-one (21) are licensed by the FBiH Regulatory Commission for Energy ("FERK") and one (1) is licensed by the BiH Regulatory Commission for Electricity ("DERK") for supply within the Brčko District territory. All these companies may carry out their licensed activities freely within the territory of BiH, regardless of which regulatory commission issued their licences.

Official Language(s): Bosnian, Croatian and Serbian.

EU Member: no. BiH signed the Stabilisation and Association Agreement with the EU on 16 June 2008, by which it established the framework for the implementation of comprehensive legal, administrative and economic reforms that would lead the country to EU membership. BiH submitted its application for EU membership on 15 February 2016. On 15 December 2022, the European Council officially granted candidacy status to BiH.

NATO Member: no. BiH was invited to join the Membership Action Plan (MAP) in 2010.

United Nations Member: yes, since 22 May 1992.

Currency: Bosnian convertible mark (BAM). The Central Bank of BiH maintains monetary stability by issuing domestic currency according to the currency board arrangement, with full coverage in freely convertible foreign exchange funds under the fixed exchange rate (BAM 1 = EUR 0.51129).

Schengen: not a member of the Schengen area.

Political System, Administrative Organisation and Economy: BiH is a country consisting of two separate entities: FBiH and RS, along with a special autonomous district under the direct sovereignty of the state, (i.e. the Brčko District). In each of the three areas in question, different legal regimes are applicable. However, certain matters are regulated by national laws, which are applicable in both entities and the Brčko District. FBiH is further divided into ten (10) smaller administrative units called cantons. Besides the cantons in BiH, there are also municipalities, of which there are 79 in FBiH and 64 in RS. The political system of BiH is a parliamentary democracy in which the Parliament Assembly is the highest legislative authority and which is comprised of two (2) houses, the House of Peoples and House of Representatives. The Presidency of BiH consists of three (3) members, each member representing one of the three (3) constituent ethnic groups in BiH (Bosnian, Croatian and

Serbian). The Council of Ministers of BiH is the highest executive authority at the state level. At an entity level, both FBiH and RS have their constitutions and they are rather autonomous. The Constitution of BiH provides that state institutions have jurisdiction over the following matters: foreign affairs, foreign trade, customs, monetary politics, financing of the institutions and international undertakings of BiH, regulation of immigration, refugees and asylum, implementation of the international and inter-entity criminal regulations including relations with Interpol, establishing and functioning of the means of mutual and international communication, regulation of inter-entity transport and air traffic control. All governmental functions and competencies that are not explicitly delegated to the BiH institutions belonging to these entities. The entities also have their legislative authorities, (i.e. the FBiH Parliament and National Assembly of RS); they also have presidents and governments that consist of 16 ministers and a prime minister. The Brčko District has a government comprised of a mayor, a deputy mayor and departments such as the executive authority and the Council of the Brčko District as the legislative authority.

The BiH economy is essentially a transitional economy that relies primarily on the export of metals, energy, textiles and furniture. BiH has preferential trade agreements with Member States of the Central European Free Trade Agreement (CEFTA). Within the BiH financial system, the banking sector is dominated by foreign banks, especially those from Austria and Italy, with the exception of only one domestic state-owned commercial bank. The banking sector is fairly liquid and well capitalised. BiH has observer status with the WTO since 1999 and negotiations for joining this organisation are still ongoing. The energy sector in BiH is one of the current and future key drivers of the BiH economy, considering that there are plenty of possibilities to invest in RES given its high, yet currently underdeveloped potential. The energy sector can potentially be a source of national employment in the future by opening up new job opportunities and attracting foreign direct investment. The national currency is pegged to the euro through a currency board arrangement, established by the Law on the Central Bank of BiH in 1998. The currency board established and maintained trust in the national currency and has created strong trade links with EU partners.

1. Defined Terms for the Main Permits Required for RES-Electricity Generation Facilities

Building Permit	Administrative deed issued by the competent entity, cantonal or municipal body before commencement of the construction of the RES-Electricity facility. The building permit in BiH includes an obligation of the investor to commence with the construction of the RES-Electricity facility within a certain period of time, usually between one (1) and three (3) years from the date of issuance of the construction permit.
Concession Right¹	If the applicable concession law requires it, the investor must obtain a concession right in order to exploit a natural resource and/or to produce RES-Electricity. The concession is granted by the decision issued by the concession grantor following the completion of the tender or self-initiative procedure, in accordance with the applicable concession law. Upon issuance of the decision granting the concession right, the concessionaire signs a concession agreement with the concession grantor, which regulates the rights and responsibilities of the parties in relation to the granted concession and performance of the future concession activity.
Connection Conditions	Technical document issued by Transco if the RES-Electricity facility is to be connected to the transmission grid. The Connection Conditions are issued based upon a technical solution for connection to the transmission grid. Once the Connection Conditions are issued, the investor must submit a statement to Transco, declaring the acceptance of the Connection Conditions.

¹ In BiH there are 14 applicable laws on concessions, i.e. one (1) on the state level, two (2) on the entities level, one (1) on the Brčko District level and ten (10) on the cantonal levels. Each law provides the list of the activities and natural resources for which the concession should be obtained, in order to perform the certain commercial activity

Environmental Permit	Administrative deed evidencing the compliance of the RES-Electricity facility with the environmental requirements as provided by the law, which also prescribes all relevant conditions and measures for mitigation and prevention of adverse effects on the environment during the construction and operation of the RES-Electricity facility.
Liability and Responsibility for Grid Connection and/or Capacity Upgrades, Improvements or Expansion of Grid	The applicable statutory regulations provide that electricity producers bear the cost of connection of the RES-Electricity facility to the distribution or transmission grid. One of the advantages defined in the BIH Rulebook on Access is that producers of RES-Electricity pay only 50% of the regular access fee to the transmission grid. Furthermore, the Grid Code of Independent System Operators ("ISO") provides that all electricity producers connected to the transmission grid, which change the technical parameters of their system, must not create a negative influence on the transmission grid. All producers connected and using the transmission grid may be temporarily curtailed with or without prior written notice only for those reasons prescribed in the Grid Code. If a producer is curtailed without justified reason by the operator of the grid, they are entitled to damage compensation. All producers connected to and using the grid shall be treated in a non-discriminatory manner.
Licence for Generation of Electricity from the RES-Electricity Facilities	The licence is issued by the competent regulatory commissions (i.e. FERK, RERS or DERK, depending on the location of the facility) enabling the investor to produce electricity from the constructed RES-Electricity facility. In FBiH, RS and in the Brčko District, the licence for generation of RES-Electricity is not required for facilities with an installed capacity of up to 1 MW.
RES-Electricity	Electricity obtained from RES sources, such as wind, solar, aerothermal, geothermal, hydrothermal and waves, hydraulic, biomass and biogas;

RES Support Scheme

A comprehensive incentivising system established in accordance with the FBiH, RS and Brčko District laws on use of RES and efficient cogeneration. In FBiH, the RES Support Scheme is based on feed-in tariffs, which provide for a guaranteed repurchase of electricity from producers that obtained the status of a privileged producer. In FBiH, the mandatory repurchase of electricity at the price set by the feed-in tariffs may be granted for a maximum period of twelve (12) years. Furthermore, producers of RES-Electricity in FBiH have priority access to the grid, while qualified producers also have priority of dispatch. *Note: A new Law on RES and Efficient Cogeneration (as defined below) establishing a new RES Support Scheme was adopted in FBiH in August 2023, and it shall apply as of 2 May 2024 – please see Section 6.2.1 for more information.*

Both in RS and the Brčko District, the RES Support Scheme for small installations is based on feed-in tariffs or premiums for consumption of electricity for personal use or sale on the market. In RS, the mandatory repurchases of electricity at the feed-in tariff or the right to premiums may be granted for a maximum period of fifteen (15) years, whereas in the Brčko District it may be granted for a maximum period of ten (10) years. The RES Support Scheme for large installations is based on the market premium, which is variable and calculated as the difference between the selling price from the auction procedure and the reference market price. The Brčko District has yet to adopt relevant bylaws regulating implementation of the RES Support Scheme.

In addition to the monetary aspects of the RES Support Schemes in FBiH, RS and the Brčko District, the RES Support Schemes are financed by the funds paid and collected from all end-customers of electricity.

Energy Permit and Permit for Construction of the RES-Electricity Facility

In FBiH, an energy permit is an administrative act issued by the Federal Ministry for Energy, Mining and Industry by means of which the investor will obtain the right to construct or reconstruct a RES-Electricity facility. An energy permit must be obtained before submitting a request for a building permit to the competent authority.

In RS, the investor is obligated to obtain a permit for construction of the RES-Electricity facility, except for:

- Electricity installations (energetska postrojenja) of biomass, biogas, landfill gas and gas from wastewater treatment plants:
- Plants for landfill gas and gas wastewater treatment plants;
- Solar plants with photovoltaic cells of installed capacity up to and including 250 KW, on the ground and on buildings, regardless of the installed power.

As with the energy permit, this permit is obtained subject to having a building permit. In the Brčko District, DERK issues the licence for the construction of a RES-Electricity facility where the installed capacity exceeds 1 MW.

2. Strategic Priorities for Development of the RES Sector until 2035

The BiH Framework Energy Strategy established the following five (5) strategic priorities for development of the RES sector until 2035:

- Standardisation of cooperation mechanisms with other countries in order to implement measures and programmes for stimulating RES-Electricity production;
- Prescribing the benefits of connecting to the transmission system for power plants that generate RES-Electricity, if it provides a safe system of operation and is based on transparent and non-discriminatory data;

- Increase of the share of RES-Electricity generation (that enters the incentive system) in overall electricity generation, along with adequate system organisation;
- Regulating the utilisation of the minimum levels of energy from RES for construction of new, or renovating existing facilities, and enactment of regulations to govern the implementation of cogeneration in the heating and cooling sector; and
- Achievement of the goal of a 10% share of RES in energy generation for transport in 2020, and continued promotion of biofuels through 2035.

3. Executive Summary – RES Market Status and Development of RES-Electricity Facilities

3.1 Market Overview – Factsheets

- The RES-Electricity market in BiH has seen significant development since the enactment of the FBIH Law on the Use of RES and Efficient Cogeneration, as well as the RS Law on RES and Efficient Cogeneration in 2013, (including various implementation bylaws adopted by the competent regulators);
- On 30 March 2016, the Council of Ministers of BiH adopted the BiH National Renewable Energy Action Plan ("NREAP") until 2020. NREAP was developed based on the action plans for RES in FBiH and RS. By adoption of the NREAP, BiH moved a step forward to compliance with the requirements of Directive 2009/28 EC;
- NREAP set the overall goal for BiH of a 40% share of RES in gross final energy consumption by 2020. Such a high share of RES in gross final energy consumption was determined on the basis of the high RES share in 2009 as the baseline year. According to the Action Plan for Usage of RES in FBiH, the goal is to reach a 41% share of RES, and according to the Action Plan for Usage of RES in RS, the goal is to reach a 48% share of RES by 2020;
- In November 2017, as a party to the Energy Community Treaty, BiH submitted its First Progress Report to the Energy Community Secretariat under Directive 2009/28/EC. The obligation of submitting the progress reports on renewable energy to the Secretariat arises from Article 22 (1) of Directive 2009/28 EC;

- The RS Action Plan for Usage of RES was revised in 2018. The dynamic quotas for solar power plants were increased from 8 MW to 12.2 MW and dynamic quotas for biomass were decreased from 14.83 MW to 12.96 MW;
- The FBiH Action Plan for Usage of RES was also revised in 2018. The dynamic quotas for solar power plants were increased from 11 MW to 23 MW and dynamic quotas for biogas were set at 1.2 MW;
- At the beginning of 2018, a working group was formed, in order to develop a concept for the reform of the RES Support Schemes in BiH ("Working Group"). The members of the Working Group are the Ministry of Foreign Trade and Economic Relations of BiH, the Federal Ministry of Energy Mining and Industry, the Ministry of Industry, Energetics and Mining of RS, DERK, FERC, RERS, and the RES Operators in FBiH and RS;
- In March 2018, the first large wind power plant ("WPP") in BiH commenced operations. The WPP generates 50 MW of installed capacity and its investor is a public enterprise Elektroprivreda HZ HB d.o.o. Mostar;
- In September 2018, the Working Group made a final report on a new concept for the reform of the RES Support Schemes in BiH, which proposed a feed-in premium for large installations (installed capacity exceeding 500 KW) and feed-in tariffs for smaller installations. In addition, certain tax relief mechanisms were proposed as part of the new concept for the RES Support Scheme;
- In April 2019, amendments to the RS Law on RES and Efficient Cogeneration were enacted, by means of which generation of electricity from WPPs is excluded from the RES Support Scheme;
- In July 2019, BiH submitted the Third Progress Report under Directive 2009/28/EC;
- On 29 August 2019, the Council of Ministers of BiH adopted the Framework Energy Strategy for BiH until 2035. The purpose of the Framework Energy Strategy is to identify key priorities required for the development of the energy sector in BiH.
- In 2020, RS adopted a revised Action Plan for Usage of RES, pursuant to which dynamic quotas for 2021 were set as follows: solar power plants: 24.83 MW; biomass: 4.16 MW;
- In 2021, FBiH adopted the Decision on Establishing Binding Targets for the Use of Renewable Energy Sources in the FBiH, pursuant to which (with amendments in 2022) dynamic quotas for solar power plants have been increased to 140.56 MW; dynamic quotas for biomass have been increased to 15 MW, and the dynamic quotas for biogas were increased to 10 MW.

- In June 2021, BiH submitted the Fourth Progress Report under Directive 2009/28/EC;
- In March 2022, the new RES Law was adopted in RS;
- In June 2022, the new Law on RES and Efficient Cogeneration was adopted in the Brčko District;
- On 31 July 2023, the FBiH adopted a set of energy laws aimed at harmonising domestic energy legislation with the European Union and Energy Community acquis, these laws included. the following:
 - Law on Electricity of the FBiH,
 - Law on the Use of RES and Efficient Cogeneration, and
 - Law on Energy and Regulation of Energy Activities in the FBiH.

The Law on Electricity of the FBiH and the Law on Energy and Regulation of Energy Activities in the FBiH entered into force on 17 August 2023. The Law on the Use of RES and Efficient Cogeneration entered into force on 2 November 2023 and shall be applied as of 2 May 2024 ("Law on RES and Efficient Cogeneration");

- In August 2023, BiH submitted the Fifth Progress Report under Directive 2009/28/EC.

3.2 RES Market Status, Permitting, Grid Connection, Licensing of RES-Electricity Facilities

General Market Data

RES Target 2020 provided by NREAP

The overall goal for BiH includes a 40% target share of RES in gross energy final consumption by 2020.

In 2021 it was reported that 36.56% of the target had been achieved.²

² Source: BiH Fifth Progress Report on promotion and use of energy from renewable sources, 2020-2021 published on 31 August 2023

Overall installed General Capacity including RES (overall production)³	In 2022, the installed capacity of all production facilities in BiH was 4,655.62 MW, whereas the overall electricity production was 15,035.96 GWh.
Installed capacity by technology⁴	Pumped Hydro – 420 MW Small Hydro – 181.89 MW Wind power – 135 MW Solar – 101.56 MW Biogas – 1.59 MW Biomass – 1.12 MW

RES Support Scheme

Mandatory repurchase of electricity produced in the RES-Electricity facility at the guaranteed prices

In FBiH, a producer that obtains the status of privileged producer is entitled to a mandatory repurchase of electricity generated in the RES-Electricity facility for a period of twelve (12) years. The privileged producer concludes a standard model power purchase agreement ("PPA") with the RES Operator.

In RS, the producer that fulfils the requirements for a mandatory repurchase can conclude a PPA with the Elektroprivreda RS acting as the RES operator for a duration of fifteen (15) years.

In accordance with the Law on RES and Efficient Cogeneration adopted in June 2022 in the Brčko District, mandatory repurchases of electricity at the feed-in tariff may be granted for a maximum period of ten (10) years. A producer that meets the requirements for a mandatory repurchase can conclude a PPA with the Office for the Incentive System. However, it is important to note that the Brčko District has yet to adopt relevant bylaws regulating implementation of the RES Support Scheme.

³ Source: DERK's Annual Report for 2022

⁴ Source: DERK's Annual Report for 2022

RES-Electricity facilities eligible for mandatory repurchase of electricity at the guaranteed prices

In FBiH, the following RES-Electricity facilities are eligible for mandatory repurchase:

- hydro power plants ("HPPs") with an installed capacity of up to 10 MW;
- WPPs regardless of the installed capacity;
- solar power plants ("PVs") of up to and including 1 MW of installed capacity;
- geothermal power plants of up to and including 10 MW of installed capacity;
- biomass power plants of up to and including 10 MW of installed capacity;
- biogas power plants of up to and including 1 MW of installed capacity;
- waste power plants of up to and including 5 MW of installed capacity;
- efficient cogeneration facilities of up to and including 5 MW of installed capacity.

In line with the new Law on the Use of RES and Efficient Cogeneration establishing a new system of RES Support Scheme in FBiH to be applicable as of 2 May 2024, the following RES-Electricity facilities are eligible for mandatory repurchase:

- PVs with an installed capacity of up to and including 150 kW;
 - WPPs with an installed capacity of up to and including 250 kW;
 - biomass and biogas power plants with an installed capacity of up to and including 500 kW.
 - In RS, the following RES-Electricity facilities are eligible for mandatory repurchase:
 - HPPs, WPPs, PVs on ground with an installed capacity of up to and including 150 KW;
 - PVs on objects, power from biomass and biogas, landfill gas and gas from wastewater treatment plants with an installed capacity of up to and including 500 KW;
-

Other Incentives

- In FBiH RES-Electricity facilities have advantages in terms of supply of electricity, for example, advantages in dispatch as well as advantages in terms of allocation of rights of facilities with an installed capacity of less than 150 KW, without reporting their daily schedule to the RES Operator.
- In RS, RES-Electricity facilities for small installation plants have benefits when connecting to the grid, in terms of time and in certain cases the cost for analysis of connection to the grid. Preferential access to the network (dispatching) to be mandatorily provided by the system operator to whose grid the generator is connected.

Grid Connection Specifics**Connection documentation and approvals**

- Based on the elaboration of the technical solution for connection to the transmission grid, the TSO will issue the Connection Conditions to the investor;
- Based on the issued Connection Conditions and building permit, the investor can conclude the connection agreement with Transco in accordance with the Grid Code. The connection agreement regulates all technical, legal and economic conditions for connection of the RES-Electricity facility to the transmission grid.
- Once the connection is constructed, Transco issues the approval for connection of the high voltage facility to the transmission grid.
- The consent for operational launch of the high voltage facility is issued by ISO based upon the approval for connection and request of the owner of the RES-Electricity facility.
- The consent for the temporary operation of the facility is issued by ISO, in order to conduct all functional and compliance tests in accordance with the Grid Code.
- Once the functional and compliance tests are performed, ISO issues the consent for the permanent work of the facility.

All of the above-mentioned approvals, documents and steps are applicable only if the RES-Electricity facility is to be connected to the high voltage transmission grid. If the RES-Electricity facility is to be connected to the distribution grid, the approvals will be obtained, and agreements concluded with the operator of the distribution grid in accordance with the rules and procedures of the operators of distribution grids.

Costs

The producer bears the costs for preparing the elaboration of the technical solution for connection to the transmission grid. Furthermore, the producer bears the costs for construction of the connection to the grid. The costs for the connection consist of a fixed and variable part. The producers from RES-Electricity facilities pay only 50% of the fixed costs for the connection.

Licensing

Licences

Once the RES-Electricity facility is constructed and the user permit is obtained, the producer can obtain the licence for generation of electricity in the RES-Electricity facility. The licence in FBiH is issued by FERK.

In RS, the licence for generation of electricity is issued by RERS.

In Brčko Distrikt, the license for generation of electricity is issued by DERK.

Throughout BiH (i.e. FBiH, RS and the Brčko District), the licence for generation is not required for RES-Electricity facilities which have an installed capacity of up to 1 MW.

Duration of Administrative Procedure

Sixty (60) days from the submission of the full documentation for all the above-mentioned licences.

Licence's Validity

The licence for generation of RES-Electricity in FBiH, RS and the Brčko District is issued for a duration of up to thirty (30) years.

4. Key Changes to the RES Support Scheme since 2016

In FBiH, the new 2023 Law on RES and Efficient Cogeneration introduced a new system of incentives for small-scale and large-scale facilities, through feed-in tariffs for small-scale facilities ("**FIT auctions**") and feed-in premiums for large-scale facilities ("**FIP auction**").

FIP auctions are envisaged for large-scale facilities at least once every two years and in line with available scale of auctions, which will compete for fixed premiums for delivered electricity. The main condition for participating in FIP auctions is possession of an urban permit/location permit or a certificate issued by a competent body stating that such a permit it is not required. The criteria for ranking offers is the lowest offered fixed premium added to the market price.

FIT auctions are envisaged for small-scale facilities every year, in line with technologic quotas, which will compete for a guaranteed purchase price. The main condition for participating in FIT auctions is possession of a construction permit or a certificate issued by a competent body stating that a construction permit is not required. The criteria for selection of the most favourable bidder is the lowest offered guaranteed purchase price.

The new law in FBiH also introduces new categories of participants using renewable energy sources: (a) prosumers – enabling end users to produce electricity for their own needs; and (b) renewable energy communities – enabling citizens to unite and construct renewable energy facilities.

In RS, a new RS Law on RES was adopted in 2022. The most significant change is the introduction of the concept of the electricity buyer-producer (prozjumer). This term refers to final customers operating within premises located in limited areas that (i) produce electricity for their own consumption, or (ii) can store or sell the electricity they produce from renewable energy sources to customers who do not fall within the category of households, where these activities do not represent their main commercial or professional activity. The buyer-producer uses the electricity thus produced for its own needs and injects the surplus into the distribution network. The buyer-producer relies on two-way meters that register how much electricity has been delivered and how much has been taken from the distribution network. Hence, the buyer-producer is paid or charged for electricity based on the difference between the quantities of electricity delivered and taken.

The end customer has the right to build a power plant that uses renewable energy sources and to connect it to the internal electrical installations of its facility for its own consumption. The installed power of the power plant, when applying the net metering or net calculation scheme, may not exceed the approved connected power of the end customer's facility. The end customer acquires the status of buyer-producer by connecting the power plant to the internal electrical installations of its facility and by obtaining a production plant (power plant) certificate in accordance with this law. It also has rights and obligations under this law, and under the law governing electricity, to increase this power to 500 KW, which is one of the recommendations of the Energy Community.

Furthermore, the existing RES Support Scheme system in RS, which included feed-in tariffs or guaranteed purchase prices, was retained for plants with small installations defined as such by law. Only those companies that have location requirements and environmental permits can apply for auctions, and it is possible to apply only for part of the installed power for which the construction is planned. A Renewable Energy Community or Energy Cooperative can also receive subsidies in the form of a premium if the installed power is less than 150 KW. The RES Support Scheme for plants with large installations is based on the market premium, which is variable and calculated as the difference between the auction sale price and the reference market price. The auction sale price remains unchanged for as long as the right to incentives endures, except where there is a change of more than 10% in the BAM to EUR exchange rate in BiH.

The Brčko District adopted its Law on RES and Efficient Cogeneration in June 2022. The law introduces, for the first time, a RES Support Scheme for small and large installations in the Brčko District. Small installations will be incentivized with feed-in tariffs or premiums for consumption of electricity for personal use or sale on the market. The mandatory repurchases of electricity at the feed-in tariff or the right to premiums may be granted for a maximum period of ten (10) years. The RES Support Scheme for large installations is based on the market premium, which is variable and calculated as the difference between the selling price from the auction procedure and the reference market price.

4.1 The Rulebook on Obligatory Share and Offtake of Electricity Generated from RES

In December 2016, FERK adopted the Rulebook on Obligatory Share and Offtake of Electricity Generated from RES by which it determined the following: (i) obligations and procedures for offtake of minimum quantities of electricity generated in RES-Electricity facilities at the annual level; (ii) obligations and procedures by which the fulfilment of the conditions set out in the Rulebook will be proven; and (iii) obligations for repurchase of the electricity from qualified producers at the reference price until the establishment of the RES market and fulfilment of the quotas related to the mandatory goals stipulated by the applicable law for all suppliers to end-customers in FBiH, as well as for qualified buyers who import electricity for their own needs.

In accordance with the Rulebook, all suppliers and qualified buyers are obligated to offtake a certain portion of the electricity produced in the RES-Electricity facilities. The percentage of the obligatory offtake is determined in advance so that the suppliers and qualified buyers can allocate funds for purchase of their obligatory offtake. The percentage of this obligatory offtake is determined by FERK's decision, to be made until 15 December of the respective year at the latest, for the following year. The RES Operator in FBiH concludes individual contracts with each supplier or qualified buyer by which all mutual rights and responsibilities regarding the offtake, metering and payments of the electricity between the parties, will be regulated. The contracts also include the obligation of the RES Operator to issue to the supplier or qualified buyer the confirmation for off taken electricity generated from a RES-Electricity facility, as well as the obligation of the supplier or qualified buyer to provide a certain payment security.

Taking into account that a new Law on the Use of RES and Efficient Cogeneration was adopted in FBiH, it is anticipated that the new bylaws regulating obligatory share and offtake of electricity generated from RES will be adopted in the following months.

In RS, the procedure for determining the obligatory share of RES-Electricity that must be off-taken by suppliers and qualified buyers is provided in the Rules on Realisation of the Incentive System in RS. The Rules were adopted in January 2012 by the RES Operator and, taking into account that the new RES Law has been adopted, it is anticipated that new bylaws will soon be adopted as well.

4.2 Repurchase of the Electricity Generated from RES at the Referent Price

Besides the feed-in tariffs, as part of RES Support Schemes in both entities, the producers of RES-Electricity are entitled to the mandatory repurchase of the electricity at the reference price if their production is included in the obligatory quotas set by the entity's action plans for RES. The producers conclude power purchase agreements with the RES operators by which the RES operators assume the obligation to repurchase the entirety of the RES-Electricity at the reference price. Unlike the feed-in tariffs, the reference price is not fixed and can be revised by the FERK or RERS usually at least once a year or more often if needed.

The mandatory repurchase of electricity at the reference price by the state-owned RES operators in BiH allows investors who intend to develop certain RES-Electricity projects to model these projects, particularly for those technologies for which there are no available dynamic quotas, (i.e. for which a PPA at the feed-in tariff level cannot be concluded).

One of the main shortcomings of the PPAs at the reference price is the fact that such PPAs may be concluded only once the RES-Electricity facility is fully operational. Hence, a producer that intends to conclude a PPA at the reference price is not able to reserve the available quota by signing the pre-agreement until it completes the construction of the RES-Electricity facility. The latter could be problematic if the producer needs a lender to provide financing for the project. This is because lenders typically expect that a PPA is executed before the funds for the project are granted.

4.3 Guarantees of Origin for Electricity Produced from RES

The guarantees of origin for electricity produced from RES in RS have been regulated by the Rulebook on the Issuance of Guarantees of Origin for Electricity. The Rulebook was adopted by RERS in 2013 and entered into force in 2014 and since then, it has not been amended. Taking into account that a new Law on RES has been adopted, it is anticipated that new bylaws will be adopted soon. In FBiH, the Rulebook on the Procedure for Submitting Requests for Issuance of Guarantees of Origin for Electricity was adopted by the RES Operator in 2015, and entered into force in 2016. According to the FBiH Rulebook, the guarantee of origin can be issued only to a qualified producer, whereas privileged producers are not entitled to submit a request for issuance of the guarantee of origin for electricity produced in their RES-Electricity facilities.

The FBiH Rulebook provides that the RES Operator must adopt a special regulation by which it will regulate the automatic transfer of the guarantees of origin for the electricity generated in the RES-Electricity facilities of privileged producers. Consequently, in 2018 the RES Operator in FBiH adopted the Rulebook on the Transfer of Guarantees of Origin for Electricity Generated in a Privileged Producers' RES-Electricity Facility. This became applicable as of 1 January 2019. In accordance with this Rulebook, the guarantees of origin for electricity generated in privileged producers' RES-Electricity facilities will be automatically issued based on the data from the RES Operator database and transferred to the suppliers and qualified buyers that are obligated to repurchase a certain percentage of RES-Electricity. Once the guarantees are transferred to the suppliers and qualified buyers, they will be automatically cancelled since they cannot be further transferred or sold. The further transfer of such a guarantee of origin is strictly prohibited. The RES Operator publishes the data on issued, transferred and cancelled guarantees on their website.

5. The Balancing of the BiH Power System

Balancing responsibility requires market participants to harmonise their generation, consumption and purchase and sale of electricity during the period of imbalance. The balancing market is part of the wholesale market in BiH, and also includes the obligation for electricity market participants to assume financial responsibility for imbalances.

According to the RS Law on RES and Efficient Cogeneration, producers of RES-Electricity from facilities where the installed capacity is less than 150KW, and that have exercised the right to an incentive for the production of electricity, are not required to pay balancing costs. RES-Electricity producers whose installed capacity exceeds 150 KW and h have exercised the right to an incentive for the production of electricity, must bear all balancing costs. Producers of electricity with large installations and the right to a market premium price, must also bear all balancing costs.

The FBiH Law on Use of RES and Efficient Cogeneration provides that micro-producers of RES-Electricity (facilities with installed capacity ranges from 2 KW to 23 KW) are not obligated to bear the balancing costs. Privileged and qualified producers of RES-Electricity in facilities where the installed capacity does not exceed 150 KW are not obligated to pay the balancing costs. Otherwise, privileged and qualified producers of RES-Electricity in facilities where the installed capacity

exceeds 150 KW must pay the balancing costs, in accordance with the Rulebook on the Methodology for Distribution of the Balancing Costs for Privileged and Qualified Producers, which was never adopted. In the meantime, the new 2023 Law on RES and Efficient Cogeneration in FBiH provides that prosumers from the household category are not responsible for balancing, as this responsibility is shifted to their suppliers. Qualified producers that have a valid agreement in place with the RES Operator and are connected to the distribution and transmission grids must bear balancing costs in their balance groups.

6. Significant and/or Expected Changes as of 2023/24

6.1 A new Support System for RES-Electricity in BiH

The new 2023 Law on RES and Efficient Cogeneration in FBiH (to be applicable as of 2 May 2024) introduced a completely new RES Support Scheme for RES-Electricity facilities. Adoption of the new bylaws regulating implementation of this law is expected in the following months.

RS and the Brčko District adopted their new Laws on RES in 2022 and have yet to adopt the remaining bylaws regulating the implementation of the laws.

6.2 The Characteristics of the New RES Support Scheme in BiH

6.2.1 FBiH

According to the explanation of the proposal of the new 2023 Law on RES and Efficient Cogeneration in FBiH, the current system of incentives through feed-in tariff is considered as an efficient but not as an economically justified instrument to incentivise the production of electricity from RES. In that regard, as mentioned above, the new law introduces mechanisms of incentives for small-scale and large-scale facilities – through FIT and FIP auctions (as defined above). Both auctions are implemented by the RES Operator.

6.2.1.1 The RES Support Scheme for Large Installations

FIP auctions are envisaged for large-scale facilities over a certain installed capacity (i.e. over 150 kW for solar power plants, over 250 kW for wind power plants, over 500 kW for biomass and biogas power plants) at least once every two years and in line with the available scale of auctions, which will compete for fixed premiums for delivered electricity. Instead of the fixed price for electricity produced in RES-Electricity facilities, producers have to sell the electricity at the wholesale market price with an added premium. The main condition for participating in FIP auctions is possession of an urban permit/location permit or certificate confirming that such a permit is not required. The criteria for ranking offers is the lowest offered fixed premium added to the market price.

6.2.1.2 The RES Support Scheme for Small Installations

Small installations will still be incentivised by feed-in tariffs. FIT auctions are envisaged for small-scale facilities of up to a certain installed capacity (i.e. up to and including 150 kW for solar power plants, up to and including 250 kW for wind power plants, up to and including 500 kW for biomass and biogas power plants) every year, in line with technological quotas, which will compete for a guaranteed purchase price. The main condition for participating in FIT auctions is possession of a construction permit or a certificate confirming that such a construction permit is not required. The criteria for the selection of the most favourable bidder is the lowest offered guaranteed purchase price.

For producers of RES-Electricity in facilities that use the produced electricity for their own needs and deliver the surplus of the electricity to the grid (prosumers), net price billing is introduced. The net price billing provides that any surplus of electricity delivered to the grid can be used later in compensation for electricity costs incurred during the period when local renewable production was not present or was not sufficient.

6.2.2 RS

The new RS Law on RES was adopted in March 2022. This new RS Law defines separate RES Support Schemes for large and small installations. Only those

companies that have location requirements and environmental permits can apply for auctions, and it is possible to apply only for part of the installed power for which the construction is planned. A Renewable Energy Community or Energy Cooperative can also receive subsidies in the form of a premium if the installed power is less than 150 KW. The RES Support Scheme for plants with large facilities is based on the market premium, which is variable and calculated as the difference between the auction sale price and the reference market price. The auction sale price remains unchanged for as long as the right to incentives endures, except where there is a change of more than 10% in the BAM to EUR exchange rate BiH.

6.2.3 Brčko District

The Brčko District adopted its Law on RES and Efficient Cogeneration in June 2022. The law introduced, for the first time, a RES Support Scheme for small and large installation in the Brčko District. Small installations will be incentivised with feed-in tariffs or premiums for consumption of electricity for personal use or sale on the market. The mandatory repurchases of electricity at the feed-in tariff or the right to premiums may be granted for a maximum period of ten (10) years. The RES Support Scheme for large installations is based on the market premium, which is variable and calculated as the difference between the selling price from the auction procedure and the reference market price.

7. Energy Storage

The new Law on Electricity of the FBiH, in force as of August 2023, introduced energy storage as a new activity in the electricity market. This enables the storing of energy produced at times when there is an excess of electric energy within the electric power system, so that it can be utilised later. The law stipulates that energy storage activity can be performed by an energy storage operator that is licensed for this activity by FERK. However, the operator is not required to obtain such a license for energy storage:

- a. using energy storage facilities with a total installed power of up to and including 500 kW;
- b. during the facilities' trial operation, and no longer than six months from the date of obtaining the use permit;
- c. in a facility located behind the billing metering point of an active customer and used exclusively for their own needs without delivering electricity to the grid; or
- d. in facilities used exclusively for the purposes of electricity distribution.

The energy storage operator is entitled to:

- a. use technologies it considers most favourable for electricity conversion and storage, while respecting the statutory conditions,
- b. access the network pursuant to statutory conditions,
- c. sell and buy electricity pursuant to statutory conditions,
- d. offer and provide auxiliary services, including balancing services, pursuant to the statutory conditions as set by law and other regulations governing individual markets.

The energy storage operator is obligated to:

- a. fulfill license requirements, if such a licence is required by law;
- b. meet statutory technical and operating conditions;
- c. fulfill statutory conditions related to energy efficiency and environmental protection;
- d. act pursuant to the rules of market competition protection when participating in the electricity market;
- e. maintain energy storage facilities in proper condition, ensure their operational readiness and safe use, in line with technical and other regulations and standards;
- f. offer and provide auxiliary services in line with the regulation governing transmission system function and provision of auxiliary services,
- g. make data necessary for the operation and management of the electric power system available to system operators,
- h. make requested data available to system operators, competent ministry, FERK and other competent authorities.

Authors:



Naida Čustović
Attorney at Law
in Cooperation with Wolf Theiss
E [naida.custovic@
lawoffice-custovic.com](mailto:naida.custovic@lawoffice-custovic.com)
T +387 33 953 460



Lamis Kulenović
Attorney at Law
in Cooperation with Wolf Theiss
E [ilma.kasumagic@
lawoffice-kasumagic.com](mailto:ilma.kasumagic@lawoffice-kasumagic.com)
T +387 33 953 458



Alija Genjac
Associate at Law Office Naida Čustović
in Cooperation with Wolf Theiss
E alija.genjac@wolftheiss.com
T +387 66801582

Law Office Naida Čustović, cooperating law office of Wolf Theiss
Zmaja od Bosne 7, 71000 Sarajevo, Bosnia and Herzegovina
T +387 33 953 444 E sarajevo@wolftheiss.com

Generating Electricity from Renewable Sources in CEE & SEE

Energy Industry Group

Bulgaria

Wolf Theiss

Country General Information

Capital: Sofia

Location: Bulgaria is situated in the centre of the Balkan Peninsula and is the most south-eastern country of the European Union, sharing a border with Romania to the north, Serbia to the west, Republic of North Macedonia to the southwest, Greece to the south, Turkey to the southeast and the Black Sea to the east. Bulgaria lies between latitudes 43° and 44° N and longitudes 25° and 28° E.

Surface: 110,993 km²

Population: 6,870,724

Climate: temperate and continental, with four (4) distinct seasons.

Electricity Grid: The total length of the national electricity transmission network is over 1,500 km, of which 1,446 km are interconnection lines. The electricity distribution grid is over 152,000 km in length. The electricity system is comprised of overhead power lines with a nominal voltage of 400 kV, 220 kV, 110 kV and electrical stations having a higher voltage of 400 kV, 220 kV and 110 kV.

Electricity Transmission, Distribution and Supply: Electricity transmission is a licensed activity performed by a certified Independent System Operator – Electricity System Operator EAD. The electricity distribution activity is divided into four (4) licensed territories operated by four (4) licensed distribution companies. The electricity supply is provided under regulated prices by licensed end-supply companies to low voltage household customers and under freely negotiated prices by licensed electricity traders to business customers. The electricity is traded on the Bulgarian electricity exchange platforms operated by the power exchange operator Independent Bulgarian Energy Exchange EAD (IBEX). The full liberalisation of the Bulgarian electricity market is expected to be completed by 2025.

Official Language(s): Bulgarian

EU Member: since 1 January 2007.

NATO Member: since 2004.

United Nations Member: since 1955.

Currency: Bulgarian lev (BGN). Bulgaria has a currency board with an exchange rate fixed to the euro at 1.95583 BGN/EUR.

Schengen: since 31 March 2024.

Political System, Administrative Organisation and Economy: Bulgaria is a parliamentary republic with a separation of its legislative, executive and judicial powers. The government is headed by a Prime Minister. The President of the Republic is also the head of state and supreme army head. The country is divided into twenty-eight (28) regions and 265 municipalities.

1. Defined Terms for the Main Permits required for RES-Electricity Generation Facilities

Building Permit	Administrative deed issued by the chief architect of the municipality or the region where the RES-Electricity facility will be built;
Certificate for Change of Land Designation	Administrative deed approving a conversion in the designation of a land plot from agricultural land to land for construction purposes, in accordance with the Bulgarian Act for the Preservation of Agricultural Lands;
Contracts for Compensation with Premiums	Commercial contract concluded between a RES-Electricity producer and the FSES for payment of Premiums;
Detailed Zoning Plan / Parcelling Plan	Administrative deed in the form of an order of the mayor of the municipality, or the municipal council, for approval of a plan for the regulation of streets, quarters and land plots assigned for construction or other purposes by prescribing the construction parameters of such land plots. Parcelling plans are developed for the electricity and communication connection infrastructure of a project;
Environmental Permit	Administrative deed in the form of an Ecological Assessment, Environmental Impact Assessment and/or Appropriate Assessment issued by the local Environmental Authority, or the Ministry of Environment and Waters, evidencing the compliance of the RES-Electricity facility with the environmental requirements as provided by law. For hydro power plants, a permit for water abstraction is required;
Grid Connection	Actions performed and commercial contracts concluded between a RES-Electricity generating facility owner and the respective grid operator to connect a new RES-Electricity generating capacity to the electricity transmission or distribution grid;
Guarantees for Origin	Administrative deed issued by the Sustainable Energy Development Agency to guarantee the produced electricity from a RES source from 1 MW of installed capacity;

Investment Design	Design developed for building of a RES project by eligible designer in accordance with the approved Detailed Zoning Plan or Parcelling Plan.
Forecasted Market Price	Annually calculated price by EWRC under a methodology considering the weighted average price for the previous 12-month period for electricity generated from solar, wind hydro (up to 10 MW), biomass and other RES-Electricity Producers. The FMP is used to provide a base for calculating the Premiums due to RES-Electricity Producers by FSES;
Fund Security of the Energy System (FSES)	Fund for Security of the Energy System created to cover expenses including the payment of Premiums to RES production companies with an installed capacity above 500 KW.
Licence for Production of Electricity	Administrative deed issued by EWRC, for the performance of electricity generation by production facilities with an installed capacity above 20 MW;
PPA	Power purchase agreement concluded between a producer of electricity and licensed trader, end consumer or electricity grid operator. The PPAs may be concluded at IBEX segments or OTC.
Premiums	Fixed mark-up paid by FSES under CfCPs to RES-Electricity Producers to cover the difference between the Feed-in Tariffs applicable prior to 2018 for the respective RES technology and the annually set FMP. Premiums are calculated on an annual basis by EWRC;
Protocols during Construction	Administrative deeds issued by competent authorities in the course of the construction of a RES Project under the provisions of the Spatial Development Act and the related secondary legislation;

Property Deed	Administrative deed establishing right of ownership or superficial right to build (in rem) over a land plot where a RES Project is to be built;
RES-Electricity	Electricity generated from RES sources such as: wind, solar (solar thermal and solar photovoltaic) energy, geothermal energy, energy from the environment, tidal energy, wave or other ocean energy, hydro energy, biomass, wastes gas, gas from treatment installations for sewage and biogas;
RES-Support Scheme	Support schemes provided under the AERS in the form of (i) Premiums for RES-Electricity Producers with installed capacity above 1 MW; or (ii) Feed-in Tariffs for RES-Electricity Producers with installed capacity up to 500 KW with a PPA concluded prior to 1 January 2016 or (iii) Feed-in Tariffs for rooftop or façade-mounted PV systems in urban territories or biomass with installed capacity below 30 KW;
OTC	Over the counter transactions concluded between market participants outside IBEX segments;
Statement of Opinion of Technical Conditions for Connection to the Grid	Statement of opinion issued by the grid operator providing the technical conditions and parameters under which a RES project can be connected to the respective grid;
Use Permit	Administrative final deed permitting the exploitation of each component of a RES production project issued in compliance with Chapter XI of the Bulgaria Spatial Development Act.

2. Envisaged need of investments in Bulgaria

According to the requirements of the Clean Energy Package¹, with an outlook towards 2030, Bulgaria has committed to new RES energy production targets of 27.09% (the target for 2020 was sixteen percent (16%)) and energy efficiency savings of 27.89%. Further, as a Member State, Bulgaria is actively involved in ensuring that all available planning tools for the European Green Deal are coherently deployed. In addition, Bulgaria has elaborated and committed to CEP targets with its Integrated Plan for the Energy and Climate 2021-2030 EC with particular national targets related to Decarbonisation, Energy Efficiency, Energy Security, Internal Market and Research, Innovation and Competitiveness. Therefore, it is expected that Bulgaria will transpose the required legal provisions in its legislative framework for the necessary investments to accelerate the transition to clean energy.

According to the Bulgarian Integrated Plan for Energy and Climate 2021-2030 EC, the RES national targets for energy from renewable sources with respect to gross end consumption of energy by 2030 are separated into 3 main areas-- namely (i) share of electricity from RES of gross end consumption of electricity – 30.33%; (ii) share of heat energy and energy for cooling RES – 42.60%; and (iii) share of RES of end consumption of energy in the transport sector- 14.20%:

RES Production targets the following main measures:

- Market principles of investment and sale of produced energy for new projects;
- Tenders after 2025 if necessary;
- National plan for energy from forest biomass -2018-2027;
- Development of energy communities and active consumers;
- Incentivising the production of energy for own consumption (prosumers);
- Development and modernisation of the capacity for energy storage and backup systems;

1 The Clean Energy Package is comprised of 4 Directives and 4 Regulations – 1. Governance of the energy union and climate action (EU) Regulation 2018/1999; 2. Regulation on the internal market for electricity; 3. Regulation establishing a European Union Agency for the Cooperation of Energy Regulators; 4. Regulation on risk-preparedness in the electricity sector; 5. Energy Performance of Buildings Directive 2018/844; 6. The revised Renewable Energy Directive (EU) 2018/2001; 7. The revised Energy Efficiency Directive (EU) 2018/2002; 8. Directive on common rules for the internal market for electricity.

- Support to the decentralised distribution, adaptation of transmission, increase of electricity network adequacy, and
- Usage of RES energy for carbon storage.

With regard to the Decarbonisation target, Bulgaria is committed to increasing its energy from RES in terms of gross end-consumption and to reduce greenhouse gas emissions. Further to the instruction of the EC, Bulgaria has increased the level of its target as regards the share of RES in end consumption from 25% to 27.09% thus aiming to reach the calculated target as per Annex II to Regulation EC 2018/1999. In support of this target, Bulgaria will implement additional production facilities with an emphasis on wind and PV energy. Moreover, in order to achieve target levels, it may consider opting out of tenders for additional capacities for energy from RES considering the market conditions after 2025.

The use of biomass is envisaged across all sectors: electricity energy, heating energy, cooling energy and transport. The envisaged measures for the transport sector will have a significant effect on the development of energy from RES as well as the reduction of greenhouse gas emissions. Specifically, Bulgaria will incentivise the implementation and use of EV and hybrid vehicles in mass, along with private transport, and in large cities it aims to create low emission zones.

In all sectors of energy, heat, cooling and transport, the Bulgarian integrated plan envisages EUR 2 billion of necessary investments in RES-related developments.

During the period between 2020-2030, an increase of at least 2,645 MW of net installed capacity of electricity production facilities using renewable energy is expected. This increase will be achieved by increasing the net installed capacity of PV power plants by 2 174 MW and of wind power plants by 249 MW. The anticipated increase of these types of power plants is related to the quick development of the technologies and a decrease in the investment costs for their construction. An increase is also expected with regard to biomass power plants by 222 MW.

The availability for new electricity production capacities in PV and wind should also replace the current ineffective and intensive carbon emission electricity generating facilities, which should be out of operation by 2025. This will be done in the context of achieving the objectives of energy security, competitiveness and decarbonisation of the energy sector.

Another target which Bulgaria has set in its national energy sector modernisation plan, which will enable further opportunity for RES integration, is the level of interconnectivity of the national electricity system with other Member States. Based on its geographical position and its current system connectivity, further interconnectivity for Bulgaria – both in terms of the physical grid as well as market measures like electricity day-ahead market and intraday market segments of IBEX functioning – is also expected. The achieved market coupling with Greece HEnEx, Romanian OPCOM and other European countries under the 4MMC initiative is also contributing to the integration of Bulgaria into the wider European energy market.

In terms of R&D and innovation, Bulgaria is planning to be actively involved in, among other things, the following projects:

- CROSSBOW – transboundary management of RES for energy storage that will allow for improved flexibility of the energy system as regards renewable energy; and
- FLEXITRANSTORE – integrated platform aimed at increasing the flexibility of data smart grids with facilities for renewable energy storage, which will increase the flexibility of the internal energy market system.

3. Executive Summary-RES Market Status and Development of RES-Electricity Facilities

3.1 Market Overview – Factsheets

- The Bulgarian RES-Electricity market has developed since 2007 with the adoption of the first Act for the Alternative and Renewable Energy Sources and Biofuels (“**AERSB**”) introducing the RES Support Scheme providing for Feed-in Tariffs, long-term PPAs, preferential connection to the grid and buy-out and merit order off-take;
- Further to the adoption of Directive 2009/28/EC on the promotion of the use of energy from renewable sources, Bulgaria has repealed ARAESB and has adopted the Act for Energy from Renewable Energy Sources (“**AERS**”), which transposed the main provisions of the directive that keep the RES support scheme with a fixed Feed-in tariff, mandatory buy-out, long-term PPAs, preferential connection to the grid and merit order dispatch. The AERS also provided for the issuance of guarantees of origin for the RES produced electricity;

- Based on the AERS, Bulgaria also adopted the National RES Plan 2010-2020 outlining the main measures and separation per renewable sources to be introduced in order to reach the threshold of 16% commitment under Directive 2009/28/EC;
- In 2011, AERS was amended and supplemented to reduce the duration of the mandatory buy-out period under the PPAs from 15 to 12 years for wind power plants, and from 25 to 20 years for PV and biomass RES-Electricity Producers. Nevertheless, Bulgaria has experienced a boom in the development, construction and commissioning of approximately 701 MW of wind, 1,047 MW of PV and 2,366 hydro RES projects (including those above 10 MW);
- In December 2013, under its second national RES achievement report, Bulgaria reported to the European Commission that it had achieved sixteen percent (16%) of total energy consumption from RES, which was the country target for 2020. AERS was amended in 2015, considering the Guidelines for State Aid related to environment and energy during the 2014-2020 period, and Regulation No. 251/2014 EC as of 17 June 2014, announcing some measures as compatible with the internal market. Thus, the RES support scheme incentives related to the mandatory buy-out under PPAs on a long-term basis were to be provided only for small energy objects connected to the electricity grid and constructed on facades and roof tops in urbanised areas with an installed capacity of no more than 30 KW. Nevertheless, RES-Electricity Producers with ensured PPAs continued to enjoy the 2011 RES support scheme;
- In 2016, as part of the liberalisation process, the organised electricity power exchange IBEX was introduced with its day-ahead and intraday segments, as well as centralised market on bilateral contracts;
- In 2018, 2019 and 2020, Bulgaria introduced amendments to the AERS and the Energy Act, by which it abolished the 2011 RES support scheme for projects with an installed capacity above 500 KW, and introduced a new support scheme. Under the new regime, all RES-Electricity produced by RES power plants with an installed capacity above 500 KW are subject to sale on the liberalised market through the IBEX segments. For the duration of the terminated PPAs, RES-Electricity Producers are to be compensated for the difference between the abolished Feed-in tariffs and the achieved power exchange prices via mark-ups (premiums) paid under contracts for compensation, with premiums to be concluded with the Fund for Security of the Energy System;
- Under the Integrated National Plan for Energy and Climate 2021-2030, Bulgaria has committed to achieving twenty-seven point zero nine percent (27.09%) of RES-Electricity as part of final energy consumption by 2030;

- Since November 2019, Bulgaria, Croatia, the Czech Republic, Hungary, Poland Romania and Slovenia have successfully linked intraday markets with fourteen (14) countries active in operational integrated electricity markets.
- Through several amendments to the Energy Act, Bulgaria has introduced several exemptions from the general legal framework for RES producers, namely: (i) RES-Electricity facilities (except for those with an installed capacity below 30 kW), which entered into operation after 1 January 2019, may sell the electricity they produce outside of IBEX (i.e. under OTC contracts with traders or end consumers); (ii) end consumers and traders that buy electricity under OTC contracts from RES producers (except for those with an installed capacity below 30 kW), which have power plants that entered into operation after 1 October 2019, are not required to pay the so-called “obligations towards society price” that is set annually by the energy regulator EWRC with regard to the purchase of electricity; and (iii) RES-Electricity facilities (except for those with an installed capacity below 30 kW), which entered into operation after 1 January 2021, are not required to pay the FSES a 5% fee on the revenues from the electricity they produce.

3.2 RES Market Status, Permitting, Grid Connection, Licensing of RES-Electricity facilities in Bulgaria

General Market Data

RES Targets 2020 under AERS (out of the final consumption of energy)	Sixteen percent (16%), reported achieved in 2013.
New targets under Clean Energy Package and Integrated National Plan Energy and Climate 2021- 2030	Twenty-seven point zero nine percent (27.09%)

Overall installed General Capacity including RES (overall production)	In 2022, overall energy production from the overall installed capacity in the amount of 10,592 MW was 45,3 TWh).
RES Installed capacity by technology	<ul style="list-style-type: none"> ○ Hydro including small – 1,732 ○ Biomass – 72 MW; ○ Wind power – 720 MW; ○ PV – 2,206 MW.
RES incentives	
Beneficiaries of RES Support Scheme	<p>RES-Electricity facilities with an installed capacity of up to 500 kW and connection to the grid prior to 2016 – Feed-in Tariff until the duration of the respective long term PPAs;</p> <p>RES-Electricity facilities with an installed capacity of up to 30 KW PV (rooftop or façade mounted systems in urban territories) or biomass – Feed in Tariff determined by EWRC annually.</p>
Priority dispatch under the Merit Order	RES-Electricity facilities receive priority access to the electricity grid and the injection of the amount of energy into the grid, up to the net specific generation amount of energy as set by EWRC in 2015 considering the specific technologies.
Other incentives	<ul style="list-style-type: none"> ○ RES-Electricity facilities with an installed capacity below 500 KW and connected to the grid prior to 2016 – compensation with premiums under contracts with FSES; ○ RES-Electricity facilities (except for those with an installed capacity below 30 kW), which entered into operation after 1 January 2019, may sell the electricity they produce outside of IBEX (i.e. under OTC contracts with traders or end consumers); ○ RES-Electricity facilities (except for those with an installed capacity below 30 kW), which entered into operation after 1 January 2021, are not required to pay the FSES a 5% fee on the revenues from the electricity they produce;

- Guarantees for origin of the RES produced energy- [still no market for trade though]. The issuance, transfer and repeal of the guarantees for origin is performed by ASES in conjunction with Standard CEN-EN16325;
- Creation of municipal centres for coordinated and centralised administrative services for the permitting (spatial planning), connection to the grid and issuing of construction permits for RES Electricity facilities within two (2) years as of the submission of an application.

Other conditions

- Licence for commercial exploitation above 20 MW;
- No installed capacity limit, as long as the technical capacity of the grid allows. Introduced option for temporary interconnection scheme until the capacity of the grid is extended, in order to ensure the respective capacity could be connected on a permanent basis;
- Sale of RES-Electricity only via the IBEX platforms (unless dealing with exempted RES Electricity facilities, which entered into operation after 1 January 2019);
- End customers may become a RES self-consumer that may (i) generate and store its own electricity from RES and sell its surplus renewable electricity through PPAs concluded with electricity suppliers and through trading arrangements with partners; (ii) install and operate an electricity storage facility in combination with a RES installation for self-consumption, without being obligated to pay for the use of the grid to connect facilities for the purpose of storing the electricity produced, within their property; and (iii) sell the surplus electricity produced by its installations at freely negotiated prices, as well as under RES support schemes;
- End customer may construct RES energy facilities on the roof and facade structures of buildings connected to the electricity transmission, electricity distribution or closed electricity distribution network, and on real estate adjacent to them in urbanised areas. The energy produced must be used only for self-consumption, and the total installed capacity of the energy projects may be up to twice the amount of the allocated capacity, but no more than 5 MW;

- Possibility to create RES energy communities by end customers (including household customers) without losing their rights or obligations as end customers and without being subject to unreasonable or discriminatory conditions or procedures that would prevent their participation in the renewable energy community. Where enterprises participate, their participation must not be linked to their core commercial or professional activity. Energy communities (i) may produce, consume, store and sell surplus quantities of RES energy; (ii) may share within the renewable energy community the energy produced by RES installations owned by the RES community; and (iii) enjoy non-discriminatory access to all relevant energy markets.
- The development of RES communities shall be promoted by means of: (i) removing unwarranted regulatory and administrative obstacles; (ii) applying the requirements of the Energy Act to the sale of energy and other energy services; (iii) ensuring cooperation with the relevant DSO and the heat TSO for the transmission of energy in the community; (iv) the competent authorities applying fair, proportionate and transparent administrative procedures, including registration and licensing, also by ensuring that regulated prices for network services are applied to all network users, which should contribute in an adequate, fair and balanced manner to the allocation of the total costs of the system, in accordance with a transparent cost-benefit analysis of the allocated energy resources; (v) granting non-discriminatory treatment with regard to their activities, rights and obligations as end consumers, producers, suppliers, DSOs or other market participants; (vi) granting accessibility to all customers for participation in RES communities, including low-income households or vulnerable customers; (vii) facilitating access to financing and information; (viii) providing regulatory support and capacity building assistance to public authorities in facilitating and establishing RES communities and in facilitating their direct participation; and (ix) introducing rules to ensure equal and non-discriminatory treatment of consumers participating in the RES community.

Grid connection specifics

Approvals

- Connection to the grid is subject to a reasoned statement of opinion on the connection conditions issued by the respective grid operator and depending on the installed capacity;
- Grid operator is responsible for issuing the reasoned statement of opinion and for further conclusion of preliminary and final connection contract with the applicant. RES Energy facilities with installed capacity below 1 MW, to be constructed on roof-tops and facade structures of buildings connected to the electricity distribution or closed electricity distribution network and on real estate adjacent to them in urbanised areas, the reasoned statements should be issued within shorter terms: (i) when issued to end consumers for own consumption - 15 days; (ii) with installed capacity up to 30 kW - 20 days; (iii) installed capacity of 30 kW to 1 MW – 40. The reasoned statements are valid for 3 months within which the RES producer has to apply for the conclusion of a preliminary connection agreement with the respective grid operator;
- Upon issuance of a reasoned statement, the RES Electricity Producer is required to pay a cash deposit or provide a bank guarantee to the Grid operator in the amount of EUR 25,566 for each MW of envisaged installed capacity. Failure to provide this guarantee invalidates the statement. The provided security is collateral for the fulfilment of the obligations of the RES producer in relation to their obligations under the preliminary connection agreement and the connection contract.
- TSO needs to include any new capacity in the 10-year grid development plan that is updated annually and approved by EWRC;
- DSOs need to coordinate the required connection capacity by the TSO prior to granting a positive reasoned statement of opinion on the connection conditions;
- RES Electricity Producers may be connected under a temporary scheme until the TSO/DSO extends the respective electricity grid capacity allowing the connection of the requested installed capacity.

<p>Permitting</p> <p>Timing: depending on the installed capacity and connection to the grid, an investor may obtain the necessary approvals in approximately 2 years.</p>	<ul style="list-style-type: none"> ○ Ecological Assessment, Environmental Impact Assessment and/or Appropriate Assessment; ○ Elaboration and approval of detailed zoning plan(s) for the land plots where the RES-Electricity plant will be constructed; and (ii) parcelling plans for the power and communication lines necessary for the connection of the RES-Electricity plant to the respective electricity grid; ○ The detailed zoning plans and the parcelling plans must be coordinated and reflected in the master plans of the municipalities where they are located; ○ Based on the zoning plan, a change of land designation of the land plots where the project is to be constructed should be obtained by the agricultural land commission; ○ Elaboration of design visa and investment design are required for obtaining a building permit for civil works and connection facilities to the grid; ○ Preliminary connection agreement and connection contract with the grid operator; ○ RES-Electricity capacity and related connection works' testing, commissioning and entry into operation; ○ Provision of access to the grid by the grid operator and conclusion of access to the grid contract.
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Licensing

<p>Procedure</p>	<p>○ Licence issued by EWRC for generation of electricity activity from an RES-Electricity facility, to be granted prior to construction or upon construction for projects above 20 MW.</p>
<p>Duration of administrative procedure</p>	<p>Within four months from the submission of the complete documentation.</p>
<p>Licence's validity</p>	<p>Thirty-five (35) years with a possibility for extension.</p>

4. Key changes to the RES Support Scheme since 2015

Since 2015, the Bulgarian legal framework and the RES Support Scheme have experienced several changes via bills for amendments and supplementations of the AERS and the Energy Act as follows:

4.1 Introduction of the Net Specific Generation of Electricity threshold for mandatory buy-out

Prior to July 2015, the public provider National Electricity Company EAD (“NEK”) and the end suppliers (Energopro Sales AD, CEZ Electro AD and EVN Bulgaria Electricity distribution EAD, “ES”) were obligated to purchase the entirety of RES-Electricity generated by RES-Electricity plants (except from hydro power plants with an installed capacity above 10 MW). After July 2015, with the Bill for amendment and supplementation to the Energy Act and the AERS, the obligation for mandatory buy-out was limited to the amount of “net specific generation of electricity” (“NSGE”) set out for the specific type of power plant. The NSGE is “the average annual electric power generation by 1 KW of installed capacity”, in accordance with the EWRC decision fixing preferential prices after deduction of the RES-Electricity plant’s own needs. The NSGE for existing power plants has been set out in Decision SP-1/31.07.2015 of the EWRC and was to apply until the end of the mandatory off-take period for those power plants. Once the NSGE is reached, RES-Electricity Producers may sell the remaining amounts of generated electricity either (i) on the liberalised market at freely negotiated prices; or (ii) respectively to the incumbent National Electricity Company EAD or the licensed End Suppliers at the price for “surplus” electricity paid on the balancing market.

4.2 Change in RES Support scheme after November 2018 for RES-Electricity Producers with installed capacity above 500 kW

In 2018, the RES support scheme introduced by AERS in 2011 for mandatory a buy-out under preferential prices (Feed-in-Tariffs) was abolished and a new support scheme replaced it. Under the new support scheme, the RES-Electricity Producers sell the produced electricity at the Bulgarian power exchange operated by IBEX at free market prices.

For the difference between the abolished, long-term mandatory Feed-in Tariff and the achieved market price at IBEX, the RES-Electricity Producers are compensated by way of premiums. The premiums are paid by the Fund for Security of the Energy System (“FSES”) which substitutes for the old off-takers – the incumbent NEK and the licensed end-suppliers. FSES is not obligated to provide premiums if a RES Producer: (i) has failed to conclude contracts for any sale of electricity at IBEX at freely negotiated prices; or (ii) has not transferred the monthly guarantees for origin.

4.3 Conclusion of Contracts for Compensation with Premiums by RES Producers above 500 kW with FSES

Each RES Producer with an installed capacity above 500 kW should have signed Contracts for Compensation with Premium (CfCPs) with FSES and existing long-term PPAs with NEK and end-suppliers should be terminated upon their conclusion. The duration of the CfCPs with FSES lasts until the term of the terminated long-term PPAs, (e.g. 12 or 15 years for wind RES Producers, or 20 years for PV or biomass RES Producers).

With regard to electricity sold on the IBEX, RES Producers have the right to claim payment of an additional amount defined as a premium under the CfCPs from the FSES. The payment of premiums by FSES was conditional upon transfer of Guarantees for origin for the produced RES-Electricity issued by the Sustainable Energy Development Agency.

4.4 EWRC determines Premiums and Forecast Market Prices annually

In 2018, EWRC’s powers were extended to adopt an Ordinance for determination of annual premiums for the FSES to pay to RES producers with an installed capacity \geq 500 kW and the Methodology for the setting of forecasted market prices (“FMP”).

Premiums are a fixed amount set by EWRC each year by 30 June, and are calculated as the difference between FMPs for the respective group of RES-Electricity Producers and the applicable FiTs under the abolished 2011 RES scheme.

The FMPs are also set by the EWRC each year by 30 June, based upon its methodology as a weighted average price for the previous 12-month period for electricity generated from solar, wind hydro (up to 10 MW), biomass and other RES-Electricity Producers.

4.5 RES-Electricity Producers above 500 kW sell electricity at IBEX and conclude CfCPs with FSES

RES-Electricity Producers with an installed capacity above 500 kW have also been excluded from the 2011 RES support scheme and have concluded CfCPs with FSES, in order to be able to receive compensation with premiums for the produced electricity sold at IBEX. Accordingly, with the conclusion of CfCPs, their long-term PPAs were terminated.

4.6 Amendments seeking to promote RES without state financial support

Amendments to the energy legislation were also introduced to promote RES generation without any form of state financial support. Among others things, the amendments concern the following:

- Smaller RES-Electricity Producers (under 30 kW of installed capacity) report to the FSES only once per year instead of every month as do the rest of the RES Producers;
- RES-Electricity Producers not connected to the electricity transmission or distribution network, but using the generated electricity for own consumption, do not pay the “obligations towards society price”;
- Opportunity for the installation of smart metering devices to replace the existing commercial metering devices for clients with a capacity of 10 kW and above, aiming to incentivise consumers to invest in their own PV plants, so as to be excluded from the obligation to pay the “obligations towards society price”.

4.7 Amendments to the AERS law in 2023 transposing the RES III Directive

Amendments to the energy legislation were also introduced to transpose the provisions of Regulation 2018/1999 of the EC and Directive 2022/2018 (RES III Directive). Among other matters, the amendments concern:

- General incentives - promotion of production and consumption of electricity, heating and cooling from RESM; the production and consumption of biogas and green hydrogen and the production and consumption of RES in transport, renewable liquid and gaseous transport fuels of non-biological origin and recycled fuels in transport, by way of: (i) regulation of the rights and obligations of the authorities of the executive and local governments with regard to implementing the policy for promotion of the use of biofuels and green hydrogen; (ii) introduction of obligations for the authorities of the executive involving the initiation and implementation of related measures; (iii) introducing support schemes in relation to the development of the electricity transmission and distribution grids, including interconnectors, of intelligent networks, as well as the construction of control and storage facilities related to the safe operation of the electricity system; (iv) introducing support schemes for the construction and development of heating transmission, gas transmission, and gas distribution networks, including interconnectors, where this is economically justified; (v) introducing support schemes for the production of energy from renewable sources for own consumption; (vi) establishment of a National Information System for the potential production and consumption of energy from RES; (vii) introducing mechanisms in support of scientific research and development; and (viii) joint implementation of measures for use of energy from renewable sources and measures for the introduction of energy efficiency enhancement technologies;
- **Requirements towards authorities** – (i) The Council of Ministers *inter alia* adopts a plan for the identification of priority areas for the development of sites aimed at the production of electricity from wind energy, developed jointly by the Minister of Environment and Water, the Minister of Energy, the Minister of Regional Development and Public Works, the Minister of Transport and Communications and the Minister of Agriculture and Food, (ii) the Minister of Energy *inter alia*, within a period of no less than 5 years, will prepare an assessment of the effectiveness of support schemes for RES electricity and their impact on different groups of consumers and on investment, (iii) EWRC

inter alia will assess the regulatory and administrative obstacles to long-term RES PPAs and take measures to remove unjustified obstacles and facilitate the implementation of such agreements; (iv) the executive director of ASED *inter alia* will prepare a manual of procedures for the construction or reconstruction of RES energy projects and facilities in compliance with the requirements of the Spatial Development Act, the Energy Act, the RES Act, the Environmental Protection Act, the Biological Diversity Act and the statutory instruments of secondary legislation implementing these, and shall publish the manual on the ASED website and provide it to municipality mayors, (v) The Municipal councils and Mayors *inter alia* (a) will develop and adopt 10-year programmes promoting the use of RES in line with the Integrated Energy and Climate Plan of the Republic of Bulgaria and (b) establish administrative service centres, which, upon a request by users of administrative services, shall provide guidance and information on the procedures for the construction, reconstruction or rehabilitation of RES projects and facilities;

- **Introduction and forming of RES communities** - End customers, including household customers, may participate in a RES community without losing their rights or obligations as end customers, and without being subject to unreasonable or discriminatory conditions or procedures that would prevent their participation in such a RES community. RES communities: (i) may produce, consume, store and sell surplus quantities of RES energy as an equal participant in the energy markets under the conditions set out in the Energy Act, including through PPAs; (ii) may share within the RES community the RES energy produced by their installations; and (iii) shall have non-discriminatory access to all relevant energy markets;
- **TSO and DSO new requirements** – TSO and DSOs shall establish and maintain electronic public registers of the submitted requests for connection to the respective network, which shall contain up-to-date data on: (i) the connection applications submitted to the relevant network and the requested capacity; (ii) the requests submitted by the DSOs to the TSO for the coordination of applications for connection of RES projects to the respective distribution network and the contracts concluded accordingly between the operators; (iii) the status of the applications submitted (under a consideration procedure, statement of opinion issued, period of validity of the statement of opinion), the preliminary connection agreements and connection contracts concluded and their period of validity and the time limit for connection thereunder; (iv) the technical data for reconstruction of the network and the conditions set for the

connection under the issued statements of opinion, the concluded preliminary connection agreements and the connection contracts; and (v) the available spare capacity for connection at each point of the electricity transmission or distribution network, as reflected in a geographical information system;

- **Guarantees of Origin of RES production** – with respect to the GoOs the following new regulations were introduced *inter alia*: (i) ASED shall also issue GoOs for biogas and green hydrogen; (ii) the GoOs term of validity and possibility for transfer would expire within 18 months of their issuance or transfer to the end consumer; (iii) the GoOs may be transferred separately from the energy, but only once to an end customer; (iv) GoOs may be transferred, to the registry of another Member State or to an end customer in another Member State against payment of a fee. ASED SHALL recognise GoOs issued by a non-Member State, if the European Union has concluded an agreement with that third country for the joint recognition of GoOs issued respectively in the European Union, and by comparable systems in that third country, and only in cases of direct import or export of energy.
- Introduction of new definitions for *inter alia* (i) biogas, (ii) green hydrogen, (iii) biofuels, liquid fuels from biomass and gaseous and hard fuels with low risk of indirect impacts in land use (iv) energy from the environment, (iv) residual heat and cold, (v) PPAs (vi) Geothermal resources and their types (deep, shallow, hydro), (vii) Jointly acting renewables self-consumers (viii) residual energy mix (ix) RES community and (x) consumer of own Res production.

5. Significant and/or expected changes in 2024

5.1 New RES-Electricity share in Bulgaria's total end consumption

Bulgarian authorities will adopt further changes to the primary and secondary legislation related to the transposition of the Clean Energy Package Directives and in particular the Directive on common rules for the internal market for electricity.

5.2 National Energy Strategy 2020-2030

The Bulgarian energy strategy for 2010-2020 has expired. Thus, Bulgaria must update its strategy, considering the Clean Energy Package and the commitments under the Integrated National Plan for Energy and Climate 2021-2030.

6. Overview of the Technical Innovations in Electricity Storage and Applicability in Bulgaria of such Storage Technologies

As more RES-Electricity will be supplied to the grids, balancing the system and the flexibility of demand -supply requirements will become a greater challenge for grid operators. The use of modern technologies like smart grids, decentralised production, own production, demand response, active consumers, etc., offer practical solutions that will support grid operators. Furthermore, with the help of energy storage technologies and solutions, it is possible to address and solve many complex challenges related to generation, frequency regulation, grid balancing including secondary and tertiary reserve, optimisation of consumption profiles and portfolio, etc., related to RES-Electricity. Thus, energy storage is increasingly seen as a key cornerstone and enabler of the transition to RES-Electricity worldwide.

Bulgaria has set its goal to progressively replace the regulatory and commercial obstacles for consumers to use, store, and sell the energy produced by them to the market and to participate in the market while providing flexibility to the system via energy storage and optimisation of consumption.

By way of amendments and supplementations introduced into the Energy Act in 2023, certain requirements and regulations were added for the market participants and authorities with regard to energy storage, namely *inter alia*:

- **With regard to energy regulator EWRC** – (i) EWRC is authorised to require that TSO/DSOs carry out an assessment of the energy efficiency potential of the networks concerned, through the reduction of technological losses. This assessment must include an analysis of transmission, distribution, load management, effective network functioning and access possibilities for decentralised energy generators and electricity storage facilities; and (ii) EWRC can issue licenses to electricity storage operators unless storage facilities are separate facilities (e.g. outside an electricity production facility);

- **With regards to energy (electricity) storage facilities and their operators (ESFO) –**
 - i. ESFOs shall: (a) store their own and/or purchased electricity and enter into transactions in electricity and/or the provision of ancillary services; (b) operate, maintain and develop secure, reliable and efficient electricity storage facilities under market conditions; and (c) provide the TSO/DSOs with information to ensure that the storage of electricity is carried out in a manner compatible with the safe and efficient operation and management of the electricity transmission and/or electricity distribution network;
 - ii. Electricity storage facilities shall be granted equal access to the electricity transmission network and the electricity distribution networks, as well as equal access to the electricity market and capacity balancing mechanisms;
 - iii. ESFOs shall be obligated to conclude contracts for access with the TSO/DSO, providing for the rights and obligations of the parties in relation to dispatching and providing additional services;
 - iv. ESFOs shall owe a price, as determined by EWRC, as well as prices for transmission through and access to the respective network for producers and end customers, which shall be determined by EWRC for the difference between the amount of electricity purchased from electricity market participants and the amount of electricity fed back into the relevant network;
 - v. an ESFO may conclude transactions for the sale/purchase of electricity at freely negotiated prices in segments such as IBEX or OTC;
 - vi. ESFOs may provide ancillary services to the TSO;
 - vii. ESFOs with a provided or installed capacity over 50 kW, may request the TSO/DSO to replace the commercial metering device with one that includes remote reading of metering data by 15- min settlement period. Said replacement should be done within 30 days from receipt of the request and subsequent to payment of the value of the commercial metering device and the expenses for the replacement;

- viii. several definitions were introduced into the Energy Act in 2023, namely:
- (a) Electricity storage²,
 - (b) Electricity storage facility³ and
 - (c) Energy sites with integrated activity⁴.

Moreover, Bulgaria has planned to develop several projects for the storage of electricity, aiming to: (i) ensure balance and flexibility in the system; (ii) improve Bulgaria's status as an energy exporter; and (iii) ensure the cross-border flexibility of the system. These initiatives will facilitate further development of RES-Electricity projects and their integration into the national electricity system, considering the fluctuating production profiles of these RES sources. Therefore, Bulgaria anticipates the following projects:

- Rehabilitation of the malfunctioning turbine and further increase of the operation capacity of PAHPP Chaira, by means of the construction of the Yadenica dam, in order to optimise the structure of generation capacities;
- Investment in batteries for frequency regulation under the EC Resilience and Sustainability Plan;
- Incentivising the use of new RES Facilities in combination with local electricity storage facilities, considering the appropriate technological solution for the respective project (in total approximately 200 MW).

Accumulator-based energy storage systems are highly sought after in Europe, as they provide utility companies with load balancing services on the power grid with an extremely fast response time.

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- 2 A postponement of the ultimate use of the electricity within the electricity system until a time that is later than its generation or conversion into a form of energy that can be stored, the storage of that energy and its subsequent conversion back into electrical energy or use in another energy medium.
 - 3 A facility within the electricity system in which energy is stored, excluding energy storage facilities for the self-consumption of producers or end customers, which does not feed the stored electricity back into the electricity transmission or distribution network. The electrochemical facilities for the storage of electricity shall be movable objects within the meaning of the [Spatial Development Act](#).
 - 4 A group of energy sites comprising at least two electricity generation sites with an installed capacity exceeding 5 MW using different technologies, or at least such a site and an electricity storage/hydrogen production facility, which are not independently connected to the electricity transmission or distribution network, but form a system aimed at making optimal use of the technological capacities of the respective sites and of the transmission network provided

7. Support scheme for cogeneration

High-efficiency cogeneration of heat and power (“CHP”) systems that inject electricity into the national grid receive operating support provided that the electricity is produced from high-efficiency cogeneration, as defined in the Energy Act and the Community guidelines on state aid for environmental protection.

Bulgaria has abolished the support scheme for the promotion of high-efficiency cogeneration with an installed capacity above 500 kW, and introduced a new support scheme similar to that for RES production by way of compensation through premiums by FSES.

The high-efficiency cogeneration capacities that sell their produced electricity at IBEX receive compensation by means of premiums from FSES upon the issuance of certificates of origin issued by EWRC and transferred to FSES. The highly efficient cogeneration capacities installed in Bulgaria amount to 1,690 MW.

The support scheme for compensation with premiums under CfCPs is applicable until the period of expiry of the terminated PPAs.

The level of the bonus received by producers for each MWh generated from high efficiency cogeneration capacities and delivered into the grid is set annually by EWRC.

Authors:



Anna Rizova

Partner

E anna.rizova@wolftheiss.com

T +359 2 8613 700



Radoslav Mikov

Partner

E radoslav.mikov@wolftheiss.com

T +359 2 8613719

Croatia

Country General Information

Capital: Zagreb

Location: part of both Central and Southeast Europe, bordered by Hungary in the north, Slovenia to the west, Bosnia and Herzegovina and Serbia to the east, Montenegro and the Adriatic Sea to the south, Croatia lies mostly between latitudes 42° and 47° N and longitudes 13° and 20° E.

Surface: Croatia covers an area of 56,594 km². The small, crescent-shaped country is highly diverse geographically.

Population: 3,871,833

Climate: Classified as moderately warm and rainy continental but can be divided into three (3) separate climate regions: continental, Alpine and Mediterranean. Croatia has four (4) distinct seasons.

Resources: Natural resources that are found in the country in quantities significant enough for production include oil, coal, bauxite, low-grade iron ore, calcium, gypsum, natural asphalt, silica, mica, clays, salt, and hydropower. Karst topography makes up about half of Croatia and is especially prominent in the Dinaric Alps.

Electricity Grid: The total length of the distribution electricity grid is 140,065 km, with 26,567 transformer substations. The system is networked with 4,519 km of lines at 35(30) kV of voltage, 37,625 km of lines at 10(20) kV of voltage, 62,083 km of lines at 0.4 kV of voltage and about 35,841 km of residential connections.

Electricity Transmission, Distribution and Supply: Croatia has adopted the ITO market unbundling model, whereby the Croatian Transmission System Operator (HOPS) is separate from the Croatian Electric Power Company (HEP Group). HOPS owns the transmission network. The distribution of electricity is provided by the Croatian Distribution System Operator (HEP-DSO). The electricity supply is provided by seven (7) providers.

Official Language(s): Croatian

EU Member: since 1 July 2013.

NATO Member: since 2009.

United Nations Member: since 1992.

Currency: As of 1 January 2023, pursuant to the Law on the Introduction of the Euro as the Official Currency in the Republic of Croatia, Croatia adopted the euro and became the 20th member of the euro area. Prior to this change, Croatia's official currency was the Croatian Kuna (HRK) between 1994 and 2023.

Schengen: As of 1 January 2023, Croatia became the 27th country of the Schengen area. Starting from that date, border and customs checks were abolished at the borders between Croatia and other Schengen member states for people crossing the borders by road, rail or water. Screening of those traveling by plane ceased from 26 March 2023.

Political System, Administrative Organisation and Economy: Politics in Croatia are defined by a parliamentary, representative democratic republic framework, where the Prime Minister of Croatia is the head of government in a multi-party system. The Head of State is the President. Below the national level, Croatia is divided into twenty (20) administrative counties called županije. In addition to the capital city of Zagreb, which is considered separately. Croatia has an economy predominantly based on services, with tourism as one of the pillars of the service industry subsector.

1. Defined Terms for the Main Permits required for RES-Electricity Generation Facilities

Building Permit	<p>Administrative deed issued by the Ministry of Physical Planning, Construction and State Assets (“MPCA”) or local authorities, depending on the type of RES Facility.</p> <p>The construction of a project may begin only after the Building Permit (<i>građevinska dozvola</i>) becomes final. As a partial exception from this rule, a Building Permit is not required for the construction of buildings and equipment connected to the electrical grid, which are designed for the generation of electricity with an installed capacity of up to 10 MW. This includes solar power plants or agrosolar power plants within the meaning of the law on spatial planning, for which ownership relations on the land where the facility will be built are resolved (meaning that there are no unresolved disputes and the ownership relations in practice correspond to what is registered in the land registry / cadastre) (“Simple Power Plants”).</p> <p>The Building Permit expires if the construction of the RES Facility does not commence within three (3) years from the date on which it became final. However, the validity may be extended for an additional three (3) year period if the conditions for construction defined within the spatial plan and Location Permit remain unchanged.</p>
CHP	High-Efficiency Cogeneration
CROPEX	Croatian Power Exchange Ltd.
Decision on the Status of an Eligible Producer	<p>The deed issued by the Croatian Energy Regulatory Agency (“HERA”), which is considered the final step in the permit collection process.</p> <p>Exceptionally, for Simple Power Plants, the decision is not issued; the status of an eligible producer is granted on the basis of evidence that the RES Facility has acquired the right to a permanent connection to the electricity grid. However, if a Simple Power Plant wishes to participate in the electricity Guarantees of Origin (“GO”), it must hold the Decision on the Status of an Eligible Producer.</p>

Electricity Approval	Administrative deed issued by the Croatian Transmission System Operator (“ HOPS ”)/Croatian Distribution System Operator (“ HEP-DSO ”). Electricity Approval (<i>elektro-energetska suglasnost</i>) sets out the technical requirements and financial obligations for the connection to the power grid and for its use.
Energy Licence	Administrative deed issued by HERA (<i>dozvola za obavljanje energetske djelatnosti</i>) allowing its beneficiary to perform one of the following activities involving electricity on the energy market: generation/transmission/distribution/supply/trade of electricity, aggregation, energy storage, organisation of the electricity market, organisation of the citizen energy community and/or activities of the closed distribution system operator.
Energy Permit	Administrative deed issued by the Ministry of Economy and Sustainable Development (“ MESD ”), representing the authorisation to build and run facilities using renewable energy or cogeneration. An Energy Permit (<i>energetsko odobrenje</i>) is required for the construction of RES Facilities, except for Simple Power Plants. An Energy Permit is considered proof of a legal interest in obtaining a Location Permit and a Building Permit. When the Energy Permit is issued through a public tender, it is awarded to the bidder whose proposal offers the greatest advantages.
Environmental Impact Assessment	<p>Assessment validated by MESD, seeking to minimise from the earliest phase of a project, the negative effects to the environment and maximise environmental quality.</p> <p>Either an Environmental Impact Assessment (“EIA”) or an Assessment on the Need to conduct the EIA (“Need Assessment”) must be carried out in the preparatory phase of an intended project and prior to issuance of the Location Permit.</p> <p>Performing an EIA is mandatory for facilities capable of generating more than 100 MW of electricity (more than 20 MW for wind power plants). For solar stand-alone, wind and hydro power plants, and other RES Facilities capable of generating more than 10 MW, a Need Assessment is performed. A full EIA will then be performed only if the MESD decides that it is necessary.</p>

Feed-in Tariff	<p>A support mechanism available for RES Facilities under “old” regulations until the expiry of the originally contracted term. During such term, RES-Electricity Producers are not entitled to participate in the new system incentives under Guaranteed off-take price or Market Premium.</p> <p>There are two (2) concurrent Feed-in Tariffs (i) the tariff system applying to those power plants with off-take agreements in place on or before 31 December 2013; and (ii) the tariff system applying to those power plants with off-take contracts granted from 1 January 2014.</p>
Grid Connection Agreement	<p>Administrative deed issued by the grid operator to connect a new generating facility or to modify or replace the connection of an already generating facility to the grid.</p>
Grid Usage Agreement	<p>Administrative deed issued by the grid operator that defines when electricity will start entering the transmission system and the technical requirements for using the grid.</p>
Guaranteed Off-Take Price	<p>A support mechanism provided to eligible producers of RES-Electricity (“RES-Electricity Producers”) which have been selected as the best bidders in the tender process. The selected candidates are entitled to conclude the agreement at a guaranteed purchase price with the Croatian Energy Market Operator (“HROTE”) and sell electricity to HROTE at the purchase price achieved in the tender, which is paid according to the delivered net RES-Electricity. The Guaranteed Off-Take Price is not available to those RES-Electricity Producers benefiting from the Feed-In Tariff.</p>
Location Permit	<p>Administrative deed issued by the MPCA or the local authorities, depending on the type of RES Facility and the planned construction/reconstruction location.</p> <p>To obtain a Location Permit (<i>lokacijska dozvola</i>), the applicant must provide a concept design to the competent authority, which should comply with the special requirements prescribed by technical and safety laws and other regulations. If an EIA is required for a power plant, it must be obtained prior to application for the issuance of the Location Permit.</p>

Market Premium	A support mechanism pursuant to which RES-Electricity Producers receive premium support based on the market premium agreement concluded with HROTE. The amount of Market Premium is paid for delivered net RES-Electricity to HROTE and is determined for a specific type of RES Facility, based on the difference between the market price of electricity and the reference value of electricity offered in the public tender. Market Premium is not available to those RES-Electricity Producers benefiting from the Feed-In Tariff.
RES	Renewable Energy Sources
RES Act 2021	Renewable Energy Sources and High-Efficiency Cogeneration Act (Official Gazette no. 138/2021, 83/2023) currently in force.
RES-Electricity	Electricity obtained from renewable energy sources such as wind, solar, aerothermal, geothermal, hydrothermal and oceanic waves, hydraulic, biomass and biogas.
RES Facility	A generation facility using renewable energy sources such as wind, solar, aerothermal, geothermal, hydrothermal and oceanic waves, hydraulic, biomass and biogas to generate electricity.
RES Support Scheme	State-aid scheme aimed at supporting RES-Electricity based on either (i) the Guaranteed off-take price; or (ii) Market Premium. However, (iii) the Feed-in Tariff accredited until 31 December 2016 remains eligible for RES Facilities with agreements concluded under Feed-in Tariff until their expiry.

Usage Permit	<p>Administrative deed issued by the MPCA or other authorised authority, depending on the capacity of a RES Facility.</p> <p>After finalising the construction of a RES Facility, the technical inspection will be carried out, in order to examine if all the conditions set out in the Building Permit are met. The MPCA or another competent authority will issue a Usage Permit only if it determines that the RES Facility is compliant with the Building Permit. With the Usage Permit, a RES Facility can legally commence its operations.</p>
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2. Envisaged need of investments in Croatia

The RES Act 2021 entered into force on 23 December 2021. Subsequent amendments to the Act were introduced in July 2023. Following its enactment, several bylaws were established to provide more detailed provisions for the implementation of the RES Act 2021. Notably, key regulations, such as those pertaining to utilisation and encouraging electricity production from RES and CHP, were enacted. However, certain bylaws established under the prior RES Act 2016 remain applicable.

For the period until 2030, certain activities aimed at increasing the safety and flexibility of the electricity system are expected. These special efforts are anticipated to focus on the development of reversible hydropower plants and battery storage, and on the organisation of market balance. These achievements will allow electricity to be accumulated when it is cheaper and then sold at a better price when needed. The storage of energy should establish a better integration of variable and intermittent renewable energy sources into the grid. Moreover, further improvements in the software tools responsible for precise scheming of the electricity production should mitigate the risk of imbalances in the system caused by intermittency.

Additionally, better integration is planned with further investments in the design of the electricity market, in which intraday trading should ultimately be approximated to real-time trading. Balancing real-time production and consumption should bring significant stability to the variable nature of renewable energy, in which the levels of supply and demand are often not coherent.

Further advancements in the development of the RES system are anticipated upon the full implementation of revisions to the EU directives within the Clean Energy for all Europeans Package. Currently, the implementation is pending for the revised Energy Efficiency Directive (EU/2023/1791)¹, which took effect on 10 October 2023, and the revisited Renewable Energy Directive (EU/2023/2413), commonly referred to as RED III², effective since 20 November 2023. RED III mandates an increase in the overall EU RES target from 32% to 42,5%, in order to significantly accelerate the current pace of deployment of renewable energy and phase-out the European Union's dependence on Russia.

3. Executive Summary-RES Market Status and Development of RES Facilities

3.1 Market Overview – Factsheets

3.1.1 Support scheme

- In 2001, Croatia adopted a set of new energy-related laws and regulations, harmonising its energy market with the EU legislation. Amendments followed in 2004, with the implementation of the common rules for internal market of electricity;
- The Croatian RES-Electricity market developed in 2007, with the Governmental Tariff System for Generation of Electricity from Renewable Energy Sources and Cogeneration entering into force. The regulation provided incentivised prices of electricity paid to the eligible producers by HROTE. Feed-in Tariff unit prices were determined according to the type of power plant (initial distinctive capacity was 1 MW) and the source used for generation, multiplied by the correction factor according to the statutory formula;
- The incentive prices obtained under the Feed-in Tariff were granted until the end of the contracted term, which was usually fourteen (14) years;

1 Directive (EU) 2023/1791 of the European Parliament and of the Council of 13 September 2023 on energy efficiency and amending Regulation (EU) 2023/955)

2 Directive (EU) 2023/2413 of the European Parliament and of the Council of 18 October 2023 amending Directive (EU) 2018/2001, Regulation (EU) 2018/1999 and Directive 98/70/EC as regards the promotion of energy from renewable sources, and repealing Council Directive (EU) 2015/652

- In 2016, Croatia introduced a new RES-Electricity promotion scheme: (i) Guaranteed off-take price, initially available for RES-Electricity Producers with facilities having a capacity of up to 30 KW (extended in 2018 to 500 KW); and (ii) Market Premium, available for all RES-Electricity Producers. Existing power plants continued to receive incentives based upon the Feed-in Tariff;
- In 2019, a regulation providing for the selection of candidates for the RES-Support Scheme in public tenders entered into force. This regulation allowed (i) RES-Electricity Producers with a capacity of up to 500 KW, who win a tender, to be awarded a Guaranteed off-take price with HROTE whereby the entire output produced in a RES Facility will be purchased at the determined price; and (ii) RES-Electricity Producers with a larger capacity (however there is no limitation; small-capacity producers may also apply) to compete in a public tender to be awarded the Market Premium. The participants selected as having the best bids in the public tender are entitled to sell electricity on the open market and are awarded the allotted Market Premium to make up the difference between the tender price and the market price;
- By July 2020, Croatia had adopted the package of secondary legislation that was necessary to put the legislative scheme into practice, the package included: (i) Regulation on quotas to encourage the generation of electricity from renewable energy sources and high-efficiency cogeneration, (ii) Decision to amend the Decision on the fee for renewable energy sources and high-efficiency cogeneration, (iii) Regulation on the criteria for payment of the reduced fee for renewable energy sources and high-efficiency cogeneration, and (iv) Regulation on the amendments to the Regulation on the support of electricity from renewable energy sources and high-efficiency cogeneration;
- In September 2020, HROTE published the first auction to award the Guaranteed off-take price and the Market Premium incentive. The auction for the Guaranteed off-take price was offered to small solar power plants (aggregate quota of 50 MW), small hydropower plants (aggregate quota of 9 MW), small biogas power plants (aggregate quota of 7 MW) and small biomass power plants (aggregate quota of 6 MW). The Market Premium was offered exclusively to biomass and biogas power plants with an installed capacity of more than 500 KW and up to 2 MW (aggregate quota of 8 MW for each);
- On 8 December 2021, the Croatian parliament passed the new RES Act 2021, which entered into force on 23 December 2021. The RES Act 2021 sets Croatia's renewable energy target as a percentage of gross final energy consumption by 2030 36.6%;

- On 9 December 2021, the European Commission approved the Croatian Market Premium programme to support the production of electricity from renewable energy sources. The programme will provide EUR 783 million in grants to the beneficiaries selected in the public tenders and will cover the period from 2021 to 2023. The first public tender under this programme was launched in June 2022;
- The first public tender for the allocation of Market Premium under the RES Act 2021 took place in June and July 2022. The tender offered the following quotas of connected power capacities per category of production facilities: (i) 300,000 kW for Solar power plants with an installed capacity greater than 500 kW, (ii) 4,000 kW for Hydroelectric power plants with an installed capacity greater than 500 kW up to and including 10 MW, (iii) 300,000 kW for Wind power plants with an installed capacity greater than 3 MW, (iv) 8,000 kW for Biomass power plants with an installed capacity greater than 500 kW up to and including 5 MW, (v) 16,000 kW for Biogas power plants with an installed capacity greater than 500 kW up to and including 2 MW and (vi) 10,000 kW for Geothermal power plants with an installed capacity greater than 500 kW. By the end of the tendering, 19 bids were properly submitted within the time fixed. Those bids comprised a volume of 150 MW;
- The year 2022 was marked by numerous contract terminations between eligible producers and HROTE. By year-end, 67 contracts were terminated at the request of the eligible producer who assessed that they could generate higher revenue by selling electricity from their facilities on the electricity market compared to revenues based on contracted incentive prices;
- In July 2023, the newly enacted Ordinance on the Promotion of Electricity Production from Renewable Energy Sources and High-Efficiency Cogeneration prescribed conditions for obtaining, implementing, and terminating entitlements to Market Premiums and Guaranteed Off-Take Price incentives. It also outlined the tendering process for their allocation, including methodologies for calculating maximum reference values and guaranteed purchase prices for electricity;

- In the third quarter of 2023, HROTE conducted market research to assess the interest of potential applicants in the Market Premium tender. Specific questionnaires were distributed for various technologies, including biomass, biogas, hydroelectric, solar, and wind. The inquiries covered a range of aspects, encompassing technology types, project maturity, anticipated participation interest, expected energy generation and revenue, CAPEX, financing conditions, OPEX, and for biomass and biogas, details about the necessary feedstock. The collected data from these questionnaires will be utilised by HROTE in the future to formulate the tender conditions that optimally align with the current market needs and the preferences of potential investors.

3.1.2 Market Developments

- In May 2014, HOPS and HROTE founded the Croatian Power Exchange (CROPEX). The launch of the day-ahead market followed in February 2016, providing a wholesale price of electricity in a transparent, liberalised and competitive trade environment for the first time. The intraday market of electricity was launched in April 2017;
- According to Eurostat data, in 2018 Croatia achieved a 28.02% share of renewable energy in gross final energy consumption and thus exceeded the target of a 20% share of RES-Electricity in gross final energy consumption by 2020;
- On 28 December 2018 Croatia notified its draft National Energy and Climate Plan for 2021-2030 (“NECP”) to the European Commission. Under the NECP, Croatia committed to achieving a 36.4% share of renewable energy in gross final energy consumption by 2030, which was one of the most ambitious goals among EU countries. The NECP was adopted in December 2019;
- Further liberalisation to the RES-Electricity market followed in 2019 with the abandonment of former suppliers’ obligations to take over the total green electricity delivered by RES-Electricity Producers from HROTE, amounting to a 70% share (while HROTE is allowed to offer the remaining 30% on the open market);
- In the last quarter of 2019, the Register of Renewable Energy Sources, Cogeneration and Eligible Producers was established;
- In January 2022, the share of net electricity delivered by eligible producers to HROTE, which suppliers must take over from HROTE, was reduced to 60%.

The remaining 40% is offered on the open market;

- In March 2022, the Croatian Parliament adopted the National Strategy for Hydrogen from 2021 to 2050. This strategy aims to establish 70 MW of hydrogen production capacity by 2030, with a projected increase to 2,750 MW by 2050. The initiative is part of the Croatian strategy to boost hydrogen's share of total energy consumption from the current 0% to 0.2% percent by 2030, and further to 11% percent by 2050;
- The first amendment to the RES Act 2021 followed in July 2023, introducing only minor changes, primarily related to the regulation of self-suppliers of electricity (in Croatian: *korisnik postrojenja za samoopskrbu*). These changes allowed users of self-supply facilities to maintain their status even if they produce more electricity in a calendar year than they consume. Previously, in such cases, they would transition to the category of own consumption (in Croatian: *krajnji kupac s vlastitom proizvodnjom*). However, under the amendments, any excess electricity produced annually shall be compensated according to market electricity rules, accounting regulations, and contractual agreements with suppliers;
- The new Rules on the Connection to the Transmission Grid and the Rules on the Connection to the Distribution Grid were adopted on 14 July 2023, and entered into force on 1 September 2023. The rules set out a detailed procedure for the grid connection, preparation and content of the Optimal Technical Solution Study (EOTRP), issuance of the connection conditions and special connection conditions, establishment of technical conditions in the grid, the procedure for changes to the connection, resolving complaints, etc. The key milestones of the grid connection process are outlined in Section 3.2 Grid Connection Specifics below. Additionally, the recently enacted Network Rules of the Transmission System came into effect this February;
- The complete legislative framework is still incomplete, as the grid connection costs remain unknown. This presents a significant challenge for projects, as they are required to secure a Building Permit within five years of obtaining an Energy Permit, yet they are unable to finalise a Grid Connection Agreement due to the lack of clarity regarding connection costs. The situation is further complicated for projects that obtained an Energy Permit under the now-obsolete 2013 Electricity Market Act, as they face a five-year deadline to construct a production facility and obtain a Usage Permit.

3.2 RES Market Status, Permitting, Grid Connection, Licensing of RES Facilities in Croatia

General Market Data

RES Target 2020 27.47%, reported achieved in 2019

RES Target 2030 36.6%

Overall installed General Capacity including RES (overall production) In 2022, total primary energy production was 155.0 PJ.

Installed capacity by technology in 2021

- Wind – 2,102.3 MW
- Hydro – 2,107.7 MW
- Biomass – 218.8 MW
- PV – 1,133.9 MW
- Biogas – 78.1 MW

RES Support Scheme

Beneficiaries of RES Support Scheme Guaranteed off-take price and Market Premium. The beneficiaries are divided in different groups according to the sources, technology used and installed capacity of RES Facilities. The Feed-in Tariff is received by those RES Facilities built prior to 31 December 2015.

Priority and guaranteed off take into the grid ○ RES-Electricity Producers that have obtained a Decision on the status of an eligible producer from HERA have priority access to the grid.

Other incentives

- Mandatory share of Net Electricity delivered by eligible producers to HROTE to be purchased by the energy suppliers;
- GOs provided for eligible producers not already participating in the Feed-in Tariff or the Guaranteed off-take price.

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- Other conditions**
- For the construction of new generating and storage facilities, with the exception of those outlined in the subsequent item, MESD conducts a public tender to award an Energy Permit after having received an expression of interest from a potential investor;
 - Public tender is not carried out to award an Energy Permit for: (i) renovation and/or revitalisation of the existing generating or storage facilities, (ii) construction of geothermal facilities, (iii) if ownership relations on the land where the investor plans to build a facility are resolved (i.e., there are no unresolved disputes and the ownership relations in practice correspond to what is registered in the land registry / cadastre), (iv) generating facilities that do not use renewable energy sources and (v) agrosolar power plants;
 - For Simple Power Plants, an Energy Permit is not required;
 - The criteria for selecting the best bid are determined in the call for tender:
 - for the construction of facilities under 500 KW, this will be the best price offered for the Energy Permit as well as the best available technologies,
 - for the construction of the facilities over 500 KW, the criteria will be determined by weighting the price offered for the Energy Permit, the competitiveness of the facility, energy efficiency, the deadline for construction and the compensation to the local self-government unit and/or the possibility of local self-government unit participating and/or acquiring a shareholding;
 - By obtaining an Energy Permit, the investor acquires the status of project holder and is entered in the Register of Renewable Energy Sources, Cogeneration and Eligible Producers. After entering into a Grid Connection Agreement with the TSO/DSO, the investor may apply for a Location Permit / Building Permit. Furthermore, if the RES Facility is to be located on public land, an easement right or building right must be established (once the Location Permit / Building Permit becomes final and binding);

- An Energy Licence is mandatory (certain exceptions regarding capacity, trial runs and behind-the-meter facilities apply);
- No installed capacity limit, as long as the grid allows this from a technical point of view.

Grid Connection Specifics

Procedure

- A new entrant to the electricity grid must conclude a Grid Connection Agreement and a Grid Usage Agreement with HOPS or HEP-DSO;
- Prior to entering into a Grid Usage Agreement, the investor must hold an Electricity Approval and a Location Permit;
- The Grid Connection Agreement is concluded prior to the issuance of the Electricity Approval and Location Permit. It must adhere to the Optimal Technical Solution Study (EOTRP) conducted by authorised persons, which outlines the potential method for connecting the facility to the grid, along with key technical specifications and essential data for sizing the facility;
- Depending on the technology deployed, the installed capacity and the connection to the grid, an investor can obtain the necessary approvals within approximately one (1) and two (2) years;
- The duration of this period might extend further due to the stipulation in the 2023 Rules on Connection to the Transmission Grid, according to which HOPS committed to accepting requests for delivery of the data on the state of the transmission grid (essential for authorised persons to draft EOTRP) solely once a year, occurring between May 1 and May 15.
- The costs of grid connection and/or capacity upgrades, improvements or expansion of the grid are borne by the investor.

Licensing

Procedure	<p>After the completion of the construction phase of the RES Facility, the following licences must be acquired:</p> <ul style="list-style-type: none"> ○ Usage Permit, only after a successfully implemented trial run and after obtaining a Certificate for Permanent Operation; ○ Energy Licence to Generate RES-Electricity; ○ Decision on the status of an eligible producer.
Duration of administrative procedure	<p>The procedure takes a minimum of two (2) months. The licensing procedures require frequent direct communication with HERA and the competent Ministry. However, it is not possible to provide any precise estimate on the time frame necessary for the issue of licences/authorisations.</p>
Licence's validity	<p>Up to thirty (30) years. May be extended.</p>

4. Key changes to the RES Support Scheme since 2016

A new programme of incentives under Croatian law was introduced on 1 January 2016, with the entry into force of the now obsolete RES Act 2016. Amendments followed in 2016, 2017 and 2018, while in December 2021 the new RES Act 2021 entered into force. The RES Act 2021 introduced certain changes to the RES system but has maintained the existing Guaranteed off-take price and the Market Premium incentive models.

4.1 Available Incentives

The key aspects of the existing support system, which replaced the Feed-in Tariff, are described below. Both incentives aim to encourage the construction of new³ RES Facilities until the quota for incentives set by the Croatian Government is met. The incentives are made available to candidates through the public tender

³ Within the context of the RES Act 2021, the term "new facility" also encompasses the reconstruction of existing production facilities that satisfy specific age and reconstruction cost requirements.

conducted by HROTE, after they receive the status of an eligible producer from HERA. According to the RES Act 2021, HROTE should select candidates at least (i) once a year for the Guaranteed off-take price incentive and (ii) once every three years for the Market Premium incentive.

4.1.1 Guaranteed Off-Take Price

- Monetary compensation provided by HROTE to eligible producers selected through a public tender, for the net electricity supplied from the RES Facility to the power grid. However, the Guaranteed Off-Take Price will not be paid in situations where there are significantly changed circumstances and *force majeure*, in which case the principle of risk shared proportionality between the contracting parties shall apply;
- Offered to all eligible producers, regardless of the size of the RES Facility⁴;
- The applicant selected as having submitted the best bid in a public tender will conclude the agreement on the guaranteed purchase price with HROTE, and thus be allowed to sell electricity exclusively to HROTE (i.e. it will not participate as an individual trader on the electricity market);
- The agreement is concluded for the term of twelve (12) years, starting from the day the status of eligible producer is obtained;
- The amount of Guaranteed off-take price is created in the tendering process. Prior to the tender, by using the methodology for estimating the market conditions, HROTE should announce the amount of the maximum guaranteed purchase price for each group of RES Facilities. The amount of the purchase price offered by each bidder should not exceed the maximum guaranteed purchase price defined by HROTE for that type of RES Facility;
- The amount of the Guaranteed off-take price determined in the agreement will remain unchanged during the entire contractual term, but the variable part of the price should be indexed every year in order to reflect inflation (by applying the indices of consumer prices published by the Croatian Bureau of Statistics).

4 Under the RES Act 2016, the Guaranteed Off-Take Price was available to eligible producers with RES Facilities capacity of up to 500 KW.

4.1.2 Market Premium

- Monetary compensation provided by HROTE to eligible producers selected through a public tender, for the net electricity supplied from the RES Facility to the power grid;
- Offered to all eligible producers, regardless of the size of the RES Facility;
- After concluding the Market Premium agreement with HROTE, the producers are not obligated to sell the produced electricity exclusively to HROTE. They are authorised to trade electricity on the open market with different producers, traders and suppliers of electricity, in accordance with the regulations governing the electricity market. However, if HROTE exercises its right of first refusal, producers must sell electricity to HROTE at the reference price (said right may be exercised by 30 October of the current year for the following year);
- A Market Premium agreement is concluded for a term of twelve (12) years, starting from the day status of eligible producer is obtained;
- The amount of premium is a variable component and depends on the market prices of electricity. It is equal to the difference between the reference value of electricity offered by an eligible producer (determined in the Market Premium agreement) and the current market price of electricity. If the market prices are lower, the amount of the premium goes up. In contrast, the premium is reduced if the market price of electricity goes up. If the market price of electricity exceeds the reference price of electricity determined in the Market Premium agreement, the eligible producer must return any attained difference in price to HROTE before the 25th day of the month, in respect of the preceding month;
- In a public tender, HROTE will first publish the amount of the maximum reference value for electricity expressed in EUR/KWh for each group of RES Facilities. The maximum reference value is revised once a year, in order to reflect changes in the production costs of electricity per unit of electricity produced by the RES Facility from each group. The revised input parameters are considered when determining the maximum reference values for the new public tenders;
- For the purpose of optimising support toward a market-price system, it is expected that applicants will aim to offer a reference value amount which is as close as possible to the actual market price of electricity.

4.2 Register of Renewable Energy Sources, Cogeneration and Eligible Producers

This register was adopted in 2019 with the Ministerial Regulation on Register of Renewable Energy Sources, Cogeneration and Eligible producers.

Led by the MESD's RES department, the register represents a unique and accurate record of ongoing RES-Electricity projects in Croatia. For instance, it is where information on available quotas for incentives, conducted tenders, ongoing tenders and announced tenders may be found. The data kept in the register is used to generate the predefined reports for the Ministry and the general public.

The Register is publicly available via an online application⁵ on the Ministry's webpage. The application also provides a graphical allocation⁶ of the projects. As of February 2024, there were 3902 solar power plants, 56 hydro power plants, 50 wind power plants, 120 biomass power plants, three geothermal power plants, 71 biogas power plants, five landfill gas and wastewater treatment gas power plants, 12 cogeneration plants and one battery energy storage included in the register.

4.3 Suppliers' Obligation to Repurchase Net Electricity Delivered by Eligible Producers to HROTE

Since the entry into force of the latest Governmental Ordinance on the Share of Net Electricity Delivered by Eligible Producers that Electricity Suppliers Must Take Over from the Electricity Market Operator in January 2022, suppliers must take over 60% of the net electricity delivered by RES-Electricity Producers to HROTE. The remaining 40% of net electricity delivered by RES-Electricity Producers to HROTE is offered on the electricity market.

5 <https://oie-aplikacije.mzoe.hr/pregledi/PopupIzvjestaj.aspx?ReportId=5b47346e-67aa-4df2-9603-fa83c47061e3>.

6 <https://oie-aplikacije.mzoe.hr/pregledi/PopupIzvjestaj.aspx?ReportId=17ed7352-2f8d-416b-b2fb-cec912e96428>

4.4 Developments on the Market of GOs

The system of GOs is another support model for RES-Electricity offered on the Croatian market. It is reserved exclusively for eligible producers that are not already participating in a Feed-in Tariff or Guaranteed off-take price.

GO is an electronic deed which provides to the end customer the proportion or amount of RES-Electricity in total electricity mix of a supplier. The basic unit is 1 MWh. In the system of GOs, eligible producers can request that GOs be issued for the electricity produced at their RES Facility and may thereafter trade these GOs with suppliers of electricity.

The data on issuing, transferring and cancelling of GOs is collected in the Register of GOs operated by HROTE. In 2022, the Register of GOs reported six (6) suppliers, twelve (12) RES-Electricity producers in total, three (3) traders and two (2) Registry users with production facility.

In 2023, HROTE conducted five auctions of GOs via CROPEX's IT trading platform for energy generated in wind farms and small biomass power plants. These auctions took place in April, July, and October. Through auctions, HROTE successfully sold a combined total of 618,709 GOs. The prices achieved ranged from 3.56 EUR/GO to 6.91 EUR/GO for energy produced in wind farms, while energy derived from biomass reached a price of 7.10 EUR/GO.

On 9 March 2023, the Government introduced a new Ordinance on the system of GOs for energy, aligning it with the provisions on of the Directive (EU) 2018/2001 (commonly known as RED II). The new legislative framework broadens the scope of GO issuance beyond electricity generated from renewable energy sources to include gas derived from renewable sources like biomethane, hydrogen, and low-carbon hydrogen. Additionally, it encompasses thermal energy (heating and/or cooling) and CHP using natural gas as fuel. Furthermore, a significant aspect of the new Ordinance is the introduction of transferability for GOs, irrespective of the energy they represent. This means that transfers can occur between users registered in Croatia, as well as with users registered in other countries. The purpose of these transfers is to demonstrate the proportion or quantity of energy within the total supplied energy volume. Consequently, a GO issued in Slovenia for instance, for electricity generated from the Krško Nuclear Power Plant, can now be fully acknowledged in Croatia.

4.5 Launching the Day-Ahead and Intraday Market at the Croatian Electricity Exchange (CROPEX)

CROPEX is the central point for trading electricity in Croatia. All interested market participants willing to become CROPEX members shall sign the membership agreement and thus gain access to the trading platform. CROPEX is jointly operated by HROTE and HOPS.

The day-ahead and intraday market on CROPEX have been operative for several years now. The intraday market provides users with a better flexibility in the system, where they can almost in real-time adjust their positions in accordance with potential deviations on the market.

In July 2018, the Croatian and Slovenian electricity markets merged as part of the Multi-regional Coupling project (MRC). The merger resulted in an exponentially larger volume of electricity trading (449,305 MWh in October 2018) that exceeded the total amount traded on CROPEX throughout the first two years of its existence.

Further development occurred with the launch of the Core Flow-Based Market Coupling project that is supposed to connect the CROPEX and HUPX (Hungarian Power Exchange) day-ahead markets. The first phase of joint regional testing (Full Integration Testing – FIT), focusing on the functionality between all systems involved in the FB MC process, was successfully finished on 13 January 2022. The following phase of testing (Simulation Integration Testing – SIT), which focused on testing joint operational procedures, commenced on 17 January 2022. On 8 June 2022 the project parties announced the successful go-live of the project. With the project's implementation, the daily cross-border capacity at the Croatian-Hungarian border is no longer allocated directly through the JAO platform but rather indirectly through the mechanism of connecting electricity exchanges.

According to HERA's annual report for 2022, twenty-five (25) registered members on the intraday market purchased electricity with a total capacity of 399,1 GWh from CROPEX. On the other hand, CROPEX's day-ahead market had thirty (30) registered members in 2022. The volume traded on the day-ahead market in 2022 was 5.789 GWh.

Starting from 9 January 2024, CROPEX expanded its intraday market by introducing 15-minute trading products (on top of the current 60-minute trading products) and the ability to trade 15 MTU across all SIDC borders. 15-minute products on the intraday market were issued in response to the growing demand for shorter trading periods, enabling participants to react swiftly to market changes and optimize their power portfolio management. The first 15-minute transaction on CROPEX intraday was concluded between a CROPEX member and a market participant from Romania with a realized volume of 1.9 MWh.

4.6 ECO Balance Group

By entering into the agreement under the Feed-in Tariff or the Guaranteed purchase price with HROTE, eligible producers of RES-Electricity automatically become the members of the ECO balance group. The ECO balance group started its operation on 1 January 2019.

In order to provide accurate production plans, producers should submit precise information on the intended production at their RES-Facilities to HROTE. The intention of the ECO balance group is to ensure the stability of the electricity system, by keeping the production and consumption of electricity always in balance. HROTE is financially responsible for any imbalances in the ECO balance group which may arise due to deviations in the realised hourly delivery of electricity compared to the preliminary estimates in the production plans.

Members of the ECO balance group with a connected capacity above 50 KW pay the monthly balancing compensation determined under the electricity balancing assessment. The compensation is calculated depending on the net supplied power of electricity. Members of the ECO balance group shall submit a non-transferable, irrevocable and unconditional bank guarantee to HROTE, in order to guarantee that the compensation is paid, or alternatively, transfer a security deposit into HROTE's bank account.

In 2021, the total production plan of the ECO balance group for the day-ahead market was 3,487,066 GWh, of which suppliers took over 1,386,804 GWh. A capacity of 1,006,780 GWh was sold through auctions while HROTE sold the remaining 1,093,482 GWh on the day-ahead market on CROPEX.

The total production plan of the ECO balance group for the day-ahead market in 2022 was 2,758,945 GWh, of which suppliers took over 1,672,094 GWh. The remaining capacity of 1,051,200 GWh was offered in auctions.

5. Significant and/or expected changes

5.1 RES-Electricity Share of Final Consumption Promoted by Croatia under the Integrated National Energy and Climate Plan for the period 2021-2030

The first draft of the NECP for the period 2021-2030 was submitted to the European Commission at the end of 2018. The plan presented an overview of the energy system, along with the energy and climate policy framework, detailing national targets for each of the five key dimensions of the Energy Union. Additionally, it outlined the corresponding policies and measures aimed at achieving these targets. Special emphasis was placed on the goals set for 2030, encompassing reductions in greenhouse gas emissions, increases in renewable energy utilization, improvements in energy efficiency, and enhancements in electricity interconnection. According to the original NECP, Croatia pledged to achieve a renewable energy share of 36.4% in final energy consumption by 2030.

Given that the Fit for 55 package and the REPowerEU plan revisited the European energy and climate targets, including raising the mandatory renewable energy target for 2030 to at least 42.5% from the previous 32%, Member States were due to submit an updated draft of the NECPs to the Commission by 30 June 2023. The Croatian draft update of the NECP proposed increasing the share of renewables in final gross energy consumption to 42.5%.

The European Commission has published its recommendations to the updated NECP for Croatia in December 2023. Most notably, the Commission invited Croatia to support its ambitious goal of 42.5% share of renewable energy by 2030 with detailed and quantified policies and measures for the further uptake of renewables. These measures include: (i) accelerating electricity production from renewable energy through reverse auctions, (ii) encouraging self-consumption and long-term power purchase agreements, (iii) fostering regional cooperation, (iv) upgrading

equipment in district heating systems, (v) continuing incentives financed by the auctioning of emission allowances etc. These recommendations are expected to be implemented in the final updated NECP, which is due by 30 June 2024.

5.2 National Energy Development Strategy for the Period until 2030 with Perspective to 2050

The Energy Development Strategy of the Republic of Croatia, adopted in February 2020, represents a step towards achieving the vision of a low-carbon energy economy and transitioning to a new era of energy policy that will provide an affordable, secure and quality energy supply, without an additional burden on the state budget through state aid and incentives.

The energy policy and strategy of the Republic of Croatia is focused on the EU goals of reducing greenhouse gas emissions, increasing the share of RES in the energy mix, energy efficiency, as well as security and quality of supply. It also aims to develop the EU's internal energy supply market, energy infrastructure, and competitiveness. Two energy transition scenarios were established under the Energy Development Strategy – one moderate and one accelerated – which assume that the share of renewable energy in final gross energy consumption will amount to approximately 37% by 2030 and within a range from 53% to slightly above 65.5% by 2050.

It is projected that by 2030 there will be a reduction in total greenhouse gas emissions ranging between 35.4% and 37.5%, and that by 2050 there will be a reduction ranging between 64.3% and 74.4%, compared to 1990 levels.

5.3 Low-Carbon Development Strategy of the Republic of Croatia for the Period until 2030 with an Outlook to 2050

On 2 June 2021, the Croatian Parliament adopted the Low-carbon Development Strategy of the Republic of Croatia for the period until 2030, with an outlook to 2050. The core objectives of the strategy include achieving sustainable development and economic growth based on a low-carbon economy, resource efficiency, lower energy

consumption and the increased use of renewable energy sources. The strategy sets out 102 technical and organisational measures that will be implemented throughout every sector of the economy, including energy, transport, industry, construction, waste management, agriculture, tourism and services.

By 2050, the strategy aims to achieve an ambitious 80% reduction in emissions compared to 1990 levels. However, analysis shows that the investment and implementation of the measures set out in the strategy will lead to an increase in all core macroeconomic indicators. With the NU1 (gradual transition) and NU2 (strong transition) scenarios, Croatia should achieve a cut in emissions of between 33.5% and 36.7% by 2030 and a cut of between 56.8% and 73.1% by 2050, as compared to 1990 levels.

5.4 National Recovery and Resilience Plan 2021-2026 (NRRP)

In July 2021 the European Commission gave the green light to Croatia's National Recovery and Resilience Plan 2021-2026, signalling its commitment to provide EUR 6.3 billion in grants and EUR 3.6 billion in favourable loans to support it. This plan, considered a pivotal instrument for economic transformation, outlined a comprehensive strategy involving 146 investments and 76 reforms aimed at fostering economic and social recovery and mitigating the impacts of the Covid-19 crisis.

The initial plan consisted of six components⁷, whereby 40% of the allocation was foreseen for measures relating to climate goals, including the acceptance of renewable energy sources, energy efficiency, reconstruction of buildings after earthquakes and sustainable mobility. The plan assumes that RES-Electricity will make up to 60% of final electricity consumption by 2030.

On 31 August 2023, Croatia submitted a revised and more ambitious NRRP to the Commission, which includes a chapter dedicated to REPowerEU. The updated plan comprises 234 measures projected for implementation, further facilitated by the successful completion of 197 milestones and 237 targets, amounting to EUR 10,04 billion in total (EUR 5.8 billion in RRF grants and EUR 4.2 billion in RRF loans). The Commission issued its second positive assessment to Croatia's NRRP on 21 November 2023.

⁷ (i) The economy, (ii) public administration, justice and state assets, (iii) education, science and research, (iv) the labour market and social welfare, (v) healthcare and (vi) renovation of buildings as part of post-earthquake reconstruction.

To date, Croatia has received EUR 3,503.1 million in RRF grants, equivalent to 34.9% of Croatia's amended NRRP. This comprises EUR 1,403.1 million in pre-financing and EUR 2,100 million in regular payments. These disbursements were contingent upon the successful completion of 86 milestones and 18 targets, primarily involving the adoption of national strategic framework documents, including revised or new legislation, strategies, and programs.

A fourth payment request worth EUR 162.5 million in grants was submitted on 21 December 2023. This request is associated with nine milestones and seven targets, which covers transformative reforms and significant investments across various sectors, such as public health, education, energy, research and innovation and public administration.

All reforms and investments envisaged in the NRRP that contribute to smart, sustainable and inclusive growth, job creation, economic productivity, competitiveness and a strengthening of economic, social and territorial cohesion must be implemented by August 2026.

5.5 Renewable hydrogen

In March 2022, the Croatian Parliament adopted the Croatian Strategy for Hydrogen until 2050 which establishes the framework possibilities for the development of production, storage, transport, and general use of hydrogen. The strategy identifies the following strategic objectives in Croatia: (i) increase of renewable hydrogen production, (ii) increase of the exploitation potential of RES for the production of renewable hydrogen, (iii) increase of the use of hydrogen and (iv) encouragement of the development of science, research and development of hydrogen technologies. The Croatian strategy for hydrogen until 2050 sets the goal of increasing the share of hydrogen in total energy consumption from the current 0% to 0.2% by 2030 and further to 11% by 2050. The vision therefore is to install electrolyzers with a capacity of 1,270 MW by 2030 and 7,330 MW by 2050. Hydrogen production in Croatia is anticipated to rely on the exploration, development, and implementation of various low-carbon hydrogen production option methods in existing industrial hubs that serve as prospective demand hubs.

In 2023, the first European cross-border initiative aimed at establishing a dedicated hydrogen valley was initiated. This project, known as the North Adriatic Hydrogen Valley, involves Slovenia, Croatia and the Italian Region of Friuli Venezia Giulia. Key industrial players from these regions will develop pilot projects aimed at producing over 5,000 tonnes of green hydrogen annually from renewable energy sources, alongside its storage, distribution and utilisation. The project's overarching goal is decarbonisation of significant industrial sectors, such as steel and cement production, as well as the implementation of sustainable transport solutions to reduce carbon emissions. The total estimated duration of the project is 72 months.

Recent legislative revisions to the RES Act in 2023 have designated the Croatian Hydrogen Agency as the National Coordinating Body for Hydrogen. The scope of the agency's activities can be divided into eight groups as follows: (i) programming and implementation of strategic planning, (ii) preparing complex and innovative projects of national interest, (iii) stakeholder mapping following technical verification of capacities, potentials and seriousness of project proposals, (iv) implementing projects in relevant funds, (v) coordinating the implementation process in complex and innovative projects of national interest, (vi) communicating with other member states regarding project positioning, negotiation in the context of project complementarity, etc., (vii) identifying and activating financial sources and (viii) reporting obligations.

5.6 Agrosolar power plants

Agrosolar power plant refers to the co-location of solar power with appropriate agricultural land. By leveraging the positive attributes of shielding crops from adverse weather conditions and other stressors such as solar radiation and frost, while simultaneously enhancing yield potential, agrosolar technology solutions are expected to become integral in future agricultural practices. Croatia, having experienced significant agricultural damage from extreme weather events in the past, formally acknowledged the advantages of agrosolar power plants in 2023. This recognition manifested in legal provisions enabling the placement of these plants across all agricultural areas under permanent plantations that are registered in the agricultural land use records (ARKOD).

Studies indicate that Croatia has the capacity to install up to 900 MW of solar energy through agrivoltaics, utilising just 1% of suitable land. Furthermore, by expanding the allocation of agricultural land for agrivoltaic installations to 5% of

Croatia's total agricultural area, solar photovoltaic capacity could escalate to 4.7 GW. Purely based on these statistics there is no doubt that agrosolar power plants will play an important role in Croatia's future energy landscape.

In the context of permitting, it is worth mentioning that for a project to qualify as an agrosolar power plant, it must meet certain conditions set forth in the Law on Spatial Planning. However, as mentioned in the introductory section of this guide, a Building Permit is not a prerequisite for initiating construction of agrosolar power plants. Croatia witnessed the launch of its first official agrosolar project in June 2023, with an installed capacity of 15 MW/p and a total investment of EUR 10 million.

5.7 Storage

Croatia has started a new chapter of its energy policy – especially in terms of the competitiveness of new technologies in energy generation and storage – by adopting its National Energy Development Strategy for the Period until 2030 with an eye towards 2050.

Common rules for energy storage are established in the new Electricity Market Act that entered into force on 22 October 2021. Under the Electricity Market Act, electricity may be stored in a facility by converting it into another form of energy, and includes reversible power plants, pumping power plants, electric boilers with tanks, heat pumps, battery tanks, electrolysers with hydrogen tanks and other devices in which electricity may be stored in some form and later transmitted to the transmission or distribution grid.

In general, to participate in the electricity market, the energy storage operator must hold an Energy Licence to Store Electricity (*dozvola za skladištenje energije*). However, exceptions apply in the following cases: (i) if the total installed power of the energy storage facility is below 500 KW; (ii) if the storage facility is conducting a trial run (or is between a trial run and acquiring the Energy Licence to Store Electricity, with a maximum duration of 60 days); or (iii) when the storage is not considered an electricity activity (i.e. if the energy storage facility is behind the metering point of an “active purchaser”, if it is used exclusively for personal needs whereby electricity is not transmitted to the grid, or if the TSO or DSO is using the storage facility to fulfil its obligations set out in the Electricity Market Act).

Energy storage operators at the metering point of facilities with an installed capacity exceeding 500 KW may provide electricity on the wholesale market. The energy storage operator will be financially responsible for any deviations caused to the electricity system.

As at February 2024, one energy storage facility with a capacity of 66 MW has been included in the Register of Renewable Energy Sources, Cogeneration and Eligible Producers.

6. Support scheme for cogeneration

In Croatia, there is no specific legislation governing the system for the high-efficiency cogeneration of combined heat and power (CHP). The RES Act 2021 applies to both RES-Electricity and CHP, as does the general regulatory framework governing the energy sector, the regulation of energy activities, the electricity market, the gas market and the heat market. In accordance with the current tariff systems, cogeneration plants using biomass and biogas are required to achieve a minimum annual energy efficiency of 50%, in order to obtain the incentivised price for supplied electricity.

According to the latest available data, as at 31 December 2022, Croatia had a total of 12 CHP facilities installed, with a cumulative capacity of 1,069 MW. However, only one facility (with a capacity of 0.5 MW) continues to participate in the incentive system, given that during 2022 three facilities, totalling approximately 103 MW in capacity, terminated their contracts with HROTE and ceased delivering energy within the incentive system. The reason for said decision stems from the assessment made by producers of CHP that they can get better prices for electricity by selling on the open market rather than through the contracted incentive scheme.

Authors:



Saša Jovičić

Partner

E sasa.jovicic@wolftheiss.com

T +385 1 4925 400

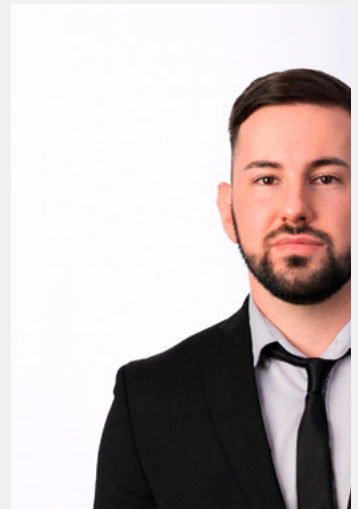


Ana Slovenec

Associate

E ana.slovenec@wolftheiss.com

T 385 1 4925 445



Alan Vučkovečki

Associate

E alan.vuckovecki@wolftheiss.com

T +385 1 4925 433

Generating Electricity from Renewable Sources in CEE & SEE

Energy Industry Group

Czech Republic

Wolf Theiss

Country General Information

Capital: Prague

Location: Situated right in the heart of Europe, the Czech Republic is bordered by Slovakia, Austria, Germany and Poland. It lies mostly between latitudes 48°N and 51°N and longitudes 12°E and 19°E.

Surface: 78,866 km²

Population: 10,880

Climate: temperate continental-oceanic climate with four distinct seasons.

Resources: The Czech Republic has abundant natural resources, thanks to its geographical diversity – from mountains surrounding the country, streams and rivers, to its geothermal areas, basins, forests, glacier lakes, ponds, etc. Natural resources include large reserves of coal, some natural gas and petroleum reserves, limestone, kaolin, limited deposits of metallic ores (lead, zinc, uranium, tin and graphite). Forestland covers a third of the country's surface area, making wood an important export.

Electricity Grid: The Czech electricity grid is divided into two parts according to voltage: the transmission grid (400 kV and 220 kV) and the distribution grid (110 kV, 22 kV and 400 V). The transmission grid has a total length of 5,769 km and is part of the continental European grid system.

Electricity Transmission, Distribution and Supply: The Czech high-voltage transmission system (400 kV and 220 kV) is operated by ČEPS, a.s., a company whose sole shareholder is the Czech Ministry of Industry and Trade. The regional distribution system (110 kV and lower) is operated by three companies: PREDistribuce, a.s., EG.D, a.s. and ČEZ Distribuce, a.s. Additionally, private operators may create local distribution networks, through which multiple end-users can be connected to the regional distribution system via a single connection point. These local distribution networks are often located in commercial and residential zones, shopping centres, industrial and business premises.

Official Language(s): Czech

EU Member: since 1 May 2004.

NATO Member: since 12 March 1999.

United Nations Member: A founding member of the United Nations as one of the two legal successor states of Czechoslovakia. As Czech Republic, it has formally been a member since 19 January 1993.

Currency: Czech crown (CZK). The Czech Republic is committed to joining the eurozone once it meets all necessary criteria (which is not the case now). However, the Czech Republic will itself decide when it enters the eurozone, a decision it has not yet taken.

Schengen: The Czech Republic is part of the Schengen area.

Political System, Administrative Organisation and Economy: The Czech Republic is a parliamentary republic with the Prime Minister as head of the government and the President as head of state. The country is divided into 14 regions, one of which is the capital city of Prague. The Czech Republic has a developed, service-based economy, yet also focused on industry, mainly in the area of transportation.

1. Defined Terms for the Main Permits Required for RES-Facilities

Authorisation for the Construction of a RES-Facility	Authorisation granted by the Czech Ministry of Industry and Trade. Any RES-Facility with a total installed capacity of above 1 MW must obtain this authorisation before obtaining Project Approval.
Connection Agreement	Agreement between the grid operator and the electricity producer, which states that all technical parameters have been met and connection to the public electrical grid will be granted.
Electricity Production Licence of RES-Facilities	Administrative document issued by the ERO that is needed by any individual or legal entity that wishes to conduct business by producing electricity.
Environmental Impact Assessment	An Environmental Impact Assessment (EIA) is required for (i) hydropower plants with a total installed electrical capacity of 10 MW or more; (ii) wind power plants with a mast height of 50 m or more if located (a) in Natura 2000 sites or in specially protected areas and their protection zones; (b) in a place which is closer than 1 km to the nearest protected outdoor space of buildings according to another legal regulation; (c) at a site that is closer than 3 km from another existing or future wind turbine; or (d) when more than 4 turbines are to be constructed. The issuance of the EIA can be merged with the proceeding for issuance of the Single Environmental Statement.
ERO	Czech Energy Regulatory Office.
Grid Connection	Actions performed by the grid operator to connect a new generating facility or to modify or replace the connection of a RES-Facility to the grid.
Liability for Grid Connection and/or Capacity Upgrades, Improvements or Expansion of Grid	The amount the producer/operator must pay as its share of the “costs associated with grid connection and ensuring the reserved capacity”.

Priority Access to the Electric Grid Given to RES-Electricity	The statutory rule whereby grid operators must provide priority grid access for RES-Electricity.
Project Approval	Administrative document permitting the placement and construction of a RES-Facility, which is issued by the competent building authority.
Single Environmental Statement	Administrative document issued by the competent local environmental authority assessing the effects of the RES-Facility on selected environmental components and on the environment as a whole. It integrates several statements and resolutions issued under the applicable environmental legislation.
RES-Electricity	Electricity obtained from RES such as wind, solar, aerothermal, geothermal, hydrothermal, hydraulic, biomass and biogas.
RES-Facility	Electricity generation plant using renewable sources, secondary sources or high-efficiency combined heat and power.
RES Support Scheme	State support provided to producers of RES-Electricity. In the Czech Republic, this support is provided to eligible producers in the form of green bonuses or feed-in tariffs.

2. Envisaged Need of Investments in the Czech Republic

As the Czech Republic is a Member State of the European Union, it must work to ensure that the goals set by the EU are met.

In 2018, the EU Renewable Energy Directive was issued with a target of at least 32% energy production from RES by 2030. In 2023, the Directive was revised and the EU's goal was raised to a minimum of 42.5% with an aspiration of up to 45% energy production from RES by the year 2030.

EU Member States are required to amend their legislation to reflect the renewable energy decision-making of the European Commission. The Czech Republic is required to enact specific measures to meet the EU's 42.5% target. The Czech contribution to meeting this EU-wide goal is adjusted based on its geographical, climate and economic conditions. The Czech Republic has set a target for RES-Energy to make up 30% of total energy consumption by the year 2030. The data from 2022 show that RES-Energy accounted for 18.195% of total consumption in the Czech Republic in 2022.

In order to meet the new goals under the Clean Energy for all Europeans package and The REPowerEU Plan, and to help the EU to reach its goal under the European Green Deal, investment in the Czech Republic is primarily needed in the following areas:

- investment to keep some of the existing RES-Facilities, mostly biomass and biogas facilities, in operation (once their support/promotion period ends), provided their operation is more effective than building a new RES-Facility;
- investment in research and development in the area of energy storage;
- investment in the hybridisation of energy systems;
- investment in the decentralisation of energy production;
- investment in the development of alternative green fuels;
- investment in research and development of heating and cooling systems using RES-Energy;
- investment in lowering energy consumption by implementing energy efficient technologies;
- investment in green transportation (infrastructure, research and development);
- investment in strengthening the distribution grid in order to connect more low-voltage facilities;
- investment in research into the efficiency of RES-Facilities; and
- investment in research and development involving facilities that utilise geothermal energy.

3. Executive Summary-RES Market Status and Development of RES Facilities

3.1 Market Overview – Factsheets

- The Czech Republic currently produces enough energy to be self-sufficient. In fact, around 18% of its total energy is produced for export.
- The Czech RES-Electricity market has been in development since 2005, when the Czech Republic started to support RES-Facilities. This support was modified by its enactment of Act No. 165/2012 Coll., on promoted energy sources (the “**Promotion Act**”) which is still in force. The Czech Republic later pledged to the EU that it would deliver 13% of its energy output from RES-Electricity. This 13% goal for 2020 was met by the Czech Republic as early as 2013.
- Between 2008-2010, the Czech Republic experienced a ‘solar boom’ while simultaneously facing financial crises, which led to the implementation of a ‘solar levy’, that required solar power plants commissioned between January 1, 2009, and December 31, 2010, to pay a monthly levy out of the state support provided. The solar levy was challenged in the Constitutional Court but was found to not breach the constitutional rights of the producers in question. Core guarantees (such as a return on investment over a 15-year period) have been maintained, except in cases where producers have been ‘strangled’ by the solar levy. The efforts to define the so-called ‘strangling effect’ have become the subject of several court proceedings at the Supreme Court and the Supreme Administrative Court. While the courts concluded that those who feel strangled can apply for a tax exemption under Section 259 of the Tax Code, the Ministry of Finance has released a follow-up statement that they can apply for tax withholding under Section 156 of the Tax Code. Although the Promotion Act was not overturned by the Constitutional Court, it was subsequently repeatedly amended, and the solar levy for solar plants commissioned in 2010 was extended and reduced from 26% (28% for green bonuses) to 10% (11% for green bonuses). Additionally, Act No. 458/2000 Coll, the Energy Act, as amended (the “Energy Act 2000”) required RES-Facilities with a total installed capacity of over 1 MW to obtain an Authorisation for the Construction of a RES-Facility from the Ministry of Industry and Trade.

- In 2010, the total percentage of RES-Electricity within the supply energy mix was 10.52%, while in 2013 that number increased to almost 15%. Since 2013, when the support of new RES-Facilities was reduced, that percentage has been increasing at a slower rate.
- In June 2014, the European Commission approved the state aid scheme for electricity from renewable energy sources in the Czech Republic, with focus on a state aid scheme provided to energy producers commissioned from 1 January 2013 onwards.
- In November 2016, the European Commission approved a support scheme for installations producing renewable energy that were built in the Czech Republic between 2006 and 2012 under EU state aid rules, with a total budget of CZK 836.5 billion over its lifetime (approx.30.95 billion EUR). The Czech authorities have committed to introducing a review mechanism. The purpose of the review mechanism is to eliminate any risk of overcompensation that may result from the cumulation of aid or the overestimation of any of the cost elements factored into the support level calculations. The review of support shall be carried out 10 years after the commissioning of installations benefitting from support under the scheme.¹
- The majority of eligible RES-Facilities receive state support for twenty (20) years (i.e. most will end in around 2030-2033).
- The Czech energy market still relies heavily on coal and nuclear energy. Coal consumption must be lowered and replaced by nuclear and RES-Energy (for details see Sections 4.3 and 4.4). More state support is paid for the initial construction, rather than the operation, of RES-Facilities. The focus should also be on the research and development of energy storage, which is a vital prerequisite for the efficient and long-term use of RES-Energy.
- On 1 January 2021, an amendment to Act No. 383/2012 Coll., on Greenhouse Gas Emission Allowance Trading Conditions was enacted. This amendment reflected the creation by the EU of the Modernisation Fund in its EU ETS Directive (Directive 2003/87/EC). In 2018, new Article 10d was added to Directive 2003/87/EC describing the Modernisation Fund, which aims to support investment to modernise energy systems and improve energy efficiency between 2021 and 2030. At least CZK 150 billion (approximately EUR 6.123 billion) should be available for the Czech Republic, representing 15.6% of the total funds in the Modernisation Fund.

¹ IRR approved per technology type: Hydro (6.3-7%), Solar (6.3 – 8.4%), Wind (6.3 – 7%), Biogas (7 – 10.6%), Biomass (7 -9.5%), Geothermal 7%.

- On 1 January 2022, an amendment to the Promotion Act came into effect and established a new type of support scheme, known as the “auction bonus”. Following extensive discussions, solar power projects were also included as eligible for future operating aid in the form of auction bonuses. As of 1 January 2022, the Promotion Act recognises three forms of subsidies for RES producers: (i) green bonuses; (ii) newly introduced auction bonuses; and (iii) a feed-in tariff. The feed-in tariff does not apply to electricity generation plants put into operation as of 1 January 2022, maintenance support for electricity (biomass-fired generation plant) and for the modernisation of an electricity generation plant.
- This 2022 amendment to the Promotion Act further introduced another mechanism to tackle the issue of overcompensation of RES-Facilities commissioned between 1 January 2006 and 31 December 2015. An internal rate of return (“IRR”) interval of 8.4%–10.6% for RES-Facilities was introduced, setting a limited level of state support. The internal rates of return on investment for each type of RES are set by the Czech Government in a regulation at 8.4% for energy from water, wind, geothermal, solar radiation, biomass and biogas. Reviews will be conducted by the Ministry of Industry and Trade after ten (10) years from when the RES-Facility was put into operation and will be carried out as sector-by-sector investigations. In the event that the Ministry of Industry and Trade identifies a risk of excessive state support for a given year, the owners of the electricity generating plants will be at risk of the amount of their state support being adjusted under a general measure adopted by the Ministry of Industry and Trade, or as a result of an individual inspection by the State Energy Inspectorate. Based on the sectoral survey report published in 2023, the value of the IRR for small hydropower, biogas and wind power plants, plants using landfill and sludge gas and biomass (all put into operation in 2012) is below the limit set by the Governmental regulation. However, the calculated value does not represent the value for the entire sector of electricity sources commissioned in 2012, as only less than 40% of the electricity sources put into operation in 2012 completed the survey papers.
- At the same time, the solar levy was increased for solar plants commissioned in 2009 and 2010. As of 1 January 2022, for solar power plants put into operation between 1 January 2009 and 31 December 2009, this tax is 10% for projects benefitting from feed-in tariffs and 11% for projects benefitting from green bonuses. For solar power plants put into operation between 1 January 2010 and 31 December 2010, the solar tax is 20% for projects benefitting from feed-in tariffs and 21% for projects benefitting from green bonuses.

- On 13 July 2021, the new Building Act was enacted. The new Building Act entered into force in its entirety on 1 January 2024, however, it applies to ‘designated constructions’ and ‘related constructions’ (i.e. certain transport and industrial buildings, transmission and transport systems, large electricity generation plants and nuclear construction) only. For other constructions, the previous legislation – the “old” building act and its implementing regulations – will continue to apply until 30 June 2024. As of 1 July 2024 the new Building Act will apply to all constructions. The new Building Act brings many innovations aimed at simplifying and speeding up the permitting process and ensuring the protection of public interests during construction. One of these changes is setting up a specialised building authority (the Transport and Energy Construction Authority) that will be competent to permit key transport and energy infrastructure constructions. These key energy infrastructure constructions include RES-Facilities (except for hydropower construction) being (i) a solar electricity generation plants with a total installed electrical capacity exceeding 5 MW; (ii) an electricity generation plant (except for solar) with a total installed electrical capacity exceeding 1 MW; and (iii) a heat production plant from renewable energy sources with a total installed thermal input exceeding 10 MW.
- A significant amount of the state support in question is distributed to individuals who wish to reduce their electricity consumption. This support is provided for the energy-efficient renovations of buildings, for the construction of new energy-efficient houses, for the construction of energy-efficient apartment buildings and for RES-Facilities used for self-consumption. This support programme is called the “New Green Light for Savings” scheme, which has replaced the previous “Green Light for Savings” scheme.
- To date, most of the support has gone towards solar power plants, with biogas and biomass facilities coming in second and third respectively as the most promoted energy sources (despite all three of these sources generating close the same amount of electricity).
- In October 2023, the European Commission approved, under EU State aid rules, a €2.4 billion Czech scheme to support the construction and operation of new or converted sustainable biomethane production plants.
- The Czech Ministry of the Environment presented an amendment to Act No. 334/1992 Coll., on the protection of the agricultural land fund, which shall enable the development of agrovoltatics.

- Finally, with respect to the European RED IV Directive, the Czech legal framework will be further amended to introduce so-called ‘acceleration zones’, which will facilitate the permitting process for wind power plants in selected areas.

3.2 RES Market Status, Permitting, Grid Connection, Licensing of RES-Facilities in the Czech Republic

General Market Data	
RES in 2022 (out of final consumption)	18.195%
RES Target for 2030	30%
Overall installed General Capacity including RES (overall production of electricity)	as of 30 September 2023, the overall installed general capacity was 20,861.7 MW, with a total overall energy production of 55,307.5 GWh gross and 51,591.4 GWh net
Installed capacity by technology by 30 September 2023	Total: 20,861.7 MW Nuclear: 4,290 MW Steam-electric: 9,435.9 MW Steam-gas: 1,363.5 MW Gas: 1,054.0 MW Hydro power: 1,096.9 MW Wind power: 337.1 MW Solar power: 2,112.8 MW Pumped storage hydropower: 1,171.5 MW

RES Support Scheme

Beneficiaries of the RES Support Scheme

The support scheme promotes:

existing RES-Facilities, under the rules applicable for the year commissioned (but solar power plants that are situated on class I or II protected agricultural land are not eligible for the new state support once the old state support expires);

RES-Facilities put into operation on or after 1 January 2022, although only the following are eligible for state support: (i) electricity generating plants whose production process units are no more than 5 years old on the date of commissioning; (ii) electricity generating plants whose production technology units are being replaced as part of modernisation and are no more than 5 years old on the date of registration of this support; (iii) power plants using water energy with an installed capacity of up to 10 MW; (iv) wind; (v) solar; (vi) landfill gas; and (vii) sludge gas, and (viii) (for electricity generation plants put into operation after 1 January 2024) units with installed capacity of up to 500 kW using biogas energy; and

“High efficiency” cogeneration plants.

Priority and guaranteed off take into the grid

The Promotion Act adheres to the principle that, in connecting to the distribution grid, operators of the distribution grid within the area covered by their licence must give priority to RES-Facilities.

Other conditions

Licence granted by the ERO for producing electricity; Authorisation for the Construction of a RES-Facility for the RES-Facilities with the total installed capacity over 1 MW.

Grid Connection Specifics

Approvals by a grid operator

Connection to the grid is subject to the approval of the grid operator based on the location and installed capacity of the RES-Facility;

The grid operator may require a connection feasibility study from an energy producer if it is clear that the connection of the project will have an impact on the operation of the grid or if the applicant applies for connection to a high-voltage grid.

<p>Permitting from authorities</p> <p>Timing: depending on the installed capacity and connection to the grid, an investor could obtain the necessary approvals in approximately six (6) months to two (2) years.</p>	<p>Single Environmental Statement; Environmental Impact Assessment (if applicable) Authorisation for the Construction of a RES-Facility (for generation plants exceeding 1 MW installed capacity); Project Approval and approval for occupancy; Electricity Production Licence; Connection agreement with the grid operator; and Registration with the market operator.</p>
Licensing	
<p>Procedure</p>	<p>A licence to produce electricity is granted once the RES-Facility is built and functioning. Licences are granted by the ERO.</p>
<p>Duration of administrative procedure</p>	<p>Within thirty (30) days from the submission of the complete documentation. In complicated cases the process can take up to a maximum of 60 days.</p>
<p>Licence's duration</p>	<p>Maximum of twenty-five (25) years.</p>

4. Key changes to the RES Support Scheme since 2022

4.1 A New Support System for RES-Electricity

The Promotion Act was amended in response to the goals the Czech Republic has pledged to meet, in order to fulfil the EU obligations set out in its environmental packages (Clean Energy for all Europeans, REPowerEU plan and Fit for 55). The Czech Republic is increasing its contribution to the EU target share of renewable energy in gross final consumption by 2030 to a 30% share of renewable energy (from the original 22%). The Czech Republic reflects the pending increase in the EU target for the share of RES in final consumption by 2030 to 42.5%, but the relevant local legislation is not yet finalised and will therefore only be reflected when the update to the National Plan (see section 4.4) is finalised.

The most important change to the support scheme is the introduction of a new type of promotion in the form of auctions. The way this works is that the State will decide which new specific types of RES-Facilities should be built and will publish an auction. Whoever is able to build and operate this RES-Facility with the lowest promotion amount may win the auction and obtain the promotion. So far in the Czech Republic two auctions for electricity production from RES in 2023 have been announced. The following categories of generating plants were invited to submit bids in the auctions for the support of electricity from RES:

- Power plants using biogas (modernised power plants) with a capacity of 1 MW and above, with a total value of the competed installed capacity of 5 MWe;
- Small hydropower plants (new electricity generation plants and modernised electricity generation plants) from 1 MW, with a total value of competed installed capacity of 7 MWe; and
- Wind power plants (new electricity generation plants) from 6 MW or more, with more than 6 electricity sources, with a total competing installed capacity of 30 MWe (respectively 60 MWe in the first call).

No offers were submitted at the first auction, therefore the Czech Ministry of Industry and Trade adjusted the parameters of the auction to make the second call more attractive for the sector. This involved increasing the maximum amount of the reference auction price and extending the deadline for commissioning the generation plant and for the modernisation of the power generation plant. Seven bids were submitted for the second auction, in which the Czech Ministry of Industry and Trade announced that four bids were successful. All successful bids were for wind power plants, comprising three sources with an installed capacity of 6.25 MW each, and one source with an installed capacity of 6 MW. The offered prices ranged between 2.990 CZK/MWh and 3.469 CZK/MWh.

The priority in terms of solar energy rests with smaller rooftop solar facilities. Their construction is supported by the New Green Light for Savings (maximum state support is CZK 200,000 (approximately EUR 7,900)) or by the Modernisation Fund.

4.2 Support Scheme for Cogeneration

For many years, cogeneration has been a common tool to produce energy and heat in the Czech Republic. The heat produced by cogeneration covers more than half of the total heat produced, and electricity produced by cogeneration currently makes up 12% of all electricity produced in the Czech Republic. Additionally, the number of small cogeneration units has been growing rapidly in the last decade.

The potential for the development of high-efficiency cogeneration has been identified, particularly for smaller sources with electrical outputs at the level of units of MWe - it will likely consist of increasing the number of micro-cogeneration units (capacity below 50 kW), small (capacity below 1 MWe) and medium-sized sources with natural gas-based cogeneration. The optimal scenario was identified as having the following parameters:

- with an increase of 33 MWe of new installed capacity for microgeneration of up to 50 kW.
- with an increase of 227 MWe of new installed capacity for small and medium-sized gas-fired cogeneration with a capacity of 50 kW-5 MW,
- 62 MWe of new installed units using RES and other alternative fuels.

The promotion of cogeneration of energy and heat is regulated by the Promotion Act. Only “highly efficient” cogeneration plants are eligible for State support. “High-efficiency production” is defined as production that achieves a primary energy saving of at least 10%. The operation of cogeneration units has been supported by the State in the form of green bonuses. The ERO determines the value of “annual green bonuses for electricity generated in cogeneration plants” in its price decisions. To be eligible for the cogeneration green bonus, a certificate of origin of electricity from cogeneration issued by the Ministry of Industry and Trade is required. Under the Promotion Act cogeneration has the right to preferential connection to the grid system, provided that the technical access conditions are met.

In December 2022 the European Commission approved, under EU State aid rules, a €1.2 billion Czech scheme to promote green and more efficient district heating mainly based on renewable energy. The measure will contribute to the implementation of the National Plan and to the EU’s strategic objectives relating to the EU Green Deal, namely the EU’s 2050 climate neutrality target. The scheme, which will run until 14 January 2026, will be financed by the EU Modernisation Fund.

The scheme will support: (i) the installation of new heat generation units based on renewable energy or high-efficiency cogeneration to replace existing installations, and (ii) the modernisation of existing heat generation units to operate with biomass instead of coal. Under the scheme, the aid will take the form of direct grants to owners of existing heat generation units and district heating systems, as well as acquirers of new heat generation units. Supported projects will have to achieve a minimum reduction of 15% in CO₂ emissions and of 10% in primary non-renewable energy consumption with respect to the levels before their implementation. In addition, projects for natural gas-fired high-efficiency cogeneration will be required to either enable the switch to renewable and low-carbon gases or implement carbon capture storage or carbon capture utilisation technologies, to avoid lock-in of natural gas.

4.3 National Energy Strategy 2015-2040

The Czech National Energy Strategy was approved by the Czech government in 2015 and contains major strategies in the field of energy up to 2040. The Czech National Energy Strategy is a fundamental document in the field of energy. The general objectives contained therein are further developed in other documents (for example the National Plan (see below)).

The main goal of the document is to ensure a reliable, safe and environmentally friendly energy supply for the needs of the Czech population and economy, at competitive and affordable prices. It promotes lowering emissions, increasing energy efficiency, promoting private energy sources, diversifying energy sources, exporting energy and a downward trend of electricity consumption in private homes.

An update to the National Energy Strategy is expected to be adopted by the Czech Government in 2024. The updated concept of the National Energy Strategy is expected to set a goal for a coal share in energy production of only 10 percent by 2030, a reduction of 33.5% compared to the current share. The National Energy Strategy should also aim for a 37% share of green electricity generation in the Czech Republic.

4.4 National Energy and Climate Plan 2020-2030

This National Energy and Climate Plan 2020-2030 (the “**National Plan**”) stems from the Czech National Energy Strategy and sets out the most important measures to be taken by the Czech Republic, in order to meet the goal for 2030, namely that RES should make up 30% of all energy produced in the Czech Republic.

In the area of decarbonisation, the Czech Republic pledges to decrease carbon emissions by 30% (between 2005 and 2030). RES plays a large role in achieving this goal. The most important tool is the Promotion Act, which brings in a new type of state support (auction bonuses) for new RES-Facilities and for keeping existing RES-Facilities in operation.

The strategic goal of the Czech Republic is to reduce the share of fossil fuels in primary energy consumption to 50% by 2030 and to 0% by 2050, as well as to completely eliminate the use of coal for electricity and heat production by 2033. The modelled scenario (discussed in detail in the National Plan) shows the feasibility of meeting these targets, but only if ambitious policies and measures are set. The scenario also confirms the assumption of a complete phase-out of coal for heat and power generation by 2033, with a significant decline already between 2025 and 2030.

In the area of energy efficiency, the Czech Republic sets goals for a decrease in the total energy consumption, binding goals for public building efficiency and binding goals for a gradual decrease in total electricity consumption. The revised EU target to reduce final and primary energy consumption by 11.7% means a decrease from 1064 PJ (the latest available data from 2021) to 846 PJ for the Czech Republic in 2030. This is the target set by the Czech Republic but it has been observed that the modelled scenario shows the difficulty of achieving it. Even with the adoption of ambitious policies and measures, including the implementation of a progressive building renovation scenario, the evolution of final consumption leads to a value of 945 PJ by 2030. While this is a very significant reduction of about 120 PJ, efforts may still fall short of the target by approximately 100 PJ.

The last area elaborated by the National Plan is research, innovation and competition. The plan sets no specific goals; however, there are other strategies and plans in place to ensure the development and public financing of research. Research into smart grids, infrastructure and storage technologies has been a focus of the Czech Republic.

5. Energy act

Since its enactment in the year 2000, the Energy Act 2000 has undergone many amendments, mainly as a result of the obligation to implement a multitude of EU legislation governing the operation of the energy sector. The relatively high number and scope of these individual amendments have made the Energy Act 2000 highly opaque, its provisions confusing and, in some cases, ambiguous, causing confusion as to its interpretation. This fact has long been reproached by the Government Legislative Council in examining each of these amendments to the Energy Act 2000. The Energy Act 2000 has undergone 3 major amendments in 2023. Their main goal is to increase the share of renewable energy produced and consumed in the Czech Republic.

- The first amendment to the Energy Act 2000 from 2023 (also called 'Lex OZE I') changes the necessary value of the installed capacity from 10 kW to 50 kW from which it is necessary to have a licence for the electricity production. This corresponds to approximately the installed capacity of a solar power plant on a larger residential building. The amendment also increases the threshold for demonstrating professional competence at the same value.
- Buildings for the production of renewable energy with a total installed capacity of up to 50 kW in a built-up area are now classified as buildings that do not require project permission or notification under the Building Act.
- Low-carbon electricity generation plants with a total installed electrical capacity of more than 1 MW will be regarded as 'established and operated in the public interest'. This will facilitate the authorisation of large-scale RES.
- The most important legal concept introduced by the second amendment to the Energy Act 2000 from 2023 ('Lex OZE II') is the energy and renewable energy community. It is a form of organisation that allows a group of individuals, businesses or local authorities to share the benefits of energy produced, typically from renewable sources. The goal of this amendment is also to achieve greater energy safety and self-sufficiency and protection of rights of end consumers.
- The third amendment to the Energy Act 2000 ('Lex OZE III') should focus on the introduction of clear rules for the grid energy storage and flexibility aggregation. A new licence type should be obtained specifically for energy storage. The holder of an electricity production license should also be entitled

to store electricity in the distribution system. Energy communities should be entitled (with a smaller installed capacity) to supply electricity from electricity storage to an electricity trader, or markets, even without a license. The final wording of this amendment is now being discussed by the Government.

In 2020, material principles of the New Energy Act were published by the Czech Government. So far, the Energy Act 2000 has only been updated by those substantial amendments mentioned above. This may result in the preparation of the planned New Energy Act being delayed.

6. Overview of the Technical Innovations in Electricity Storage and Applicability in the Czech Republic of such Storage Technologies

Efficient energy storage is one of the key prerequisites for the successful use of RES-Energy. As renewable energy is dependent on the weather and/or time of day, electricity grids need to become more flexible, in order to manage the changes in the amount of electricity supplied. Energy storage is a major component of the functionality of RES-Systems. For times when there is an energy surplus, there is a need for technology and space to retain and store this excess energy.

The most common energy-storage system in the Czech Republic remains pumped-storage hydroelectricity. The Czech environment is ideal for these systems because of the abundance of water sources in mountainous areas (for most of the year). The Czech Republic has large water storage facilities that use cheap energy to transport water uphill and let the water stream downhill to produce energy in peak hours, when demand for electricity is at its highest.

Another common mode of energy storage in the Czech Republic is rooftop solar panels, where a solar panel is connected to a lithium-ion battery that stores excess energy. This stored energy may be used when sunlight is scarce.

However, in order to balance the entire grid, larger batteries with storage capacities of tens of MWh are needed. These can stabilise systems powered by RES-Electricity, protect the grid against blackouts, ease the transition to electromobility and ultimately save money for expensive electricity in peak hours. Some large-scale batteries have been installed but the area of energy storage is still underdeveloped, and legislation is lacking.

The concept of air compression systems is being researched but is not widely used in the Czech Republic at present.

7. Power purchase agreements (PPA)

In recent years, the use of power purchase agreements (PPAs) for purchasing RES-Electricity has been on the rise in the Czech Republic. This reflects the commitment to transitioning towards a low-carbon economy, since PPAs have emerged as a popular tool for promoting renewable energy development.

PPAs are contractual agreements between renewable energy developers and buyers, typically large corporations or institutions, whereby the developer agrees to supply electricity at a predetermined price (either fixed or indexed) over a specified period. Hence, the PPA gives the buyer predictability about its energy costs while guaranteeing the origin of the electricity.

The most popular variants of PPA contracts are:

- 'On-site PPA, where the RES facility (usually solar power plant) is located on the customer's premises or is physically connected to the point of consumption;
- 'Off-site PPA Pay as Produced', where the subject matter of the contract is a supply of RES-Electricity without direct physical connection to the point of consumption. The customer undertakes to offtake a defined percentage of the electricity produced. The amount of energy produced is not guaranteed due to external influences such as light and wind. The advantage for the buyer is the lower price compared to the 'Pay as Contracted' option; and
- 'Off-site PPA Pay as Contracted', where the subject matter of the contract is a supply of RES-Electricity without direct physical connection to the point of consumption. A specific supply size is guaranteed by the producer, based on a pre-determined delivery schedule. The price of this option is usually higher compared to the 'Pay as Produced' option.

Typically, PPAs in the Czech Republic are concluded for a period of 10 to 15 years. Very often the RES – Facility is developed only after the PPA is signed.

Since PPAs enable businesses to directly support the development of renewable energy projects, they reduce greenhouse gas emissions and contribute to climate change mitigation efforts. This aspect resonates with companies seeking to enhance their environmental credentials and meet sustainability targets.

8. Foreign Direct Investment (FDI)

In May 2021, the Foreign Direct Investments Screening Act (Act No. 34/2021 Coll. – the “FDI Act”) came into force. The FDI Act allows the government to screen potentially high-risk foreign transactions by investors from countries outside the EU. The state may approve the foreign investment under review or make it conditional upon fulfilment of certain conditions, or in extreme cases, prohibit its execution (or continuation, in the case of existing projects). The FDI Act defines foreign investors as a natural or legal person from outside the EU or a legal person or trust fund directly or indirectly controlled by such a person or legal entity, that intends to make or has made (i.e., completed) an investment of any kind (i.e. both share and asset deals) that could endanger the security of the Czech Republic or its public or internal order. Only foreign investments that would enable the foreign investor to gain effective control of an economic activity can trigger an investment review. However, effective control can be acquired among others by enjoying 10% of voting rights, which means that minority investments may also be subjected to review.

The Czech FDI control regime distinguishes between investments in (a) specified industries (some energy related investments can be categorised as specified industries because of their critical infrastructure and services characteristic - e.g. power plant, water supply), (b) media and (c) all other sectors. Whereas investments in (a) specified industries and (b) media are subject to stricter scrutiny by requiring an application for permission or obligatory proposal for consultation. No direct obligation is imposed on foreign investors who intend to make or have made investments in (c) other sectors. However, the Ministry of Industry and Trade may initiate an *ex officio* review of any investment (i.e. not only investments in one of the specified industry sectors) which might endanger the security of the Czech Republic or its public or internal order. Such an investment review may result in the prohibition of the investment, or its discontinuation if the investment has already been made. The Ministry may intervene before the investment is made or within a period of five years from the moment the investment was made.

In order to protect the investment from an *ex officio* review, any foreign investor may submit a voluntary proposal for consultation to the authority. Following said consultation, the investment is deemed to have been approved and thus no longer subject to subsequent review, unless it is revealed that the investor submitted untruthful or incomplete information.

In respect of proposals for consultation, the Ministry must notify the foreign investor of the outcome of the consultation by issuing either (i) a decision to initiate a review, or (ii) a notification that it did not find any grounds to initiate a review – within a period of 45 days from the date it receives the complete filing. In respect of a mandatory application for permission, the Ministry is empowered to either (i) issue a decision that the investment is approved no later than 90 days after the date on which it initiates the review proceedings (in more complex cases, an additional 30 days may be granted), or (ii) request a Government resolution no later than 90 days after the date on which it initiates the review proceedings (in more complex cases, an additional 30 days may be granted). Consequently, the Government must issue its resolution whether to prohibit an investment or its continuation or impose a conditional permission within 45 days. The Ministry must then issue its decision accordingly without undue delay.

In general, the FDI investor should be the applicant. A request for approval of FDI or a consultation proposal is to be submitted in a form specified by Government Decree No. 178/2021 Coll., and signed by a statutory representative of the applicant.

Failure to comply with the FDI Act carries the risk of a fine for the foreign investor in the amount of up to 1% of their aggregate net turnover for the most recent complete fiscal period, or up to CZK 50,000,000 (if the investor went ahead with the foreign investment without filing a request for approval, or without filing a mandatory request for consultations), or in the amount of up to 2% of the aggregate net turnover for the most recent complete fiscal period, or up to CZK 100,000,000 (if the foreign investor failed to respect a decision whereby the further continuation of an existing foreign investment has been prohibited, or to fulfil the conditions that were imposed on them). The FDI Act does not apply to investments that were completed before the FDI Act came into force.

9. Renewable hydrogen (Green hydrogen)

The Czech Republic's Hydrogen Strategy from 2021 to date has responded to the requirements expressed in the European Commission's 2020 Communication on a Hydrogen Strategy for a Climate Neutral Europe, in an effort to achieve the goals of the Green Deal for Europe.

The Hydrogen Strategy is currently being updated under the auspices of the Ministry of Industry and Trade of the Czech Republic, following the changes introduced in this area during 2023. The revision of the Directive on the promotion of the use of energy from renewable sources, the so-called 'RED III' (Directive (EU) 2023/2413), introduced new binding targets for the consumption of green hydrogen in the transport and industrial sectors, in an effort to promote the consumption of green hydrogen across Member States. The updated version of the Czech Hydrogen Strategy should clearly express support for renewable hydrogen and highlight sectors, which are considered to be the most important in terms of greenhouse gas emission reductions. In particular, it should identify specific actions to be taken in the coming years in the area of hydrogen market development - the launch of support for renewable hydrogen production from the Modernisation Fund, the comprehensive anchoring of hydrogen as an energy gas in the Czech legislation, and the promotion of hydrogen consumption in the industrial and transport sectors (for example, the construction of filling stations). The updated strategy is expected to be approved in 2024.

The development of the market for green hydrogen in the Czech Republic is only at a very early stage. There has not yet been a significant expansion of hydrogen technologies. The high up-front costs are partly covered by subsidies. Several individual green hydrogen plants have recently been established but these are only pilot projects designed to test its practical use. The first sophisticated energy system for the industrial production of green hydrogen in the Czech Republic became operational in October 2023.

Authors:



Robert David

Partner

E robert.david@wolftheiss.com
T +420 234 765 111



Marie Talašová

Counsel

E marie.talaso@wolftheiss.com
T +420 234 765 228



Barbora Malimánková

Senior Associate

E barbora.malimankova@wolftheiss.com
T +420 234 765 111

Generating Electricity from Renewable Sources in CEE & SEE

Energy Industry Group

Hungary

Wolf Theiss

Country General Information

Capital: Budapest

Location: Hungary is situated in Central Europe in the Carpathian Basin and shares a border with Slovakia to the north, Ukraine to the north-east, Romania to the east and south-east, Serbia to the south, Croatia and Slovenia to the south-west, and Austria to the west.

Surface: Hungary is a mid-sized country spanning 93,030 km².

Population: 10 million

Climate: Hungary has a temperate seasonal climate with four distinct seasons.

Resources: Hungary's geography has traditionally been defined by its two main waterways, the Danube and Tisza rivers. The main natural resource of the country is the black soil of its farmlands. The alluvial soils of the Great Hungarian Plain are highly fertile. Soils in the northern highland river basins are also generally fertile. The nation's main mineral resources are bauxite, coal, oil, natural gas, manganese, uranium, lignite and iron ore.

Electricity Grid: The total length of the transmission system network is 4,897 km, which is comprised of 750 kV, 400 kV, 220 kV and 132 kV overhead lines and 132 kV high voltage cables. The total route length of the network is 169 764 km.

Electricity Transmission, Distribution and Supply: The current structure of the Hungarian electricity market began to take shape around 1995, when the majority of the large power plants, the public utility suppliers and the distribution networks were privatised. Currently, domestic power plants sell the majority of their generated power output through agreements with the TSO or traders. A significant part of the purchases takes place on the secondary trade market. The TSO has the exclusive right to operate and maintain the Hungarian transmission system network. The distribution systems are operated by 6 regional DSOs.

Official Language(s): Hungarian

EU Member: since 2004.

NATO Member: since 1999.

United Nations Member: since 1955.

Currency: Hungarian Forint (HUF)

Schengen: since 2007.

Political System, Administrative Organisation and Economy: Hungary is a parliamentary republic with a government led by the prime minister, exercising executive power, and a head of state (the president of the republic) whose primary responsibilities are related to security of the constitutional democracy, representation of the country and special orders of state. The country is divided into 19 counties plus the capital (Budapest) as an independent entity.

1. Defined Terms for the Main Permits required for the RES-Electricity Generation Facilities

DSO	means the authorized distribution system operators in Hungary, currently, E.ON Dél-dunántúli Áramhálózati Zrt., E.ON Észak-dunántúli Áramhálózati Zrt., OPUS TITÁSZ Áramhálózati Zrt., ELMŰ Hálózati Kft., MVM Émász Áramhálózati Kft., and MVM Démász Áramhálózati Kft.;
FIT	means the so-called „feed-in tariff“ support scheme regulated mostly by Government Decree No. 389/2007. (XII. 23.), where the RES-Electricity is sold for a mandatory off-take price;
GoO	means guarantees of origin;
HEPURA	means the Hungarian Energy and Public Utility Regulatory Authority;
METÁR	means the so-called „premium support“ scheme regulated by the METÁR Decree, where RES-Electricity is sold for either a mandatory off-take price (in case of small projects below 0.5 MW and demonstrative projects) or a market price with price correction (i.e., projects above 0.5 MW);
METÁR Decree	means Government Decree No. 299/2017. (X. 17.) on the feed-in tariff for renewable electricity and the premium tariff;
PPA	means power purchase agreement;
RES	means renewable energy sources in general, such as wind, solar, aerothermal, geothermal, hydrothermal and oceanic waves, hydraulic, biomass and biogas;
RES-Electricity	means the electricity generated from RES;
RRF	means the Recovery and Resilience Facility;
TSO	means the transmission system operator in Hungary, i.e., MAVIR Zrt.

2. Envisaged Investments in Hungary

2.1 National Energy Strategy of Hungary

The evolving landscape of the energy sector in Europe anticipates significant market transformations. Therefore, Hungary, recognising the strategic importance of the energy sector, has renewed its National Energy Strategy to align with recent technological and market changes, EU regulations, and state asset policies. The updated strategy aims to bolster energy sovereignty and security, sustain the benefits of reduced energy costs, and decarbonize energy production through a mix of nuclear and renewable sources, crucial for countries like Hungary with limited traditional energy resources. Key measures include investments such as:

- a. investments promoting the on-site use of RES-Electricity among consumers;
- b. investments in the development and stability of the electricity grid, such as the establishment of new gas-fired power generation capacities and investments in energy storage facilities;
- c. investments in nuclear energy, in particular supporting the commissioning of the Paks 2 project;
- d. investments in biogas and biomass power plants and other forms of geothermal energy;
- e. high value-added investments and investments in low energy consumption, energy storage or carbon capture and use;
- f. investments in the increased utilisation of non-recyclable waste in heat generation;
- g. investments in the establishment of decentralised, gradually connected district heating islands;
- h. investments in the “greening” of transportation including the establishment of electric charging stations; and
- i. investments in the development of alternative green fuels.

The revised National Energy Strategy and the related action plans provide a vision for the future of the Hungarian climate and energy sector up to 2030, while also providing an outlook towards 2040. The main objectives are to make the energy sector “clean, smart and affordable”, focusing on consumers, (i.e., strengthening of security of supply, making the energy sector climate-friendly, and promoting innovation and economic development). The National Energy Strategy envisages a progressively transformative electricity market dominated by solar and nuclear power, with fossil electricity generation contributing only 10%.

Renewable energy is one of the main focus areas with clear targets for the electricity, thermal and transportation sectors, setting a 21.3% share of RES in the electricity sector, 28.7% RES in the heating and cooling sector and 16.9% RES in the transportation sector by 2030.

Achieving these targets will ensure a far more stable and balanced renewable energy mix. In view of the growing importance of weather-dependent, mainly photovoltaic generation capacity in RES-Electricity production, the strategy aims to increase solar capacity to nearly 6,500 MW by 2030 and to nearly 12,000 MW by 2040. In addition, similar expansion is anticipated for wind turbines, despite the currently low installed capacity (expected to increase from approximately 330 MW to 1,000 MW).

With the increasing electricity load and demand on the system, it is crucial to improve and increase flexibility. Therefore, the classic and smart grid developments of the TSO and the DSOs (such as developing new gas-fired power generation capacities and energy storage capacities) is a must in order to integrate more solar energy without compromising security of supply.

“Greening” transportation is also an important aspect of fighting climate change, with a particular emphasis on the development of railways, which are significantly more climate-friendly than internal combustion engine road transportation. The Hungarian Government has also launched a major “green” programme with a number of tenders for electric cars, buses and bicycles in recent years.

2.2 Recovery and Resilience Facility

The Recovery and Resilience Facility (RRF) stands as a temporary instrument at the forefront of NextGenerationEU, the European Union's plan for emerging stronger and more resilient from the energy crisis of recent years. The RRF funds are allocated to EU Member States to undertake bold reforms and investments. The overarching goals are to foster sustainability, resilience, and readiness for the green and digital transitions, aligning with EU priorities, and to address specific challenges highlighted in country-specific recommendations. Moreover, the RRF plays a pivotal role in realising the REPowerEU plan, the Commission's response to the socio-economic hardships and global energy market disruptions triggered by Russia's invasion of Ukraine.

Entering into force on 19 February 2021, the Facility financed reforms and investments from the onset of the pandemic in February 2020, and will continue to do so until 31 December 2026. Member States can access financing up to a predetermined maximum amount. To tap into support from RRF, EU governments have submitted national recovery and resilience plans delineating reforms and investments to be executed by the end of 2026, complete with clear milestones and targets. Notably, these plans are required to allocate a minimum of 37% of their budget to green measures and 20% to digital measures. Hungary's plan includes 13 reforms and 16 investments to reduce its reliance on fossil fuels. To finance this increased ambition, Hungary has requested to take up EUR 3,918 million in loans, in addition to Hungary's REPowerEU grant of EUR 700.5 million.

The RRF operates on a performance-based model. This means that the Commission disburses funds to each country only upon the attainment of agreed milestones and targets, reflecting progress towards the completion of reforms and investments outlined in their plan. Until now, the Commission has disbursed EUR 919.6 million in pre-financing to Hungary.

3. Executive Summary – RES Market Status and Development of RES-Electricity Facilities

3.1 Market Overview – Factsheets

As at the end of 2022, Hungary has witnessed a significant growth in its domestic electricity system, with the installed capacity increasing from 11,440.8 MW to 12,475.3 MW. This notable 9 percent increase was predominantly fuelled by the connection of new solar power plants, contributing 666.8 MW, and the growing capacity of small-scale household power plants, adding an additional 367.7 MW. The solar sector has particularly flourished, reaching a total capacity of 2,524.9 MW, constituting almost one-third of the overall installed capacity. This marks a substantial 6.4 percent increase from the previous year.

Notably, nearly two-thirds of the increased photovoltaic capacity can be attributed to industrial-scale solar power plants. This emphasises a strategic shift towards larger solar installations. Concurrently, the installed capacity of conventional power plants has experienced a decline, although there are prospects for new combined cycle power plants in the upcoming years.

While the legal environment in Hungary has thus far hindered the establishment of newly constructed wind farms over the past decade, the electricity system currently boasts 323.3 MW of installed wind power capacity, generating 585 GWh of electricity in 2022.

The integration of weather-dependent power plants, particularly solar, has introduced challenges in managing the electricity system. In 2022, this impact was evident at the transmission system level, prompting the transmission system operator to procure additional reserves to ensure stability. The growing reliance on renewable energy sources, coupled with the intermittent nature of these sources, poses an ongoing challenge for control of the electricity system. Given the evolving energy landscape, control of the electricity system has become more complex. To address this, the transmission system operator has implemented measures to enhance the efficiency of the balancing regulation market. New products have been introduced, and modifications to the reserve balancing methodology in the capacity market in 2023 aim to improve cost efficiency. These regulatory initiatives reflect a proactive approach to adapting to the changing dynamics of the energy sector and ensuring the reliable operation of the Hungarian electricity system.

Hungary's electricity system is connected with all neighbouring countries, with cross-border transmission cables reaching approximately 50 percent of the nation's gross installed capacity. This surpasses the EU target of 15 percent, providing Hungary with significant transmission capacities for flexible diversification of commercial transactions. The existing infrastructure facilitates robust cross-border connections, enhancing regional energy cooperation.

Hydropower plants have a total installed capacity of 61 MW, capable of generating 168 GWh of electricity.

The Paks nuclear power plant currently produces around half of the electricity generated in Hungary. The Hungarian Government decided to build two new reactors with a total capacity of 2,400 MW.

As a climate protection technology, the development of a hydrogen economy is noteworthy. As an example of greening hydrogen production, the surplus electricity generated at night at the Paks nuclear power plant or unused solar energy could be used.

3.2 Support Schemes

Most of the RES-Electricity projects that have already reached the operational phase in Hungary are supported under the FiT or METÁR system. The FiT system was replaced by the METÁR system on 1 January 2017 (i.e., applications can no longer be submitted, but the FiT entitlements already granted remain in force). Under the FiT system, the electricity generated is sold to the TSO at a fixed price, whereas under the new METÁR system the electricity is sold mainly to traders or on the power exchange with price corrections.

The METÁR system was originally designed for new projects (i.e., those that had not yet started to be implemented at the time of submitting an application for support). The system is intended to have five separate branches for different target audiences. In reality, however, only the so-called "green premium granted through tendering" system for installed capacities over 1 MW is currently available, although a new call for tenders has been pending since 2022.

The HEPURA is the central agency for the FiT and METÁR systems. The FiT price, the supported quantity and the support period, as well as the margin of METÁR price correction, are all defined by HEPURA.

As the Hungarian energy market has undergone significant changes due to the energy crisis in Europe, support schemes have been marginalised. Concurrently, there has been a notable increase in the use of PPAs as an alternative to the previously popular support schemes.

4. Key changes to the RES legislation since 2022

4.1 Further Developments in Grid Connection Rules

Over the past two years, the landscape of grid connection regulations has undergone significant fluctuations, adapting to the dynamic shifts within the energy sector. These alterations aim to foster a transparent, secure, and efficient system that caters to the needs of developers, consumers, the TSO, and the DSOs. The key transformations that have emerged during this period are the following:

- In December 2022, the Hungarian Government significantly tightened the grid connection rules for weather-dependent power plants. Developers with a valid grid connection right (but at least a technical-economic information sheet, or “*műszaki-gazdasági tájékoztató (MGT)*” in Hungarian) were compelled to declare their intended grid connection year to the TSO or the DSOs, which was new from the previous quite flexible connection timelines. Based on these declarations, the TSO and the DSOs conducted load calculations and, if necessary, had the right to postpone the grid connections until 2027. The approved grid connection date now operates within a one-year window from 30 January of a given year to 30 January of the following year. Additionally, new payment obligations were also introduced, requiring developers to pay securities or provide a bank guarantee. The financial securities paid will be included in the grid connection fee and credited by the TSO or the DSOs in the earliest grid connection fee instalment due. The second publication procedure to secure free capacities in the system took place on 30 November 2023 under these new tightened rules, in which developers could apply for grid connection rights from 2029.
- In March 2024, with the goal of managing increased grid capacity demand outlined in the second publication procedure efficiently and equitably, alterations to the grid connection rules have been made again. These changes may present challenges for some developers, as they face tighter restrictions on grid access until 2030. Among the key changes, capacity requests for

connection beyond 2030 are generally rejected, and an order of preference has been established to prioritize eligible applications. The new rules also mandate transparent publication of granted connection rights and introduce additional financial guarantees for eligible applicants. Moreover, looking ahead, a new capacity allocation regime is anticipated by the end of the year, marking a significant shift in the allocation process.

- As at 2024, the Hungarian Government has introduced new regulations in order to clarify how property owners and tenants could establish weather-dependent on-site power plants (e.g., solar and wind) and sell electricity to businesses on their premises. The regulations provide guidance on establishing private cable lines and grids, allowing users to plan private grids not only for their energy consumption but also for supplying on-site consumers, expanding opportunities for on-site electricity sales. Additionally, the amendment addresses the expansion of electricity sharing, according to which consumers have the option to sell the electricity passed on or generated by them within their consumption site.
- A defining innovation is that power plants or storage units operated on a property adjacent to the designated consumption site – or reasonably close to it in case of power plants over 5 MW capacity – can directly connect to the site’s private grid. This requires the construction of an interconnector (production) line, but the cost of this can be recovered realistically by not using the public grid for energy transmission. If the producer supplies only on-site consumers, it may even be exempted from the obligation to compete for scarce feed-in capacity to the public network or to bear the costs of its development. A further condition is that electricity produced or stored by the power plant / storage facility must not result in any change in the feed-in capacity of the grid connection point of the site supplied and that only one site can be connected to a power plant or electricity storage facility.
- The concept of a self-sustaining generation unit has also been introduced. These units, with a minimum of 5 MW capacity, connect to the public grid without a feed-in capacity. They share generated electricity at the same connection point with users or consumers within the same corporate group. A self-sustaining generation permit is required for their establishment, following rules like those for power plants of 50 MW or more. Regulating self-sustaining generation units aims to promote sustainable and efficient electricity generation. The permit enables facility modernisation and capacity expansion while maintaining necessary controls for grid stability.

The foregoing provisions will undoubtedly have a significant impact on domestic solar power developments. On the one hand, investors had already devoted substantial financial resources to many projects, and the above restrictions resulted in significant changes in their business models in the short term. Consequently, not all investors have been able to adapt to the new regulatory environment quickly enough. The increased financial costs and the reduced opportunity for allocation of grid connection capacities certainly narrows the range of potential investments. On the other hand, the amendments regarding on-site projects will unlock new business opportunities for alternative, decentralized energy systems. The new rules will help achieve this by clarifying the legal framework for on-site energy supply. Under the new regulations, installing power plants in proximity to large industrial consumers will become a more attractive option, as private lines may be exempted from paying system charges by directly supplying to the user.

4.2 A Positive Outlook for Wind Energy

From the outset, the regulation of wind energy in Hungary has been restrictive compared to European standards, with significant limitations to the size of the areas suitable for investment and a strict, bureaucratic licensing procedure. In 2016, various legislative amendments essentially prohibited the installation of wind farms in Hungary. They imposed technical conditions that wind turbines had to be built in accordance with the currently available knowledge – a condition that was difficult to meet. Although the legal environment in Hungary has not allowed for newly built windfarms in the last decade, the electricity system still has 323.3 MW of installed wind power capacity, which generated 585 GWh of electricity in 2022 as highlighted above.

Presently, the European Union's RRF should reinvigorate the Hungarian wind energy market. The facilitation of onshore wind investments is one of the reforms listed in Hungary's Recovery and Resilience Plan, which should bring a boost to this sector.

In essence, by reason of this national plan, the regulatory framework has been amended in order to remove unnecessary limitations. In particular, the distance requirement will be reduced (from the prior 12 kilometres to 700 metres) for the proximity of wind turbines and their power generating capacity to settlements. Tenders will also no longer be required to obtain the right to build wind farms. In addition, through the creation of designated target areas in parts of the country where wind energy density and wind speeds are favourable, developers will be able to obtain a specific simplified authorisation procedure for the installation of wind farms, with shorter procedural deadlines.

4.3 Tighter Rules on FDI Clearances

The beginning of 2024 has also brought significant changes in the field of foreign direct investment (FDI) screening in Hungary. As at January 2024, Hungary has tightened its already restrictive rules on the transitional FDI regime, thereby narrowing current exemptions and introducing a right of first refusal for the Hungarian State in solar power plant investments. The amended rules limit the range of transactions exempt from FDI clearance, retaining only foreign transactions as an exception, provided that they are purely foreign-to-foreign transactions and do not result in a change in the direct ownership structure of the Hungarian target company (subordinated affiliate).

Another novelty of the new rules amending the transitional FDI regime is that it grants the Hungarian State a right of first refusal in respect of domestic strategic target companies that are planning to be acquired by foreign investors for the implementation of photovoltaic (solar) projects. According to the new rules, if the sale and purchase transaction subject to prior approval is concluded in respect of a strategic target company whose main or additional activity (in Hungarian: “TEÁOR”) is electricity generation and which is engaged in solar power plant activities, the Hungarian State will have a statutory right of first refusal before any other party.

The process involves a thorough examination by the competent minister, followed by a decision from the minister responsible for energy policy on the exercise of the right of first refusal. This decision and the relevant documentation will be forwarded to the Hungarian National Asset Management Zrt. and at the same time to the competent minister conducting the FDI clearance. The competent minister will terminate the FDI clearance procedure, expressly stating that the minister responsible for energy policy is of the opinion that the exercise of the right of first refusal is justified.

Thereafter, the minister responsible for energy policy must become the beneficiary of the State’s ownership rights and obligations over strategic target companies acquired through the right of first refusal, which will be transferred to the state-owned MVM Zrt. within 6 months. Financial coverage for these acquisitions will be provided in the national budget.

For further details regarding Hungary’s current FDI system, please refer to our international comparative legal guide, available at <https://www.wolftheiss.com/insights/foreign-direct-investment-regimes-2023/>.

4.4 Geothermal Energy

So far, geothermal energy has remained largely untapped despite its considerable potential in Hungary. Geothermal energy holds promise as a reliable and sustainable energy source due to Hungary's geological characteristics. In recent years, there has been growing interest from both domestic and international stakeholders in harnessing Hungary's geothermal potential.

Recognising this, Hungary has implemented comprehensive legislation to regulate geothermal energy exploration and utilisation. The key aspects of Hungary's geothermal legislation include licensing procedures for exploration and exploitation activities, and incentives to promote investment in geothermal projects. The geothermal legislation also addresses environmental protection measures, such as monitoring and mitigation of potential impacts on groundwater quality and surface ecosystems.

By providing a clear regulatory framework and incentives for investment, Hungary aims to promote the development of geothermal energy as a key component of its renewable energy strategy.

5. Significant and/or expected changes in 2024

5.1 Power Purchase Agreements (PPA)

In line with EU trends, there is also a growing interest and enthusiasm for long-term PPAs in Hungary. Through PPAs, stakeholders can mitigate the risks of electricity price increases and fluctuations on the market by ensuring long-term price fixing. The scheme can provide additional benefits for both producers and end-users compared to traditional market solutions. For the producer, because normal market conditions might not allow it to make such a capital-intensive investment. For the user, because it will enable them to meet a significant part of their energy needs from renewable sources, in line with increasing sustainability requirements. This is all the more true in the face of the electricity market prices that have increased in parallel with the boom in natural gas prices over the past years.

However, in Hungary, the overwhelming majority of electricity producers are in the FiT System. Hence, there is little to no market practice for PV-based PPAs. Both traders and large corporations are only beginning to assess the possibilities in solar projects, and there are no established practices or standard legal procedures in any terms. Although PPAs and related investments are theoretically feasible in Hungary, there are currently several factors hindering the uptake of the scheme, on the part of producers, end-users and regulators alike:

- a. When talking about renewables, there are legitimate concerns about security of supply, which are not only a barrier to the deployment of renewables in this country and not only for PPAs, but also for renewables in general. Renewables are not capable of continuous baseload generation, which understandably makes users wary of them.
- b. Domestic consumers of Hungarian companies are not yet environmentally conscious enough to be willing to pay more for more sustainable products, and in PPAs, at least under normal circumstances, they typically pay a premium over market prices.
- c. Since PPAs are also financing schemes, the electricity producer takes on a financing risk through PPAs. Therefore, stable companies with a high credit rating are the most suitable partners for producers, which limits the potential range of Hungarian corporate users.
- d. At present, the domestic financial sector is not prepared to handle the relatively complex PPA contracts, but under the right circumstances, are unlikely to shy away from the new scheme.
- e. In the eyes of producers, a PPA also competes with the METÁR system, which offers better conditions for the producer, especially in terms of risk allocation and pricing, than are currently available with a PPA. The market therefore expects that CfD (contract for difference) clearing systems and contracts could be popular in Hungary, because they are physical PPAs and are similar in structure to METÁR, which increases their acceptance by banks and financiers.
- f. The 41% Robin Hood tax on pre-tax profits is a significant barrier to the domestic expansion of PPAs. The tax is also payable by renewable electricity producers, unless they participate in the FiT or METÁR Systems.

So far, there has been no indication of whether the government or the regulator plans to take specific measures to facilitate the uptake of these agreements. Conservative estimates therefore suggest that a total of 200-300 MW solar projects developed through PPAs are likely to be completed within 4-5 years, initially in the physical PPA sector.

5.2 Robin Hood Tax

Energy suppliers (e.g., holders of a power generation license or electricity traders) are subject to the so-called Robin Hood tax, being a special 31% income tax (increased to 41% in the 2024 tax year) on the pre-tax profit of stakeholders, adjusted by certain tax base modifying items. An exception is made for those participating in the FiT or METÁR system and with a capacity below 50 MW. This tax burden puts prospective solar developments that would take place without the above subsidies in a doubly difficult situation: in addition to not receiving the state support in question, they will also have to pay the special Robin Hood tax.

Financial simulations show that the estimated return is significantly worse if the project does not participate in the FiT or METÁR system, (i.e., the electricity produced is sold entirely at market prices). The difference is mainly due to the Robin Hood tax payable outside the FiT and METÁR systems. In this case, the average annual return for the project is around 3 to 5% depending on the investment cost (for a new METÁR project, the average is between 6 to 8%), which rarely provides a sufficient return for investors.

Beyond those explained in Section 4.1, the developments in grid connection rules could also yield tax advantages. The introduction of self-sustaining generation units under the new regulations potentially exempts them from the Robin Hood tax, as they may not meet the criteria for classification as energy suppliers according to current laws. Nonetheless, the legislative language remains ambiguous, necessitating further clarification on this matter.

Overall, the current rules of the Robin Hood tax create a competitive disadvantage for small power plants not participating in the FiT or METÁR System. These circumstances significantly reduce the return on investment for projects without subsidies and thus reduce the chances of a positive investor decision. Without a positive legislative turnaround, change in this area is unlikely. However, there is no information on whether the legislature plans to change its approach to the tax in the near or distant future.

5.3 Energy Communities and Aggregators

The implementation of the EU Clean Energy Package introduced new actors to the Hungarian electricity market, namely the energy communities and independent aggregators, which are registered and supervised by HEPURA.

Aggregation is the combination of power plants, user installations and electricity storage facilities connected to the electricity grid or to a private line for the purpose of sale, purchase or auction on the energy market. By combining the production and consumption of smaller, individually inefficient actors, the aggregator can create a larger portfolio through which these actors can access the power exchange or other electricity markets.

Energy communities are cooperative or non-profit legal entities with the main purpose of providing environmental, economic and social benefits to their members operating within certain areas. These include at least one of the activities being in power generation, storage, consumption, provision of distribution flexibility services, electricity sharing and aggregation, provision of e-mobility services and/or operation of e-charging facilities. In a significant stride towards a sustainable and community-driven energy future, Hungary has recently registered its first energy community. This initiative is a model for future energy communities, emphasising the commitment to a greener future and tangible changes in energy production and consumption practices.

5.4 Guarantees of Origin

GoOs are tradable, electronic certifications proving to the final consumer that a certain quantity of the energy consumed has been produced from renewable energy sources. GoOs are in a privileged position: the amount of electricity from RES or from high-efficiency cogeneration can only be certified by GoOs in Hungary.

HEPURA operates the official registry of GoOs in its electronic management system. From 1 February 2022, this management system is compatible with the European Energy Certificate System (EECS). Consequently, Hungarian GoOs can be transferred to foreign management systems and the foreign GoOs can be more easily adopted to the Hungarian management system.

Due to the growing trend of GoO trading, the Hungarian power exchange (HUPX) launched a GoO market platform in 2022. During the first phase of the operation of the GoO market platform, the TSO, as the nominated buyer of Hungarian FiT production, was selling the related GoOs. Now other members of the GoO market platform can sell their GoOs, including non-FiT GoOs. According to HUPX, the GoO trading platform is highly liquid and transparent, aiming to strengthen the role of GoOs in the region.

6. Technical innovations

6.1 Electricity Storage

The domestic battery sector can play a key role in achieving the 2050 climate neutrality target. Accordingly, the Hungarian Government has set a clear goal for Hungary to become a leader in the battery industry. In August 2023, the approach to electricity production and consumption from renewable energy sources has taken a new turn, as battery energy storage systems are now among the investments that the Hungarian Government intends to support with financial incentives. A contract for a difference-based scheme has been set up that may reimburse developers or the Hungarian state for the difference between the prevailing market price and the strike price set under the subsidy, depending on how the market is performing (i.e., whether the market price is up or down compared to the strike price granted by the state budget).

Compensation is available not only to those feeding electricity into the public grid, but also to single-user providers irrespective of their feed-in capacity. This will be determined through a tendering process similarly used to support schemes for solar projects. Compensation is expected to be calculated on the basis of the difference between the claimed net revenue in the tender process (strike price) and the reference net revenue the developer earns through the sale of its services (market price). Should the claimed net revenue be lower than the reference net revenue, the TSO would be obligated to pay the shortfall to the developer, whereas if the claimed net revenue were to exceed the reference net revenue, the TSO would receive compensation from the developer.

The detailed rules of the scheme, (e.g., the calculation of the claimed net revenue and the reference net revenue, the eligibility criteria, and the accounting procedures), is determined by HEPURA4 weeks before the tender submission deadline at the latest. It appears that compensation will be granted only up to 120 months after obtaining appropriate aFRR accreditation for the facility, with a cap to recover capital investments in the amount of a minimum EUR 16/kW and a maximum EUR 160/kW per year.

The first tender for battery energy storage systems was published on 13 November 2023, according to which developers were entitled to submit their application between 15 January 2024 and 5 February 2024. Due to recent changes to the TSO's operational code, the transition of granted grid connections from photovoltaic power production to battery energy storage projects will be allowed. This new support scheme is expected to provide the necessary boost to electricity storage in Hungary.

6.2 Necessary Grid Developments in Hungary

Optimising energy systems is becoming increasingly urgent both across Europe and in Hungary. This need arises not only from outdated electricity grids and growing energy demand, but also from the installation and integration of an increasing number of solar power capacities, presenting significant challenges in this regard. The European Commission predicts a 60% increase in EU energy demand by 2030, alongside growth in industries, household heating, the number of vehicles, and demand for hydrogen. Therefore, Hungary and the European Union emphasise the critical importance of developing the electricity grids.

At the beginning of 2024, Hungary had updated its Network Development Plan, which details the elements to be built or renovated in the transmission network over the next fifteen years, as well as already approved developments. It also outlines investments to be realised in the distribution network over the next ten years. The Network Development Plan also includes strengthening the national electricity grid's international connections with Slovakia, Serbia, and Romania by 2030. Due to increased demand from large consumers and renewable energy power plants, significant investments are required by network operators to maintain the network's ability to meet demands and ensure supply security.

6.3 Hydrogen

In line with European trends, hydrogen is gaining increased attention in Hungary. Hydrogen may become a widespread green energy source in the next decade. Accordingly, the Hungarian Government adopted the National Hydrogen Strategy in 2021. The main objectives are the production of large volumes of low-carbon and decentralised carbon-free hydrogen, decarbonisation of industrial consumption (using hydrogen), developing hydrogen-based green transport, and developing green balancing energy infrastructure.

Hungary's target is to produce 36,000 tonnes/year green or other carbon-free and low carbon hydrogen (20,000 tonnes/year low-carbon hydrogen and 16,000 tonnes/year carbon-free hydrogen by 2030). The Hungarian Government intends to have 240 MW of electrolyser capacity in the next decade.

Regarding industrial decarbonisation, low-carbon hydrogen may be introduced to the petrochemical and chemical industries (i.e. ammonia production). This is focused on technical processes where decarbonisation is urgent due to the climate strategy compliance.

The Hungarian Government intends to make traffic more environmentally friendly by way of increasing hydrogen usage. This may result in a corresponding reduction of gas and oil use, particularly in heavy-duty vehicle traffic (i.e., road transport and public transport). In 2021, the first hydrogen filling station was established in Hungary, however it is not a publicly used filling station.

Hydrogen may play a key role in electricity system balancing as green hydrogen-fired power plants may replace the currently operating gas-fired power plants. Hungary will need a stable and reliable balancing system due to the increasing volume of weather-dependent renewables.

After 2030, a further increase in the use of hydrogen is expected. The Hungarian legislator is dedicated to creating a suitable regulatory environment for hydrogen-related investments. Over the next few decades, hydrogen will play an increasing role in the industrial decarbonisation, transport and cooling-heating sectors in Hungary.

Authors:



Laszlo Kenyeres

Partner

E laszlo.kenyeres@wolftheiss.com

T +36 1 4848 800



Adam Lukonits

Senior Associate

E adam.lukonits@wolftheiss.com

T +36 1 4848 800



Tamás Pál

Associate

E tamas.pal@wolftheiss.com

T +36 1 4848859



Virág Lócsei

Associate

E virag.locsei@wolftheiss.com

T +36 1 4848865

**Generating Electricity
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Montenegro

Country General Information

Capital: Podgorica

Location: Montenegro is a country in Southeast Europe, which is bordered by Croatia, Bosnia and Herzegovina, Serbia, Albania and the Adriatic Sea. The country is characterized by its mountainous terrain with more than 50 peaks that are over 2,000 m high. Montenegro is also known for its river valleys and the Bay of Kotor. Its geographic coordinates are 42°30 N 19°18 E.

Surface: 13,812 km² with 293.5 km of coastline.

Population: 622,781 (2016 estimate) of which approx. 25% live in the capital city of Podgorica.

Climate: Montenegro has 6 climate regions (mountain climate above 1,500 m - snowy forest climate with long, cold winters and snow cover all year; continental climate at an altitude of 1,000 m – short and wet summers and long and harsh winters; continental climate at an altitude of up to approx. 700 m with very low precipitation, Adriatic mountain climate - the highest amount of precipitation in Europe above the Bay of Kotor (Krivošija) with 5,000-7,000 mm rainfall annually (5,000 being the European maximum), coastline climate - long and warm summers and mild winters with large amounts of precipitation; Zeta-Bjelopavlić plain - long, hot and dry summers with high temperatures, mild winters with large amounts of precipitation).

Resources: Water, wood, coal, bauxite, sea salt, oil and gas, stone, gravel, and sand. Main source of income in the country is its services sector, especially tourism.

Electricity Grid: The transmission system is composed of 45 ducts divided into 400 kV (284 km), 220 kV (372 km), and 110kV (642 km). The distribution system is divided into 35kV (1,017 km), 10kV (5,054 km) and 0.4 kV (13,351 km). The transmission system is interconnected with Serbia, Bosnia and Herzegovina and Albania. The undersea interconnection with Italy allows a bi-directional exchange of electricity between the two countries, with a capacity of 600 megawatts (expected to be doubled in the near future).

Electricity Transmission, Distribution and Supply: Electricity transmission is operated by state-owned company Crnogorski Elektroprenosni Sistem AD (CGES). The electricity distribution system, operated by Crnogorski elektrodistributivni sistem d.o.o. Podgorica (CEDIS) is considered legally and functionally unbundled from its parent company, the largely state-owned Elektroprivreda Crne Gore AD Nikšić (EPCG). EPCG is the largest producer and supplier in the market, with the retail market fully supplied by EPCG, although several other suppliers are licensed. There are more than 70 local and foreign companies registered for the wholesale supply of electricity in the Montenegrin market.

Official Language(s): Montenegrin

EU Member: Candidate since 2010.

NATO Member: since 2017.

United Nations Member: since 2006.

Currency: Euro (EUR)

Schengen: no

Political System, Administrative Organisation and Economy: Montenegro is a parliamentary representative democratic republic with the Prime Minister acting as the head of government. Executive power is exercised by the government, while legislative power is vested in both the government and the Montenegrin Parliament. In the presidential and parliamentary elections that took place during 2023, pro-European candidates and parties won the majority vote. From an economic perspective and following its separation from Serbia, Montenegro's economy relies heavily on its services sector and many high-profile investments in the country are aimed at creating an elite tourist destination. Out of 50,353 companies, 15,466 companies are in the services sector, 11,167 are in retail, and 6,847 are in wholesale trade, based on data from December 2023.

1. RES potential in Montenegro

In their national strategy and commitments to the Energy Community, the Montenegrin Government had committed to increasing the percentage of RES as part of total final consumption to 50%. The Montenegrin Government went on record to confirm that these goals were fulfilled. Based on the Report on Energy Realization for 2022, Montenegro produced 1,780.94 GWh of electricity from RES, which is 55% of their total production of electricity. However, the remaining 45% was produced from coal-powered thermal power plants.

The largest hydropower potential is currently exploited through the HPP Perucica (over 700GWh per year) and HPP Piva (over 600 GWh per year). According to Wind Europe data, wind farms in Montenegro, particularly 46 MW Mozura and Masdar's 72 MW Krnovo, sometimes produce in excess of 40% of Montenegro's total electricity needs. EPCG's WPP Gvozd, with an estimated 54 MW, Alcazar Energy's WPP Bijela with an estimated 118 MW, and WPP Brajci with an estimated 100 MW are also in development.

The RES potential of Montenegro, in that regard, seems well-utilised but also shows great potential for growth, particularly in the domain of solar where potentials are largely considered untapped. Recent studies show that wind and solar power plants could cover all 217,000 households in Montenegro, with the potential of solar being estimated up to even 2.7 GW.

An interesting topic in Montenegro is also the potential for development of off-shore wind farms, but at present such initiatives still seem stalled by the lack of regulatory framework as well as infrastructure deficiencies. Poor road infrastructure remains one of the key hurdles for on-shore developments, particularly for wind power projects.

The key priorities in further development of the Montenegrin energy sector are achieving greater interconnection with the region and the EU, further liberalisation of the local market, strengthening the knowledge and capabilities of local authorities, and increasing private sector participation in infrastructure investments. State-owned EPCG is still considered the largest producer and trader in the market.

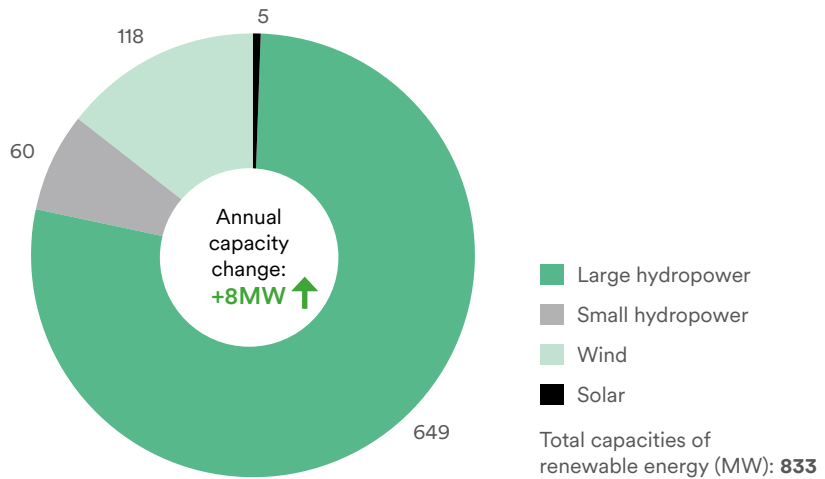
At the time of the drafting of this Guide, a new draft of a Renewable Energy Law was in the works, which should address some of these main challenges and also introduce auctions for premiums into the Montenegrin market. Additionally, the adoption of the new Law on Cross-Border Energy Infrastructure Projects is pending and, once in place, is expected to assist regional integration.

2. RES Market

2.1 Market Over the Years

- In 2007, Montenegro acceded to the Energy Community Treaty.
- In April 2016, Montenegro signed the 2015 Paris Agreement, which was later ratified by parliament and came into force on 19 January 2018.
- The Energy Law was also adopted in 2016.
- In February 2017, construction was completed on a EUR 800 million, 433 km underwater energy cable for the transport of electricity to Italy.
- In July 2017, a former strategic partner to the Government of Montenegro, Italian company A2A, initiated the withdrawal procedure by exercising the put option. Under the agreement, the Government would purchase A2A's 41.7 percent of EPCG shares for 250 million euros over a period of seven years. The government thus became the majority shareholder of EPCG, the largest producer, supplier and trader in the country.
- In December 2018, Montenegro opened Negotiation Chapter 27 on 'The Environment and Climate Change' in its ongoing process of accession into the EU. The Energy Law was amended several times in this process, mostly to harmonise the local market with EU legislation and allow for further integration of renewables into the market.
- In July 2022, the Montenegro Constitutional Court abolished the Decree on Wind Power Plants, which was adopted under an earlier version of the Energy Law, due to its noncompliance with the current Energy Law and the Montenegrin Constitution. Interestingly, the producers who acquired rights under said decree, prior to its abolishment, were granted privileged status under the decree and continue to benefit from the incentivised price of electricity.
- The total capacities of renewable energy in 2022 can be illustrated as follows:

Total Capacities of Renewable Energy 2022 (MW)



- In April 2023, BELEN, the operator of MEPX, the local power exchange, launched the day-ahead electricity market. The market has limited liquidity and is dominated by the incumbent producer and trader, EPCG. A total of 63 participants are registered to participate.
- In November 2023, EPCG announced its new partnership with Miami-based UGT Renewables for the development of 250 MW of total capacity of solar projects in Montenegro with a storage system of 50 MW. The technical engineering on the projects will be done by Hyundai Engineering from South Korea. At the same time, EPCG entered into a Memorandum of Understanding with Polish Respect Energy Holding for the purposes of exploring the possibility of development and operation of an offshore wind power plant with a capacity of approximately 2 GW, as well as the development of a battery energy storage and solar power plant. Additionally, the memorandum envisages the development of an ammonia and hydrogen production plant equipped with an 800 MW electrolyser.

- In November 2023, the Energy Support Package for the Western Balkans was adopted, and Montenegro received EUR 27 million of budget support from the European Commission to reduce the immediate impact of the energy crisis. As part of the package, Montenegro's Parliament adopted the national energy action plan, which consists of 13 measures covering a range of targets, including the preparation of a strategic framework for the NECP and implementation of the Commission's recommendations on energy.
- In December 2023, the first ground-mounted solar power plant in Montenegro, under the name Čevo, initiated operations with its total capacity of 4.4 MW.

2.2 Project Development in Montenegro

As is the case with most Western Balkans countries, one of the key steps in project development is securing real estate rights which may be problematic in rural areas where wind and solar projects may be developed, due to multiple individual owners and/or unresolved ownership issues.

Poor road infrastructure still remains one of the key hurdles, particularly for transport and delivery of large equipment. Farmers' protests against solar projects, as well as NGO engagement with respect to larger wind and hydropower projects, have also been recorded, so liaising with the local communities is a must for any project developer.

The Montenegrin Government announced several projects for the increasing of grid capacity, which should facilitate more projects to be connected in the upcoming period.

One of the main bottlenecks in project development in Montenegro continues to be the slow and highly formal administrative and licensing processes. Hard copies of documentation, together with required notarisation and apostille, are still the norm. For example, it can be seen on the website of the ministry in charge of construction that it issued only 17 construction permits for projects in 2023.

General Market Data

Overall Production	In 2022, overall electricity production was 3.235.08 GWh
Production by Technology (GWh)	Wind – 9.97% Hydro – 44.96 % Solar – 0.12% Thermal – 44.95%
Key Authorities	<ul style="list-style-type: none"> ○ Line ministry: Ministry of Capital Investments ○ Regulator: REGAGEN ○ Market operator: COTEE ○ Transmission System Operator: CGES ○ Distribution System Operator: CEDIS ○ Public supplier: EPCG

RES Support Schemes

Current Energy Law	None available at the moment
New draft RES Law - Market Premiums	The right to a market premium is acquired in an auction procedure conducted by the Ministry of Mining and Energy.

2.3 Main Permits required for RES-Electricity Generation Facilities

Energy Permit	An Energy Permit is a precondition for obtaining a Construction Permit, where applicable.
Construction Permit	Depending on the capacity of the power plant, a Construction Permit is issued by the local municipality or the Ministry of Urban Planning, Urbanism and State Property.
Environmental Impact Assessment	An Environmental Impact Assessment (EIA) may be required in some cases.
Building Use Permit	The Building Use Permit certifies that the plant, as constructed, is in full conformity with the Construction Permit and other technical requirements.
Energy Licence	Electricity generation is subject to obtaining an Energy Licence from REGAGEN. This Energy License can only be issued to a Montenegrin legal entity, and with the exception of certain limited cases, is issued for a period of 10 years.

3. Significant and/or expected changes in 2024

3.1 New National Energy and Climate Plan (NECP)

The development and adoption of the National Energy and Climate Plan (NECP) was delayed, in part due to the 2023 elections, with its expected adoption postponed to the second quarter of 2024. The NECP will become the new strategic plan for the development of the energy sector until 2030, including policy and measures in the field of renewable energy and energy efficiency. This document is expected to align Montenegro's energy policy with Energy Community targets for 2030.

3.2 New Renewable Energy Law

Montenegro has prepared the draft Law on the Use of Energy from Renewable Sources. This law will introduce a number of new concepts, including auctions for premiums. The draft aims to transpose the Renewable Energy Directive (2018/2001). The law will also regulate financial support for generating electricity from renewable sources, generation capacities for self-consumption, use of renewables in heating and cooling and the transport sector, as well as guarantees of origin.

A series of roundtables will be held during the process of public discussion of this draft.

The Montenegrin Government was advised in this process by the European Bank for Reconstruction and Development (EBRD).

3.3 Preparing for auctions

Under the above law, Montenegro is expected to launch its first auctions for renewables in 2025. The Government of Montenegro is tasked with enacting a 3-year incentive plan for market premiums and feed-in tariffs. On that basis, annual quotas would be set for one or more auctions. The price ceiling should then be set by REGAGEN.

3.4 Promoting RES in households and public buildings

The Montenegrin Government has launched several initiatives and subsidy programs for the increase of solar power generation on household rooftops. Many private and public initiatives are also in place aiming to increase the energy efficiency of municipal buildings.

3.5 Focus on solar

According to a statement by the Montenegrin Minister for Energy, Montenegro is preparing for around 4 GW of solar projects in the upcoming period.

Author:



Andjelka Todorovic

Partner

E andjelka.todorovic@wolftheiss.com

T +381 11 330 2900

Wolf Theiss Bulevar Mihajla Pupina 6/18, 11000 Belgrade, Serbia

T +381 11 3302 900 E beograd@wolftheiss.com



Generating Electricity from Renewable Sources in CEE & SEE

Energy Industry Group

Poland

Wolf Theiss

Country General Information

Capital: Warsaw

Location: Situated in Central Europe, Poland's territory extends across several geographical regions, between latitudes 49° and 55° N, and longitudes 14° and 25° E. Poland is bordered to the north by the Baltic Sea, to the northeast by Russia and Lithuania, and to the east by Belarus and Ukraine. To the south the border follows the watershed of the Beskid (Beskidy), Carpathian (Karpaty), and Sudeten (Sudety) mountains, which separate Poland from Slovakia and the Czech Republic, while to the west the Neisse (Nysa Łużycka) and Oder (Odra) rivers define the border with Germany.

Surface: 312,696 km²

Population: 37,677,000

Climate: continental, with four (4) distinct seasons.

Resources: Poland has substantial agricultural and mineral resources. It has the world's fifth (5th) largest proven reserves of hard and brown coal, in addition to deposits of copper, sulphur, zinc, lead, silver, magnesium, and rock salt. There is natural gas and also potentially useful deposits of chalk, kaolin, clays, and potash.

Electricity Grid: The Polish transmission grid, as at the end of 2023 has over 303 400 kV and 220 kV lines, with a length of 15,964 km, as well as several 400kV DC submarine cables connecting the Polish and Swedish power systems.

Electricity Transmission, Distribution and Supply: Within the territory of the Republic of Poland there is one (1) electricity transmission system operator – Polskie Sieci Elektroenergetyczne S.A. (PSE S.A.); with sole ownership by the State Treasury of Poland. There are five (5) major electricity distribution system operators: Stoen Operator sp. z o.o., ENERGA-Operator S.A., ENEA Operator Sp. z o.o., TAURON Dystrybucja S.A. and PGE Dystrybucja S.A.

Official Language(s): Polish

EU Member: since 1 May 2004.

NATO Member: since 12 March 1999.

United Nations Member: since 24 October 1945.

Currency: Polish złoty (PLN). Poland does not use the euro as its currency. However, under the terms of the Treaty of Accession with the European Union, all new Member States "shall participate in the Economic and Monetary Union from the date of accession as a Member State with a derogation", which means that Poland is obligated to eventually replace its currency, the złoty, with the Euro.

Schengen: Poland is a member of the Schengen area.

Political System, Administrative Organisation and Economy: Poland is a multi-party democratic republic with a two (2) chamber parliament. The Head of State is the President, elected by a majority of votes for a five (5) year term. The upper parliamentary chamber is the Senate, with one hundred (100) senators; whereas the lower chamber is the Sejm, which has four hundred and sixty (460) seats. Parliament is chosen by a majority of the electorate for a four (4) year term. The state's internal and foreign policy is decided by the government, i.e. the Council of Ministers, whose activities are directed by the President of the Council of Ministers, i.e. the Prime Minister. The executive officer for government administration and the government's representative in the voivodships is the voivode. In addition to a central level administration Poland is divided into 3 local administrations: 2477 gminas (municipalities), 380 powiats (districts) and 16 voivodships (regions).

1. Defined Terms

10H rule	The minimum distance between a wind turbine and a residential housing which is 10 times the tip height of a turbine (in practice it equals approx. 2 km);
Building Permit	Administrative deed issued by the head of the powiat (district) where the RES-Electricity facility will be built;
CfD	A contract for difference – a state aid instrument in the form of a legal guarantee of the negative balance between the prices of electricity the investor earns on the market and the guaranteed price of electricity granted by the President of the ERO for a defined period;
Licence	Administrative deed issued by the President of the ERO, authorising the generation of electricity;
OSW Act	The Act on Promotion the Generation of Electricity in Offshore Wind Farms of December 17, 2020 (as amended);
President of the ERO	The President of the Energy Regulatory Office – the regulatory authority for the energy market in Poland;
RES Act	The Renewable Energy Sources Act of February 20, 2015 (as amended);
RES Electricity	Electricity obtained from renewable sources such as wind, solar, aerothermal, geothermal, hydrothermal, hydraulic, biomass and biogas;
RES Facility	An electricity generation facility using renewable sources such as wind, solar, aerothermal, geothermal, hydrothermal, hydraulic, biomass and/or biogas;
RES Support Scheme	State-aid scheme approved by the European Commission based either on (i) green certificates (“GCs”) or (ii) CfD auctions (the “Auction Scheme”).

2. Market Landscape

In 2023, Poland produced almost 166 TWh of electricity, of which 44 TWh came from RES Facilities (half supplied by onshore wind farms). The share of electricity generation through coal in Poland in 2023 fell to 63%, the share of electricity generation through renewables rose to 27% and the share of generation through gas reached 10%. While the share of gas remains at this level, we have already seen that coal and renewables have shown the fastest changes ever in 2020. Extremely high levels of electricity prices in 2022 and 2023, combined with an upcoming phase out of coal fired electricity plants has turned Poland into one of the biggest RES Facilities construction sites in Europe. The statutory electricity price control measures applied in 2023 on electricity generation were lifted on January 1, 2024. The rapid growth of solar projects has caused the Polish market to experience its first ever case of negative electricity prices in 2023.

With an unusually high share of lignite and hard coal in the Polish energy mix (when compared to other EU members states) the new government of Poland, which took over on December 13, 2023, must significantly revive and update its national energy policy. It must set new targets for the full decarbonisation of the entire economy by 2040, as recently proposed by the European Commission. The parties forming the new government, campaigned on the promise of defining a new energy policy document by the end of 2024, and the rapid growth of nuclear and RES Electricity generation, along with a controlled phase out of coal and lignite.

Experts emphasise that the development of the hydrogen market will continue, with the problem of balancing supply and demand. The relatively few programmes or subsidies aimed directly at hydrogen consumers will be key to the increased use of this new fuel and thus meeting regulatory targets. In addition, Poland's burgeoning ESG policy is only just beginning to function effectively, which is in line with the expectations of foreign investors who require this, in order to engage in Polish energy projects.

It is estimated that the Polish energy sector requires PLN 1.3 - 1.7 trillion of investment by 2030. Within this amount, experts include: (i) spending on investments in the development of new energy sources, (including a massive offshore wind program); (ii) development of both large-scale nuclear electricity generation facilities and SMRs; (iii) investment in upgrades and extensions of electricity and gas transmission and distribution networks; (iv) energy storage; and (v) green hydrogen investments.

3. The Market Status

3.1 The Legal Framework for the RES Support Scheme

The first Polish RES Support Scheme was introduced into the Energy Law in 2005. This scheme was based on green certificates (“GCs”). RES Facilities commissioned before 31 July 2016 could benefit from this RES Support Scheme based on GCs. However, GCs are being slowly phased out in Poland. GCs can only be issued for fifteen (15) years from the date of commissioning of the RES Facility for commercial operation.

In 2015, a new RES Support Scheme was introduced based on the CfDs. This scheme guarantees that for each MWh delivered to the grid, the price earned on the electricity market by the RES Facility is topped up to the level of the price guaranteed in the CfD. CfDs are awarded through competitive auctions organised yearly by the President of the ERO. The bidder determines the price for the period of up to 15 years for the needed duration of the CfD and the planned annual electricity production output. Auction winners are selected based on the lowest price until the electricity auction volume for a particular year is exhausted.

Small projects with a capacity between 0.5-1MW are awarded to regular electricity purchase agreements with authorised power trading companies in separate auctions. Both CfDs and PPAs can last for a maximum period of 15 years. Auctions are scheduled yearly until 2027. Every year, the government defines the number of MWh of electricity to be auctioned in a particular year and the maximum price for each RES technology that can be offered in the auction bids. To participate in the auction, planned RES Facilities must be preapproved and submit collateral. In order to receive a preapproval, the RES Facility must achieve the ready-to-build stage (i.e. obtain a final Building Permit) and have secured a grid connection. The auction certificate is valid for twelve (12) months.

The auction winner must commence RES Electricity generation within the deadline defined in his auction bid, that must not be longer than the deadline defined in the RES Act for a particular technology counted from the auction date, (i.e.: (i) 24 months for solar, (ii) 33 months for onshore wind).

The authority responsible for settlements and negative balance payments is a fully state-owned agent - Zarządca Rozliczeń SA. Settlements of the balance take place monthly based on the filed negative balance support payment request. Zarządca Rozliczeń is obligated to pay out the amount of the negative balance within thirty (30) days from the date of submission of the negative balance payment request. If the value of the RES-Electricity that was sold based on the market price is higher than its value based on the auction bid price, no payment is made, and the balance is credited the following month. If, at the end of the entire settlement period, the balance is still positive, the amount of the positive balance shall be paid by the RES Electricity producer to Zarządca Rozliczeń. The bid price is adjusted yearly for inflation.

The meeting of the bid obligation to produce the declared volume of RES Electricity is verified by the President of the ERO every three (3) years (for projects commissioned after 2021). The auction winner is under the obligation to deliver to the grid and sell at least 85% of the RES Electricity volume declared in the auction bid for 3 consecutive years. Failure to meet the minimum volume delivery obligation is subject to a financial penalty levied and collected by the President of the ERO on the value of the missing RES Electricity.

Almost 88 TWh of RES Electricity with a total value of approximately PLN 40.8 billion was allocated for sale in the 2023 auctions. However, the auctions resulted in a total of less than 6 TWh (6.8 per cent) of RES Electricity contracted with a value of approximately PLN 2 billion (4.8 per cent). Of the winning bids (200), more than 98 per cent were photovoltaic installations (197), with the remainder being wind installations (3). In 2023, all auctions were dedicated to new installations. In November 2023 alone, of the seven auctions held, only 2 were successful.

The auction for photovoltaic and wind installations of 1 MW or less attracted the most interest. It was joined by 80 generators submitting 163 bids - all bids came from entrepreneurs investing in photovoltaic installations. More than PLN 3.8 billion was earmarked for the purchase of 11.25 TWh of energy.

As a result of the settlement of the above auction, 11% of the energy volume (approximately 1.2 TWh) was sold under 133 bids submitted by 56 generators, with a total value of over PLN 413 million, which is less than 11% of the total value of the energy to be sold. The total capacity of PV installations shall be around 123 MW.

The reference price was PLN 414/MWh and the minimum price at which energy was sold was PLN 284.95/MWh. The maximum price at which energy was sold was 355 PLN/MWh. No wind power generators joined the auction. There was an insufficient number of bids in auctions dedicated to hydroelectric power plants, agricultural biogas plants and installations using biomass and non-agricultural biogas.

Due to the lack of the required number of bids, the auctions for installations using only biomass for electricity generation (including biomass combustion installations, multi-fuel installations, thermal waste conversion hybrid systems) or exclusively non-agricultural biogas (including exclusively landfill biogas or exclusively sewage treatment plant biogas), for new agricultural biogas plants with a capacity greater than 1 MW, as well as for installations using bioliquids, geothermal energy and hydropower, ended with no winners announced, as the RES Act requires a submission of at least three valid bids.

4. The RES Support Scheme – Recent Changes

the September 2023 amendment to the RES Act introduced changes concerning, among other things, energy clusters, i cable pooling and new regulations for direct lines, as well as solutions for offshore wind, biomethane, operational support for RES and hybrid installations. As of August 2024, end customers may benefit from dynamic prices of electricity (i.e. the prices that can change on an hourly basis, which should encourage consumption of electricity when the offered prices are at their lowest.

The amendment introduced a definition of biomethane, a register of biogas producers and removed support for biogas in the form of certificates of origin. It also established operational support for biomethane and added to the catalogue of gaseous fuels. It has also regulated energy carriers such as renewable hydrogen or cooling.

The definition of an energy cluster, which must include at least one local authority, has been amended and the scope of its activities has been extended to include energy storage. Clusters will be able to operate in one county, five neighbouring municipalities within a service area of a single distribution grid operator. The regulations also introduced a register of clusters. By the end of 2026, at least 30%

of the energy produced and fed into the grid by the parties to the cluster agreement must come from RES, and the total capacity of the installations put into operation in the energy cluster must not exceed 150 MW. During the year, it must be possible to cover no less than 40% of the total annual demand of the parties to the energy cluster.

Support has been introduced for energy clusters in the form of discounts to distribution charges, charges related to support schemes for RES, high-efficiency cogeneration and energy efficiency, which is expected to accelerate their development. Provisions have also been included to streamline the activities of energy cooperatives, which operate based on registration through a register kept by the Director General of the National Centre for Agricultural Support.

The support system dedicated to biomethane generators uses a market price subsidy model, modelled on the feed in tariff system providing additional payments to the market price received, up to the guaranteed level of the electricity price. Obtaining support requires a certificate from the President of the ERO. The period of support in this system is 20 years from the first day of sale of biomethane covered by the support scheme, but no later than 30 June 2048.

The guarantees of origin catalogue has been extended to include those issued for biomethane, heat or cooling, renewable hydrogen, biogas and agricultural biogas. The President of the ERO is now able to join the Association of Issuing Bodies (AIB), an association of entities issuing guarantees of origin, which is expected to increase the attractiveness of these investments in Poland.

5. Solar Projects

At the end of 2023, the total capacity of photovoltaic RES Facilities exceeded the 17GW threshold, adding more than 4 GW compared to 2022 and accounting for 60% of operating renewable RES Facilities.

The 2023 amendment to the Construction Law increased the capacity of photovoltaic installations that are not required to obtain a Building Permit from 50 to 150 kW. In addition, as part of the National Reconstruction Plan and the 'My Electricity' programme (more on this later in the Guide), significant funds are planned for green investments in Poland in the coming years.

However, the development of solar projects may slow down significantly mostly due of lack of available interconnection capacity. This is anticipated despite recent changes to the way in which household PV micro-installations are billed - from so-called net-metering to the less favourable net-billing. Interest among homeowners to install their own rooftop PV RES facilities remains significant.

6. Onshore Wind Projects

The Wind Farm Investment Act of 2016 introduced the rule that a wind farm may not be located in the vicinity of a residential building that is within a distance equal to 10 times the height of the wind turbine, including the rotor – thus earning the name the “10H Act”. The 10H Act left only 2% of Polish territory available for wind farm development, which has effectively meant a total ban on the development of new onshore wind farms. Some wind farms were grandfathered in due to being able to receive a permit for use within 5 years of the date of the 10H Act coming into force or having won auctions involving CfDs for onshore wind farms.

At the beginning of 2023, work was undertaken on an amendment to the 10H Act to liberalise the 10H rule. The amendment was passed in the summer of 2023 that kept the 10H rule in principle, however, the amendment granted local authorities the right to agree on locations of wind farms at a distance of not less than 700 metres under certain conditions. The changes will allow for an additional 4 GW of new onshore wind energy capacity. However, the relatively long period when the 10H rule was fully in force has effectively frozen the development of onshore wind projects. It should take at least two to three years before new wind power projects will commence construction, and only if grid operators allow for the interconnection of these new capacities. The new government announced its priority to change the 700m distance to 500m, which was strongly advocated by the wind power community. The introduction of a distance of 500m would allow for an additional 4GW of onshore wind projects to be developed.

Despite all these recent difficulties, the installed capacity of onshore wind power plants in Poland is 9,107 MW, which ranks Poland third in the European Union in this respect.

7. Offshore Wind Projects

Poland introduced the separate RES Support Scheme for offshore wind farms under the offshore wind (OSW) Act. The development of OSW projects is allowed only in the Polish special economic zone (“SEZ”) of the Baltic Sea. Under the OSW Act, offshore wind farms (“OSW Farms”) which were the most advanced in their development (“Phase I Projects”) were entitled to apply for CfDs no later than March 31, 2021. OSW Farm CfDs are awarded for up to 25 years. The investor declares the level of a maximum price of electricity denominated in PLN/MWh. The maximum amount of electricity to be covered by the CfD is equal to 100,000MWh per each MW of capacity of the OSW Farm. The price must not be higher than the maximum price defined by the Minister of Climate and Environment, pursuant to the criteria defined in the OSW Act that was set on March 30, 2021 at the level of 319.60PLN/MWh (the “Maximum Price”). OSW Farms with a final environmental decision apply to the European Commission via the President of the ERO for an individual approval of the state aid granted under the OSW Act. In the next step, the President of the ERO issues an amendment to the decision granting a CfD, this time defining the individual strike price of electricity in the CfD (hereinafter the “Strike Price”). Most of the Phase I Projects have received their individual Strike Price decisions and are about to begin construction.

Amendments made at the end of 2022 introduced changes into the OSW Act, which came into force on January 1, 2024. Now the Strike Price will be adjusted for inflation from 2022 using the 2021 CPI inflation rate and followed by adjustments for each following consecutive year of the CfD. To accommodate EUR inflation, the amendment introduced the right of the investor to request the percentage of the Strike Price to be denominated in EUR. This request must be filed with the Zarządca Rozliczeń no later than 30 days before the date of filing of the first request for payment of the negative balance. This EUR denominated part of the Strike Price is first adjusted based on the CPI inflation rate in PLN. Later, the adjusted PLN Strike Price is converted into EUR using the EUR/PLN exchange rate applicable in 2021, when the Maximum Price was defined. In the next step, the EUR denominated Strike Price is converted from EUR to PLN again, but this time using the EUR/PLN average exchange rate applicable a month before the date of the request for payment of the negative balance. The investor is entitled to change the percentage of the Strike Price denominated in EUR once more.

CfDs for any other OSW Farms will be allocated via separate offshore wind auctions with the assigned capacity of projects and the Maximum Price. Following the 2023 amendment to the OSW Act, the first OSW Farm CfD auction will take place in 2025 for 4GW, followed by 4 GW in 2027, 2 GW in 2029, 2 GW in 2031 and 2 GW in 2032 (if there was some capacity not allocated in the earlier auctions). The bidders are preapproved by the President of the ERO if they hold a seabed permit, at least preliminary interconnection conditions and/or an interconnection agreement with the transmission system operator, along with an environmental decision and having placed a bid deposit. The bids are selected basing on the lowest price.

In 2023, the Polish government completed a process of allocation of a set of seabed permits to OSW Farms for an additional 10 sites of the Polish SEZ in a competitive process. All permits were awarded to 2 state-controlled companies (5 to PGE for 3.9GW and 5 to Orlen for 5.9GW). PGE holds one more 0.9GW permit awarded earlier, and privately owned Polenergia holds a 1.56GW permit as well. Some of the Phase II permits were challenged in courts by competing investors, so it is still not clear if Orlen and PGE will remain seabed permit holders, as these cases have not yet been finally decided.

8. Corporate Power Purchase Agreements (PPAs)

The legal regulation of PPAs is one of the most important developments on the Polish market in 2023, and experts predict it will flourish in the near future.

The number of PPAs continues to grow on the Polish market. Last year, more than 20 large corporate PPAs were signed, and experts predict an increase in interest in this type of corporate PPAs in the coming years.

According to calculations, the 10 largest corporate PPAs last year contracted energy from wind and solar installations of almost 800 MW. In terms of installation capacity, the largest PPA deal announced last year was for the 137 MW Silesia 2 wind farm. Contracts for approximately 186 GWh and 400 GWh of energy per year were also signed.

PPAs are concluded mainly due to financial (stable, predictable price) and legislative factors. The rules for concluding PPAs have been legally regulated in Poland following the implementation in 2023 of part of the EU RED II directive on renewable energy sources. The possibility of the direct sale of energy by the producer to the consumer was regulated, as well as the elements necessary to conclude a contract.

Poland recorded among the highest average PPA prices last year at 110 €/MWh.

9. Energy Storage

The Ministry of Climate and Environment and the National Fund for Environmental Protection and Water Management are implementing the 'My Current 5.0' scheme, which aims to promote sustainable energy sources, including photovoltaics and energy storage.

The scheme has a budget of PLN 950 million and a maximum grant of PLN 16,000 for the purchase and installation of an energy storage facility with a capacity of at least 2 kWh. In 2024, investors will be able to receive a subsidy of up to 50% of the eligible costs related to purchasing and installing energy storage. The subsidy is available to three groups of investors who meet the relevant criteria set out in the scheme.

10. Hydrogen

In Poland, the Polish Hydrogen Strategy was adopted in 2021 with the aim to have it implemented by 2040. It envisages the creation of at least 32 hydrogen stations and 100-250 hydrogen-powered buses by 2025, as well as achieving a low-emission hydrogen plant capacity of 5 MW.

In implementing this plan, the first publicly accessible hydrogen station in the country was opened in Warsaw in September 2023 as part of an initiative supported by the National Fund for Environmental Protection and Water Management. The first hydrogen station is private - used to power a fleet of Hyundai Nexo cars imported from Germany. In Poland, only one hydrogen car model of the Toyota Mirai brand is available for purchase. At the end of August 2023, there were 203 hydrogen-powered vehicles in Poland, 10 of which were buses.

By June 2024, more hydrogen stations are planned to be launched in other locations in Poland, including Gdansk, Gdynia, Katowice, Wroclaw, Tychy, Walbrzych, among others. The cost of construction is estimated at PLN 54.7 million (20 million of which is to be financed by the National Fund for Environmental Protection and Water Management). Orlen wants to build as many as 57 H2 stations across the country, plus 28 stations in the Czech Republic and 26 in Slovakia over the next seven years.

In addition, the construction of zero-emission railway infrastructure is also planned over the next few years. It is meant to partially replace diesel trains and locomotives with zero-emission variants by 2030.

11. Support Scheme for Cogeneration

On 14 December 2018, Poland adopted a scheme to support high-efficiency cogeneration. The scheme will support combined heat and power (“CHP”) installations connected to district heating networks in Poland. On 15 April 2019, the European Commission approved this scheme under EU State Aid rules. The aim of the Polish cogeneration scheme is to contribute to energy efficiency and lower the levels of CO₂ emissions, in line with the EU environmental objectives and the EU climate change goals.

The scheme, with an annual budget of EUR 500 million, will run until 31 December 2028. The support may be granted to new and refurbished high-efficiency CHP installations, as well as to existing gas-fired highly efficient CHP installations. It will also be open to generators in other Member States.

The high-efficiency CHP installations benefitting from the scheme will receive support through a premium on top of the market price (cogeneration premium). The level of the cogeneration premium will be set either in a competitive bidding process or (in exceptional and clearly defined cases), determined administratively at a level covering the difference between the generation costs and the market price of electricity. The cogeneration premium will be granted until the full depreciation of the installations it supports, for a maximum period of fifteen (15) years.

In 2022, auctions for the cogeneration premium for the sale of electricity from high-efficiency CHP installations were conducted in each quarter (in March, June, September and December). Each investor may submit more than one bid at each auction (provided that they are for different cogeneration units). The auction is won by those participants who bid for the lowest cogeneration premium (i.e. the subsidy for electricity sold from high-efficiency cogeneration) and whose bids in total do not exceed 100% of the value or quantity of the electricity specified in the auction announcement and 80 percent of the quantity of electricity covered by all submitted bids. In 2022, the maximum amount of electricity from high-efficiency cogeneration that could be sold under the cogeneration premium was 18 TWh.

For the purpose of conducting the auction, reference values are fixed. These values set the maximum amount of the cogeneration premium, in PLN per MWh, that an auction participant may bid for electricity produced from high-efficiency cogeneration that is injected into the grid and sold.

12. Biocomponents / Biofuels

In 2023, the possibility of using a reduction factor of 0.82 was introduced for another year, generating a significant increase in the use of domestic biocomponent production capacity. As a result, the demand for local raw materials for biocomponent production supplied by domestic agricultural producers has stabilised.

In addition, the mandatory blending for diesel was lowered to 5.2%, the limit on the possibility of using liquid bio-components in the implementation of the NIT was raised to 0.9% and the limit on the use of bio-components produced from certain raw materials was raised to 0.5%.

However, the Polish government is working to amend the Act on bio-components and liquid biofuels and the Act on the system of monitoring and controlling fuel quality, introducing regulation of the domestic biofuel sector regarding the obligation to use bio-components added to transport fuels. As a result of these anticipated amendments, a new type of petrol with an increased proportion of biocomponents is to be introduced in 2024.

13. Expected changes in 2024

13.1 Changes to 10H Rule

Pursuant to the declaration of the government, the change of a minimum distance exception of the 10H rule from 700m to 500m is expected.

13.2 New changes regarding Biogas and Biomethane

As indicated in the National Energy and Climate Plan 2021-2030, the energy potential of the agricultural biogas sector alone is estimated to be more than 7.8 bcm per year.

As the current legal regulations do not correspond to the actual needs in the field of the operation of biomethane and biogas facilities, amendments to the RES Act indicate both the possibility of feeding energy into gas networks and transporting it by means of transport other than gas networks, or using it to refuel motor vehicles in a direct manner (i.e. without having to transport the biomethane from the place of its production), as well as clarifying the definition of agricultural biogas itself.

A definition of biomethane has also been introduced into the law, the guarantee of origin system has been extended to biomethane, the range of permissible differences between the average combustion heat value of gaseous fuels for a given day and the combustion heat value of gaseous fuels determined at any point in a given area has been increased from 3 per cent to 4 per cent in the case of injecting biomethane into gas networks, and a support system has been introduced for biomethane installations with an installed capacity of no more than 1 MW.

In addition, it is anticipated that civic energy communities will be created. These will be authorised to operate in the following areas: generation, distribution, sale, trading, aggregation, storage of energy, implementation of energy efficiency improvement projects, provision of other energy services (including flexibility services) or production, consumption, storage or the sale of biogas, agricultural biogas, biomass and biomass of agricultural origin.

14. Changes to the Energy Law and the RES Act

The new government in Poland has also announced a significant reform of the Energy Law and the RES Act, in order to clarify and simplify existing provisions and allow for a full implantation of REpowerEU. Those provisions of law governing green hydrogen market development and Carbon dioxide capture and transmission will be considered. It is likely that nuclear projects may receive support in the form of CfDs. A special governmental committee will be formed to elaborate the draft amendments.

15. Energy for Rural Areas

Rural Energy is a subsidy scheme for increasing the use of RES in rural areas. Support in the form of loans or grants will be aimed at individual farmers, agricultural energy cooperatives and energy cooperatives made up of businesses. The call will last until 29 February 2024 or until the funds are exhausted. Under the first call, the pool of available funds is PLN 1 billion.

Funding from the Energy for Villages scheme can be obtained for:

- photovoltaic and wind power plants of more than 50 kW and no more than 1 MW;
- hydroelectric power plants and agricultural biogas plants with a capacity of more than 10 kW and no more than 1 MW;
- energy storage facilities provided they are integrated with the generation source being developed as part of the investment.

Energy cooperatives or its members can receive funding for the following investments:

- photovoltaic, wind, hydroelectric and biogas power plants of more than 10 kW, not exceeding 10 MW;
- energy storage facilities on condition that they are integrated with the generating source implemented as part of the investment.

The maximum amount of subsidy for the scheme is PLN 20 million. Support in the form of a grant is not available for the construction of photovoltaic installations or wind projects, but only for biogas plants and hydroelectric power plants. The maximum share of the cost of the energy source that the subsidy can amount to is 45%. Exceptions are available for micro and small enterprises, which can receive a subsidy of up to 65% of eligible costs, and medium-sized enterprises for which the threshold for a non-refundable subsidy is set at 55%.

The maximum amount of a repayable loan is PLN 25 million. The loan period is up to 15 years and a 12-month grace period is possible.

15.1 Nuclear Power Plants

Poland has no operating nuclear power plants. However, it is working to develop both large-scale nuclear power plants as well as small modular reactors (SMRs). The commissioning of the first unit of the first nuclear power plant in Poland is planned to take place by 2033, however delays are likely to occur. Five new nuclear units are planned to be commissioned at intervals of 2-3 years. Without the commissioning of these new energy sources, there will be further shortfalls in meeting the increasing demand for power during this period. According to Polish government estimates, nuclear units with a total capacity of 6-9 GW should be operational in Poland by 2040.

By the end of 2023, various developers announced plans to build a total of 79 SMRs at 25 locations in Poland by 2038, including sites near Ostrołęka, Włocławek, Stawów Monowskie near Oświęcim, Dąbrowa Górnicza, Nowa Huta, the Tarnobrzeg - Stalowa Wola Special Economic Zone and Warsaw. Poland has a chance to become one of the first countries to host operating SMR.

The state-owned company Polskie Elektrownie Jądrowe signed an Engineering Service Contract with the Westinghouse-Bechtel consortium at the end of September 2023 for the design of a power plant with three AP1000 reactors on the Baltic Sea coast. The cost of this contract is estimated to be around PLN 1.5 billion and most of the work will take place in 2024. The construction project is expected to be ready by early 2025 and the main EPC contract is expected to be signed by the end of 2025. However, the lack of an official scheme defining the way the power from this nuclear plant will be sold, and how to finance such a large scale undertaking, is still to be decided.

The next nuclear power plant is planned in Pałnow in the municipality of Konin. It is expected to start operating in 2035 and will be based on Korean technology equipped with at least two APR1400 reactors with a total capacity of 2,800 MW, which is expected to supply around 22 TWh of energy annually, i.e. 12% of Poland's current electricity demand.

16. Other Changes

The Polish government plans to allocate more than €5bn from the National Recovery Plan to energy companies for the development of RES, energy efficiency and energy storage projects. 4.8 billion euro will go to offshore wind energy. Disbursement from the funds can be expected to start in April 2024.

The funds will therefore cover the expenses of the final recipients of the support, including the green transformation. They will also allow for the launch of further investments in these and similar areas, such as the purchase of trams, green urban transformation projects or energy efficiency improvements in companies.

Approximately EUR 9 billion is to be allocated for the green urban transformation, EUR 300 million for energy efficiency and RES in enterprises, approximately EUR 35 million for energy storage (pumped storage power station) and an offshore wind support fund of approximately EUR 4.8 billion.

Ultimately, of the more than €22.5 billion in REPowerEU loans, €21.8 billion will be placed in financial instruments for offshore wind and the energy system, with the possibility of more projects after 2026.

Authors:



Igor Muszyński

Partner

E igor.muszynski@wolftheiss.com

T +48 22 378 8966



Daria Goliszewska

Associate

E daria.goliszewska@wolftheiss.com

T +48 22 378 9022

Generating Electricity from Renewable Sources in CEE & SEE

Energy Industry Group

Romania

Wolf Theiss

Country General Information

Capital: Bucharest

Location: Situated in the south-eastern part of Central Europe and sharing a border with Hungary to the northwest, Serbia to the southwest, Bulgaria to the south, the Black Sea to the southeast, Ukraine to the east and to the north and the Republic of Moldova to the east. Romania lies between latitudes 43° and 49° N and longitudes 20° and 30° E.

Surface: With a surface area of 238,397 km², Romania is the largest country in South-eastern Europe and the twelfth (12th) largest in Europe.

Population: 18,889,374

Climate: temperate and continental, with four (4) distinct seasons.

Resources: Romania is blessed with an abundance of various natural resources, including rich farmland, water, wind, sun, biomass, geothermal potential, Black Sea access, Danube Delta, forests, fossil fuels, and deposits of a wide range of metallic ores, including iron, manganese, chrome, nickel, molybdenum, aluminium, zinc, copper, tin, titanium, vanadium, lead, gold, and silver, large deposits of pure salt, minerals, domestic raw materials to produce caustic soda, soda ash, chlorine, sulfuric and hydrochloric acid, and phosphate fertilisers, etc.

Electricity Grid: The total length of the national electricity grid is 8,931 km. The national electricity grid is interconnected with the electricity infrastructure of all neighbouring countries. The grid is comprised of overhead power lines with a nominal voltage of 750 kV, 400 kV, 220 kV, 110 kV and electrical stations having a higher voltage of 750 kV (1 station), 400 kV (38 stations) and 220 kV (42 stations).

Electricity Transmission, Distribution and Supply: Electricity transmission is a regulated natural monopoly and is provided by Transelectrica S.A. The electricity distribution market is divided into eight regions controlled by four distribution companies. The electricity supply is provided by more than forty 40 private providers. Electricity is traded on the Romanian electricity and gas exchange market platforms authorised by ANRE and outside these market platforms through direct negotiation between the parties.

Official Language(s): Romanian

EU Member: since 1 January 2007.

NATO Member: since 2004.

United Nations Member: since 1955.

Currency: Romanian leu (RON). Romania has committed to the EUR currency once it fulfils the necessary conditions.

Schengen: since 31 March 2024.

Political System, Administrative Organisation and Economy: Romania is a semi-presidential republic with a head of government – the prime minister – and a head of state – the president of the republic. The country is divided into 41 counties and the municipality of Bucharest. Romania has an economy predominantly based on services and is a producer and net exporter of machines and electricity.

1. Defined Terms for the Main Permits required for RES-Electricity Generation Facilities

Accreditation	Administrative deed (decision) issued by ANRE, stating the right to benefit from the renewable energy sources (“RES”) support scheme based on complying with all the legal requirements;
Building Permit	Administrative deed issued by the mayor of the local administrative unit where the RES-Electricity facility will be built, or by the president of the county council if the premises are located outside the city limits;
CfD	Contracts for Difference support scheme for generators of electricity from renewable sources and nuclear sources
Connection Certificate	Administrative deed issued by the grid operator certifying that all technical parameters have been met and connection to the public electricity grid has been performed;
Energy Transition Fund	A fund established in the treasury accounts of the Ministry of Finance for the purpose of collecting contributions from various sectors of the energy industry;
Environmental Approval	Administrative deed issued by the local Environmental Authority evidencing the compliance of the RES-Electricity facility with the environmental requirements as provided by law;
Grid Connection	Actions performed and administrative deeds issued by the grid operator to connect a new generating facility or to modify or replace the connection of a generating facility to the grid;
Guaranteed Access to the Electric Grid given to the RES-Electricity	Set of rules and technical and commercial conditions based on which RES-Electricity contracted on the electricity market shall be taken into the grid;
Land Book	The national Authority for Land Book and immovable assets registration (“ANCPI”).

Liability and Responsibility for Grid Connection and/or Capacity Upgrades, Improvements or Grid Expansion	<p>The RES-Electricity Producers benefit from regulated access to the electricity grid of public interest. Access to the electricity grid of public interest is a regulated, obligatory service to be managed by the transport and system operator, grid operator and licence holders, as well as any person who owns an electrical distribution network located in the public domain. These entities must provide their services to all users of the electricity grid, in a non-discriminatory manner, ensuring access to the electricity grid in accordance with the law and with the grid capacity to take over the output. The expenses for modifying any grid installations are borne, according to legal requirements, based upon objective criteria. Certain categories of reinforcement works to the grid may be required (depending on the size of the RES-Electricity generating facilities) from the RES-Electricity Producers. The grid operator will refund the RES-Electricity Producers the value of the expenses incurred for the reinforcement works upstream of the connection point, the method of compensation being agreed between the parties;</p>
Licence of RES-Electricity Facilities	<p>Administrative deed issued by ANRE, for the commercial exploitation of such RES-Electricity facilities, which gives a RES-Electricity Producer the right to operate the RES-Electricity facility and to sell the generated RES-Electricity on the market;</p>
Priority Access to the Electricity Grid given to RES-Electricity	<p>Set of rules and technical and commercial conditions, to have the possibility of taking over and selling the entire RES-Electricity output produced at a certain moment in time, depending on the capacity of the grid connection and the availability of the eligible units / resources (and as long as the national grid is not affected);</p>
RES-Electricity	<p>Electricity obtained from RES sources such as wind, solar, aerothermal, geothermal, hydrothermal and oceanic waves, hydraulic, biomass and biogas;</p>

RES Support Scheme	State-aid measure notified and approved by the European Commission based on the green certificates (“GCs”) support system applicable for all RES-Electricity capacities accredited until 31 December 2016. Under this support scheme, eligible producers of RES-Electricity (“ RES-Electricity Producers ”) received a specific number of GCs, depending on the technology used, for each MW produced and delivered to the grid, along with an obligation imposed on the electricity suppliers and certain producers (“ Entities¹ ”) to purchase a mandatory quota of GCs. GCs can be traded on the GCs and RES-Electricity markets organised and administrated by OPCOM S.A. (“ OPCOM ”), the market’s administrator and operator;
Setting-Up Permit	Establishment authorisation issued by the Romanian Energy Regulatory Body (“ ANRE ”) required for creating a new RES-Electricity generation facility.

1 Electricity suppliers and producers of (i) electricity purchased and used by suppliers for their final consumption as well as the electricity invoiced to end consumers; (ii) electricity used by a producer for their final end consumption, other than the electricity used for their technological consumption; and (iii) electricity used by a producer to power consumers connected through direct lines to the production facility.

2. Envisaged need of investments in Romania

According to the new European requirements, as a Member State, Romania should work to ensure that all available planning tools for the European Green Deal are coherently deployed. Therefore, it is expected that Romania will adopt a legal framework for the necessary investments to accelerate the transition to clean energy such as:

- Investments promoting the use of RES-Electricity for industrial purposes;
- Investments in development of alternative green fuels;
- High value-added investments and investments in low energy consumption, energy storage or carbon capture and use;
- Investments in the rehabilitation of the energy transportation system;
- Investments in promoting geothermal pumps for heating and cooling buildings;
- Investments in the technical configuration of gas transportation in infrastructure for transportation of biogas and green hydrogen;
- Investments in greening of transport fleets and equipping them with electrical charging stations;
- Investments to upgrade municipality heating systems;
- Investments in energy storage facilities;
- Investments in competitive electrolysis installations to obtain green hydrogen.

As per the provisions of Romania's National Plan in the field of Energy and Climate Change submitted with the European Commission, pursuant to the requirements of the Aarhus Convention, Romania proposes a clear plan to support further investments in RES-Electricity; mostly in wind and photovoltaic energy.

Romania will facilitate the funding of the following capacities to ensure a diversified and balanced energy mix with the purpose of securing its energy supply by 2030:

Type of source	New production capacities (2021-2030)	Capacity (Production of electricity MWe/ Production of heat MWt)	SACET (MWe) (MWt)	Industrial clients (MWe) (MWt)
Nuclear energy	CANDU	675	-	-
Natural gas	CCGT	1600/-	-	-
Natural gas	CHP	1,302/1,214	952/914	350/200
Hydro (watercourse/ reservoir)	Units>10MW	1,088		
RES	Wind	2,302		
RES	Solar Photovoltaic	3,692		

Investments in the flexibility of the energy system are also necessary, in the form of operational and investment state aid. As part of these necessary investments into the flexibility of the energy system, the implementation of storage capacities for all RES-Electricity investments will also need another state aid support scheme.

The digitisation of the Romanian energy system, including the transport and distribution networks (“smart grids”) also plays an important role in reducing own technological consumption (OTC) and increasing the production of RES-Electricity as well as in transforming the Romanian energy market into a “fit-for-RES” market and increasing integration of RES.

In Romania, it is estimated that in the coming years, photovoltaic capacities will be developed both in the form of medium-capacity solar parks, built on degraded or non-productive lands, and in the form of small capacities dispersed by the energy consumers who can make the transition to prosumer status.

It will also be necessary to replace electricity generating facilities that will be out of operation by 2030 with new, efficient, low emission and innovative investments in new capacities for electricity generation. To this end, the capacities anticipated from the repowering activity considered in the above-mentioned National Plan are:

- i. Wind energy – 3 GW installed capacity;
- ii. Photovoltaic energy – 1.35 GW installed capacity.

This should be done in the context of achieving the objectives of energy security, competitiveness and decarbonisation of the energy sector.

The level of interconnectivity with other Member States of the national electricity system is expected to increase rapidly due to both the electricity day-ahead market and intraday market functioning in coupling modus with other European countries. This involves both domestic capacity-building investments and specific investments for transport interconnections. As a logical consequence, these will become national projects with regional impact, which will later transform into projects of common interest. They are supported by the EU and will become clusters with operational impact on energy security and commercial impact related to the single energy market:

- Black Sea Corridor cluster with direct impact on the energy system in Bulgaria and Romania; and
- The Mid Continental East Corridor cluster with direct impact on the energy system in Montenegro, Romania, Serbia and Italy.

3. Executive Summary-RES Market Status and Development of RES-Electricity Facilities

3.1 Market Overview – Factsheets

- The Romanian RES-Electricity market has been under development since 2008 with the adoption of the first Renewable Energy Act (“**Law 220**”) introducing the RES Support Scheme providing for GCs, long-term power purchase agreements (“**PPAs**”), available connection to the grid and merit order off-take;

- In 2011, the RES Support Scheme was approved by the European Commission and this led to a dynamic development of solar and wind projects resulting in 1,375.91 MW of solar and 3,015.93 MW of wind projects installed by 2019;
- The RES Support Scheme is applicable for those RES-Electricity Producers commissioned prior to 31 December 2016;
- RES-Electricity certified by a guarantee of origin is traded on the markets organised and administrated by OPCOM and sold to energy suppliers and/or to large intensive consumers and therefore consumed in the energy mix by both economic operators and residential consumers;
- In 2013, the government introduced measures such as support of RES annual quotas, the obligation for energy agreements and GC agreements to be concluded on OPCOM, mandatory annual GC quotas to be purchased by the energy suppliers on the market and deferral from trading on the market of a number of GCs related to each RES technology. After 2014, few new projects were therefore developed on the local Romanian market;
- The development of electricity storage has evolved since 2014, through the construction and operation of hydroelectric power stations with an installed pumped-storage capability of more than 15 MW;
- Since 19 November 2014, the day-ahead market in Romania has been operating in a coupled way with the markets in the Czech Republic, Hungary and Slovakia through a price coupling mechanism, known as 4M MC;
- Since 2014, based on a state aid measure approved by the European Commission, energy intensive users are exempted from fully supporting RES-Electricity and are paying at least fifteen percent (15%) of the number of GCs related to the mandatory GCs quota;
- In 2015, the RES Support Scheme was amended and reapproved by the European Commission;
- In 2016, Romania reported to the European Commission that it had reached twenty five percent (25%) of total energy consumption from RES, exceeding the twenty four percent (24%) RES quota established as a country target for 2020 and provided no additional support scheme for new projects, except the sale of RES-Electricity on the specialised market;
- Since 2018, the Romanian government has regulated the use of RES-Electricity by prosumers, who own RES-Electricity facilities of at least 27 KW/consumption location and has given a strong signal that Romania encourages RES-Electricity consumption and energy efficiency;

- In November 2018, the Energy Minister drafted Romania's Energy Strategy 2019-2030 with an outlook set for 2050;
- In 2018 and 2019, the first electricity storage capacities were installed, which helps wind park and photovoltaic capacities to minimise energy losses during the charging process and adds new functionalities, including levelling of energy forecasts, recovery from power failures, as well as capturing energy at low voltages or on cloudy days;
- Since November 2019, Romania, Bulgaria, Croatia, Czech Republic, Hungary, Poland and Slovenia *inter alia* have successfully linked intraday markets with a total of fourteen (14) countries active in operational work since June 2018.
- Under the draft of the National Plan for Energy and Climate Change for 2021-2030 with a perspective towards 2050, in early 2020 Romania committed to having thirty-point seven percent (30.7%) of RES-Electricity as part of final energy consumption by 2030.
- In 2020, ANRE approved the conditions for obtaining a licence for the commercial operation of energy storage facilities, along with the rules for licence holders regarding the commercial exploitation of new hydrogen production facilities. That same year, the validity conditions for the Setting-Up Permit and licensing of new biogas/biomethane plants were also approved;
- On 1 February 2021, the following changes were introduced to the operation of the balancing market and the settlement of imbalances: (i) a 15-minute settlement time interval; (ii) a single imbalance price for settling imbalances of responsible parties; and (iii) a calculation method for dual imbalance prices (a single imbalance price for settlements between balancing parties (deficit and surplus price));
- In June 2021 the interim coupling project was launched by extending the 4M MC markets –(i.e. the integration of the day-ahead electricity markets from the Czech Republic, Slovakia, Hungary and Romania with those in Austria, Germany and Poland), as part of the pan-European SDAC project;
- In 2021, the Romanian government adopted amendments to the Energy and Gas Law 123/2012 to provide that wholesale electricity market transactions may also be concluded in the form of directly negotiated bilateral transactions (i.e. directly negotiated power purchase agreements (PPAs), through bids on organised markets, including for balancing services, or import/export transactions;

- In October 2021, operations were completed for the coupling of the Romanian-Bulgarian border in the SDAC, which allowed for the integration of the Greek and Bulgarian day-ahead markets into the SDAC;
- Starting in November 2021, price caps for end consumers were introduced by Government Emergency Ordinance No. 118/2021 as approved by Law 259/2021. Furthermore, Law 259/2021 introduced a windfall tax for RES producers of 80% applied on revenues exceeding RON 450/MWh.
- In December 2021, the Romanian government presented its intentions to introduce a CfD support scheme (which is expected to be largely modelled on the existing CfD regime in the UK) as a means of promoting nuclear and renewable energy investments in Romania;
- On 21 December 2021, the European Commission approved an extension to the validity of the Romanian state aid scheme for a high-efficiency cogeneration bonus and related conditions;
- In March 2022, the Energy Ministry published an emergency ordinance draft for public debate, which was prepared in relation to an institutional and financial framework meant to implement and manage the funds allocated to Romania through the Modernisation Fund aimed at financing renewable energy projects.
- In July 2022, new legislation was approved by the Parliament, which simplifies the development of renewable energy generation facilities on extra-muros land with a surface of up to 50 hectares. For further details please see Section 5.4.
- In September 2022, the Government adopted Government Emergency Ordinance 119/2022 which amended the price caps and applicability period thereof. In addition, the windfall tax (contribution to the Energy Transition Fund) for surplus revenues was extended to all electricity producers and set to 100% of the revenues exceeding RON 450/MWh. The windfall tax is not applicable to capacities commissioned after the entry into force of Government Emergency Ordinance 119/2022. Furthermore, a windfall tax was introduced also for other market participants engaged in electricity trading activities. The compounding mechanism of the windfall tax for trading is different than that used for the windfall tax for producers of electricity and aims to ensure that the margin of market participants engaged in trading activities does not exceed 2% of the median price of the electricity acquired by the market participant.

- In April 2023, the law for the approval of the support agreement between the Romanian State and Nuclearelectrica S.A. for the development of Units 3 and 4 of the Cernavoda Nuclear Power Plant was enacted. Pursuant to the law, the Romanian state undertakes to implement the CfD for the support of Units 3 and 4 of the Cernavoda Nuclear Power Plant until 31 July 2025.
- In June 2023, new legislation was enacted which allows the issuance of building permits for renewable energy projects even in the absence of a General Urbanism Plan (PUG), or of a Zoning Urbanism Plan (PUZ), regulating the urbanism requirements applicable to the project lands. For further details please see Section 5.4.
- In June 2023, the Government approved the governing programme for the 2023-2024 Vision for the Nation, and one of the main objectives of the governing programme is the signing of the CfDs.
- In February 2024, ANRE submitted a draft methodology for grid capacity allocation for public consultation following a competitive tendering process. The main criteria for this shall be price per MW of grid capacity offered by the bidders. The capacity allocation mechanism (if approved) should be applicable starting from 1 January 2025.

3.2 RES Market Status, Permitting, Grid Connection, Licensing of RES-Electricity facilities in Romania

General Market Data

RES Target by 2030	Thirty-point seven percent (30.7%)
Net production	In 2023, overall energy production was 56.6 TWh. Consumption: 53.4 TWh Exported energy: 3.2 TWh
Installed capacity by RES technology	Biogas – 21.35 MW; Biomass – 106.26 MW; Wind power – 3,084. MW; Solar – 1,922 MW;

RES Support Scheme

Beneficiaries of RES Support Scheme	GCs are received by those RES-Electricity facilities accredited prior to 31 December 2016.
Priority and guaranteed off-take into the grid	RES-Electricity Producers receive priority access to the grid and the sale of the entire amount of energy with the observance of the market rules.
Other incentives	<ul style="list-style-type: none"> ○ Mandatory annual GC quotas to be purchased by energy suppliers; ○ National annual RES quotas supported.
Other conditions	<ul style="list-style-type: none"> ○ Licence for commercial exploitation above 1 MW; ○ No installed capacity limit as long as the grid allows this from a technical point of view;

Grid connection specifics

Approvals	<ul style="list-style-type: none"> ○ connection to the grid is based on a solution study or solution sheet, depending on the installed capacity; ○ the grid operator is responsible for drafting the solution study / sheet and for issuing the connection approval.
Permitting Timing: depending on the installed capacity and connection to the grid, an investor may obtain the necessary approvals in approximately six (6) months to two (2) years.	<ul style="list-style-type: none"> ○ building permit for civil works and connection works to the grid; ○ technical connection approval and connection agreement with the grid operator; ○ RES-Electricity capacity and related connection works' commissioning; ○ Environmental approval and environmental authorisation; ○ Connection Certificate.

Licensing	
Procedure	<ul style="list-style-type: none"> ○ Setting-Up Permit; ○ Accreditation; ○ Licence for commercial exploitation of the RES-Electricity facility.
Duration of administrative procedure	Within sixty (60) days from the submission of the full documentation.
Licence's validity	Twenty-five (25) years.

3.3 Designated/preferred legal form of investment vehicle and RES-Electricity project's

3.3.1 Acquisition

Romanian legislation does not require or recommend a particular type of investment vehicle in the RES-Electricity sector. Usually, the limited liability structure (“SRL”) is the most popular form of investment vehicle in this field.

A Romanian RES-Electricity project under development usually contains, within the structure of the SRL, several types of assets, including (i) rights to the land associated with the RES-Electricity project (ownership or superficies rights, as well as easements and rights of way); (ii) building permit for the construction of the RES-Electricity project; (iii) technical documentation (solution sheet or solution study, as the case may be); (iv) technical connection approval for the connection to the grid and sometimes, if the developer secured the financing for the RES-Electricity project, the connection agreement entered into with the local grid operator; (iv) contracts (loans, various services related to the development of the project, etc.); and (v) potentially tangible assets and employees.

The acquisition of a RES-Electricity project can be performed through the purchase of either the shares in the SRL (share deal) or on an individual asset basis (asset deal).

Below is a comparison of the advantages and disadvantages of each type of acquisition.

Share Deal

Benefits	Disadvantages
<p>1. The most common way to purchase a RES-Electricity project in Romania.</p>	<p>Complying with Trade Registry formalities for share deal publicity towards third parties.</p>
<p>2. Taking over all civil and energy related permits and authorisations without any other formalities, except the notification to the relevant environmental authority in case of change of control over the SRL's shares or change of the project's characteristics.</p>	<p>The purchaser assumes all the historic corporate liabilities (and associated risks) of the SRL.</p>
<p>3. The transaction can be performed faster, at lower costs and ensures an easier transfer of the RES-Electricity project with the necessary elements for construction and operation.</p>	
<p>4. Flexible transaction structure based on the findings of a proper due diligence of the company, plus the real-estate assets, permits and authorisations, movable assets, and employees, as the case may be.</p>	
<p>5. Transaction in two stages: signing and closing. The transaction usually contemplates conditions precedent to closing: performing a comprehensive due diligence to the purchaser's satisfaction, not only legal, but also technical, commercial, tax and accounting on the RES-Electricity project and the SRL; the seller obtaining any outstanding permits and authorisation and securing any relevant rights to land or access; the seller terminating any unnecessary or undesired contracts and/or obtaining any relevant consents up to the decided development stage.</p>	

-
6. The transaction might contemplate a holdback on the purchase price or payment in instalments, to ensure that certain agreed milestones are met.
-
7. For the purchaser's protection, the share-purchase agreement may include a comprehensive set of representations and warranties regarding the SRL and the project, as well as indemnities, for any issues which the purchaser identified in the due diligence process.

It is also recommendable to include, as a condition for the transaction, obtaining a real estate title insurance and warranty & indemnity insurance policy covering the liability under the sale and purchase agreement.
-

Asset Deal

Benefits	Disadvantages
1. The purchaser will not take over the historical corporate liabilities (and associated risks) of the SRL.	Complying with ANRE's formalities for notification of the transaction at least one hundred and twenty (120) days before the transaction date.
2. The purchaser can change the characteristics of the project before applying for various permits and authorisations.	If the project includes rights to land, the asset purchase agreement must be notarised by a Romanian notary public, subject to a fee.
3.	Additional fee to be paid for registering the transfer of the rights to land with the Land Register. In principle, an asset deal carries VAT (unless performed as a going concern).

4.	The transfer of the energy-related permits associated with the project requires, in principle, the consent of the issuer and if there are technical changes to the project the issuance of other permits and authorisations.
5.	The transfer of relevant contracts requires the consent of the contracting parties and sometimes the conclusion of new agreements renewing the contracting parties and ensuring the undertaking of the assumed obligations.

4. Key Recent changes to the RES Legislative Framework

In 2018 the RES Support Scheme experienced several amendments as per the provisions of Emergency Ordinance No. 24/2017, as approved by Law 184/2018, Emergency Ordinance No. 88/2011 and Law 360/2018:

4.1 Introduction of the concept of *prosumer*

A prosumer is a natural or legal person that not only consumes energy from the grid but is also a RES-Electricity Producer.

The prosumer can sell the RES-Electricity produced and delivered to the grid operator, based on a Connection Certificate obtained from the grid operator at the weighted average price recorded on the day-ahead market in the previous year, published on the OPCOM website.

4.2 Deferral of GCs generated by photovoltaic facilities

Two (2) GCs of photovoltaic facilities accredited prior to 31 December 2013 shall be deferred from being traded as of 1 April 2017 until 31 December 2020.

The above-mentioned GCs and the GCs deferred until 31 March 2017 shall be recovered starting from 1 January 2021, in equal monthly instalments until 31 December 2030.

4.3 Trade of the deferred GCs after the expiration date of the Accreditation and Licence of RES-Electricity Facilities

RES-Electricity Producers have the possibility to receive those GCs deferred from trading and to trade them after the Accreditation and Licence of RES-Electricity Facility is set to expire.

In all cases, when the Accreditation or the Licence of a RES-Electricity Facility has expired, the RES-Electricity Producers are entitled:

- to obtain the GCs deferred from trading; and
- to trade until 31 March 2032 those GCs issued for their own production within the period of the Accreditation's validity.

4.4 GCs and electricity transactions between small RES-Electricity Producers and electricity suppliers

There is the possibility of concluding bilateral GC agreements and/or electricity agreements between small producers with an installed capacity of 3 MW and the electricity suppliers of the final consumers outside OPCOM markets.

4.5 All the GCs issued between 1 April 2017 and 31 March 2031, including all the deferred GCs will be guaranteed to be taken over on the market

This would eliminate the risk that RES-Electricity Producers will not make use of their GCs due to their expiration. The only condition is for annual electricity consumption to not fall under the average value registered between 2017-2022.

4.6 GCs may be traded only once between the RES-Electricity Producer and the electricity supplier

There is only one exception; when the RES-Electricity Producer faces a shortfall of promised GCs for GC sale and in this case may buy the GC difference on the centralised markets.

4.7 Payment of EUR 70 by the electricity suppliers for non-fulfilment of annual mandatory GCs quota

Since 2018, RES-Electricity Producers and suppliers who do not fulfil the annual mandatory GC quota shall be required to pay the equivalent value of the non-purchased GCs to the Environmental Fund Administration at EUR 70 for each non-purchased GC, calculated in RON at the average exchange rate set by the National Bank of Romania for the previous year.

4.8 GCs will receive value in the account of the RES producers at the time of trading

The GCs shall be registered in the RES-Electricity Producer GC accounts and as revenues for tax purposes only at the time of their trading on the markets and not at the issuing time. The change in registration will have a direct impact on the profit tax related to GCs.

The measure is applicable only for GCs issued after 31 March 2017.

4.9 Limited financial impact of RES Support Scheme on the end-customer's electricity invoice

By law, the economic impact of the RES Support Scheme on electricity invoices of end-customers is limited through:

- a new calculation of the value of GCs to be used by electricity suppliers in the electricity invoice of end-customers;
- the maximum trading value for a GC is reduced to EUR 35/GC compared to EUR 55/GC;
- the financial support of end-customers will not exceed more than EUR 14.5/MWh in 2022.

Electricity suppliers shall need to calculate the GC value in the electricity invoice separately.

The value shall be calculated as the product of the GC mandatory quota, invoiced electricity quantity and the GC price.

The GCs price will be calculated as the weighted average price of the transactions on the spot GC market and subsequently, at the time of the electricity invoice's settlement, at the weighted average price of GCs used by the electricity supplier to meet the mandatory GC quota for the previous year. This may not be higher than the weighted average price of GCs traded on the GC spot market in the previous year.

4.10 Electricity suppliers required to purchase fifty percent (50%) of the number of the GCs necessary for fulfilment of the GC quota

Companies with an obligation to purchase GCs on the market should purchase at least fifty percent (50%) of the GCs necessary for fulfilment of the GC quota from the GC centralised spot market.

5. Significant and/or expected changes in 2023 and 2024

5.1 A new support system for RES-Electricity: contracts for difference

In June 2020, a memorandum for the approval of the principles for the implementation of contracts for different support schemes was published on the website of the Romanian government secretariat.

Romanian authorities, the Ministry of Energy in particular, and the consultants contracted for the development of the CfD support scheme have organised public debates and presented CfD support schemes in December 2021 as well as collected views and position papers from the industry and non-governmental organisations.

The implementation of a CfD support scheme may create an attractive and predictable environment for investors because it enables investors to lock an electricity price for a longer period and eliminate exposure to volatile wholesale prices.

In 2022, there were several public announcements and public consultations of the upcoming CfD mechanism and a questionnaire for the expression of interest was published on the Ministry of Energy website. However, the draft legislation for the CfD support scheme has not been published as at the date of this Chapter's publication.

The latest development is that in June 2023, the Government approved the governing programme for the 2023-2024 *Vision for the Nation*, and the main objective of the governing programme is the signing of the CfDs during this period.

5.2 CfD overview

The CfD mechanism works by stabilising incomes for producers who benefit from it, at a fixed price level known as “strike price”. The strike price is the final price per MWh that the investor will obtain as a result of the CfD. The strike price is an electricity price that reflects the cost of the investment in a certain technology. It is established following tenders held for the award of CfD support or, in the case of unique projects, through direct negotiation.

Simply put, the CfD is a two-way support payment, which will be the difference between the strike price and the market reference price:

- i. The CfD Counterparty pays the Generator when the market reference price is below the strike price;
- ii. The Generator pays the CfD Counterparty when the market reference price is above the strike price.

The total revenue of generators per unit of electricity is given by:

Actual Sale Price + (Strike Price - Market Reference Price)

The key documents for implementing CfD are:

- i. The CfD Law:
 - sets out the legal basis for the implementation of the CfD scheme;
 - this is the primary law which will be supported by secondary instruments amending existing legislation.
- ii. CfD Contracts:
 - are the bilateral, private-law contracts that will set out the detailed terms and conditions for the CfD support scheme between a generator and the CfD Counterparty
 - comprises 1) a “front end” contract agreement specifying generator and project details; and 2) standard terms and conditions as issued by the Ministry pursuant to the CfD Law.
- iii. Auction Framework (issued via secondary legislation)
 - sets out the technical procedures which apply to CfD applications and auctions.

5.3 Overview of the auction process

5.3.1 Eligibility requirements:

Eligibility criteria	Requirement
Applicant conditions	<ul style="list-style-type: none"> iv. Legally constituted, having electricity production as the main object of activity; v. Not in default, insolvent, bankrupt, in liquidation, etc. with fulfilled tax obligations and clear reputation of the legal representative (has not been subject to particular judgements relating to professional misconduct or fraud; vi. Not in serious breach of public procurement/ funding provisions/obligations; vii. Submission of bid bond as specified in the CfD AIO - envisaged to equal the RON -equivalent of EUR 10-20/kW
Eligible technologies	Will vary by CfD auction; generally low-carbon generators, will include onshore wind and solar
Minimum capacity	5MW ² – subject to change until we have a final version of the legislation. Moreover, the awarded capacity can be lowered where the grid connection certificate ultimately allows only a smaller amount of capacity to be constructed.
Grid Connection	Grid connection permit
Supply chain plan	Statement providing an overview of the supply chain for the Project
Bid bond	Payable by all bidders and refunded after closure of the auction and award of CfDs. Envisaged to equal the RON - equivalent of EUR 10-20/kW

2 <https://energie.gov.ro/wp-content/uploads/2022/11/CfD-scheme-market-sounding-Nov22.pdf>

5.3.2 Review of bids and allocation of CfDs:

- i. Bidders submit a sealed bid specifying the technology, capacity and offer price;
- ii. The CfD scheme operator ranks all bids from eligible bidders by offer price;
- iii. If a bid violates a capacity constraint, several options exist for that marginal bidder (e.g. the bidder could be asked to accept a reduction in their capacity such that the exact allocation constraint is met);
- iv. If there is a tie in the offer price of two marginal bidders, preference should be given to the bidder with the smaller offered capacity.

5.3.3 CfD offer and signature:

- i. CfD contracts will be offered to successful generators within five (5) working days from the auction closure;
- ii. CfD contracts must be executed by the generator within ten (10) working days of their issue;
- iii. Where a generator fails to execute its CfD contract within this period, the CfD will be revoked and the CfD scheme operator will draw on the bid bond.

The CfD scheme will be open only to new generation projects and will not be available for existing facilities.

Although the Romanian government declared that they expected the legislation to be in force by the summer of 2023, as at the publication date of this Guide, the legislation has still not been adopted nor the tendering process commenced. It is currently anticipated that this will be done before the end of 2024.

5.4 New RES-Electricity share in final consumption promoted by Romania

Under the National Plan for Energy and Climate Change for 2021-2030, Romania has committed that by 2030, it will have thirty point seven percent (30.7%) of RES-Electricity as part of its final energy consumption, however the European Commission requested a higher RES-Electricity quota of thirty four percent (34%) in June 2019, which was subsequently accepted by the Romanian government in March 2023.

Other measures proposed to be adopted by Romania, in order to reach the assumed RES-Electricity target and energy efficiency target recommended by the European Union, are (i) to include RES-Electricity in public transportation; (ii) to develop policies and measures that would lead to further energy savings by 2030; (iii) to specify measures to support the achievement of the objectives in the field of energy security, regarding the diversification of energy sources and the reduction of energy dependency; (iv) to develop liquid and competitive wholesale and retail markets, both by stimulating competition within the country and by removing barriers to cross-border trade, (including export restrictions); and (v) to enhance regional cooperation with neighbouring Member States with regard to natural gas and electricity infrastructure, RES-Electricity, energy efficiency and research, innovation and competitiveness.

5.5 National Energy Strategy 2020-2030

Given the pressure of the new targets imposed by the Green Deal Act, it is expected that the new national energy strategy will preserve and improve, in terms of real measures: the generation of RES-Electricity based on low-carbon technologies, large scale energy storage, energy efficiency in buildings, the use of electric vehicles in public transportation, an increased share of RES-Electricity in heating and cooling, and necessary investments in the EU electricity interconnection infrastructure.

5.6 Amendments to the grid connection regulation

The grid connection regulation approved by ANRE Order 59/2013 was amended in June 2022, in order to facilitate the connection of generation facilities. Specifically, the amendment of the grid connection regulation provides that the grid operator has the obligation to also consider and propose solutions for grid connection that imply operational limitations for the N-1 functioning regime. The grid operator cannot refuse to endorse a grid connection solution that provides operational limitations in a N-1 functioning regime.

Furthermore, the provisions of the grid connection regulation regarding the termination of the grid connection permit (“ATR”) for failure to post the guarantee within 3 months as of the issuance of the ATR, were repealed.

In addition, new grounds for the termination of the ATR and of the grid connection agreement were introduced, namely the ATR and the grid connection agreement will be automatically terminated if the building permit of the generation facility is not submitted to the grid operator within 18 months of the issuance of the ATR, and within 12 months of the signing of the grid connection agreement.

5.7 Amendments to the permitting framework for RES generation facilities

In July 2022, the Romania Parliament adopted Law No. 254/2022 for the amendment of Land Law No.18/1991, with the aim of simplifying the authorisation process for the development of RES generation facilities. Specifically, Law No. 254/2022 introduced an exemption to the restriction to build on extra-muros lands (i.e. agricultural lands, pastures, etc). Thus, Law 254/2022 specifies that RES generation and storage facilities can be developed on extra-muros lands having soil fertility quality class III, IV and V with a total surface of up to 50 hectares, based on the building permit and the approval of the removal of the land from the agricultural circuit without the requirement to introduce the land intra-muros. Introducing the land intra-muros is done by means of approval of a Zonal Urban Plan (“PUZ”). This is usually a lengthy procedure that may take up to one year.

While Law 254/2022 was intended to provide a facility for the streamlining of permitting for RES generation and storage facilities developed on lands having soil fertility quality class III, IV and V, with a total surface of up to 50 hectares, the Ministry of Agriculture's strange interpretation of the abovementioned provisions is that only the development of RES projects on lands with the aforementioned soil fertility quality classes and a total surface of up to 50 hectares, is permitted. Furthermore, development of projects located on lands with a total surface area of over 50 hectares is forbidden. Thus, the Ministry of Agriculture has refused the issuance of the endorsement required, in relation to the PUZ procedure, for the introduction of land intra-muros that is intended for RES projects developed on lands with a surface area of over 50 hectares.

In addition to the above, the permitting procedure was also streamlined by the amendment of Construction Law No. 50/1991 in June 2023 through Law 166/2023, which introduced an exception to the general provisions of both the Urbanism Law 350/2001 and the Construction Law 50/1991. The aforementioned provisions require the prior existence of territory planning documents and/or urbanism documentation as a condition precedent for the issuance of a building permit.

As such, building permits for renewable energy projects may be validly issued even in the absence of a General Urbanism Plan (PUG) or of a PUZ regulating the urbanism requirements applicable to the project lands. We note however that Law 166/2023 must be read in conjunction with art. 92 paragraph (2) letter j) of the Land Law 18/1991 referring to the exception to the restriction to build RES generation and storage facilities on extra-muros land having soil fertility quality classes III, IV and V, provided that the total surface area of the land used for the development of such facilities is no greater than 50 hectares. Therefore, RES generation facilities that are not located on land with soil fertility quality class III, IV and V, with a total surface of up to 50 hectares, will still have to undergo the PUZ procedure for the introduction of the land intra-muros.

5.8 New Land Book rules for registering photovoltaic panels on buildings or structures

The new Land Book registration regulation entered into force on 14 February 2023. Specifically, it clearly states that photovoltaic panels erected on buildings or other similar surfaces do not have to be registered in the Land Book. With this added

clarity on the matter, photovoltaic panels can now be installed without legal hassle or doubt on structures including, but not limited to, constructions, constructive elements of road or rail transport infrastructure, constructive elements of building networks, elements of irrigation infrastructure, etc.

6. Electricity Storage and THE Applicability of SAID Storage Technologies in Romania

The national electricity system (“NES”) should maintain a balance between generation of electricity and demand uncertainty.

As more RES-Electricity will flow through grids, the more flexible these grids must become. This will be achievable only with the help of storage technologies.

Energy storage is increasingly being seen as a key cornerstone and enabler of the transition to RES-Electricity worldwide.

Law 155/2020 introduced specific provisions for new storage facilities and rules for their management. ANRE included references to storage capacities for energy producers in their recent provisions regarding licenses.

The NECP lists storage as an instrument to improve energy security. Transelectrica’s system adequacy assessment study mentions a minimum 400 MW of needed storage capacity.

The first battery energy storage station in Romania was inaugurated in 2018 in Constanta by EDP Renewables S.A. The Cobadin 1 wind energy storage system, with an installed capacity of 1 MW, will help the wind park to level the energy forecast, and therefore the power generation fluctuations.

The second energy storage capacity in Romania was also installed by EDP Renewables S.A. in December 2019. The battery energy storage system is connected to the solar photovoltaic installation near Băilești in Dolj county.

EDP Renewables S.A. has installed an innovative energy conversion system that connects photovoltaic panels and uninterrupted current batteries with an alternative

current transformer and a lithium-ion battery, as well as a system that monitors the entire process.

An Austrian investment fund is currently building a 7MW storage solution in Moara Vlasiei, Ilfov County, and plans to expand it to a total of 14 MW.

While analysing monthly reports issued by ANRE in 2023, we noted an increase in requests for authorising battery storage capacities for covering the 1% reserve.

The storage system is remarkable, mainly because of its direct connection installation, which minimises energy losses during the charging process and adds new functionalities, including recovery from power failures, as well as capturing energy at low voltages or on cloudy days.

It is expected that an increasing number of RES-Electricity Producers in Romania will adopt the solution of using batteries in order to improve energy forecasts and to reduce load imbalances that could occur during operation of RES-Electricity facilities.

7. Support scheme for cogeneration

Romania implemented a support scheme for the promotion of high-efficiency cogeneration, which was approved by the European Commission through Decision No. 437/2009.

The high-efficiency cogeneration capacity installed in Romania totals 1,223.51 MW.

The high-efficiency cogeneration of heat and power (“CHP”) systems injecting electricity into the national grid receive operating support provided that the electricity is produced from high-efficiency cogeneration, as defined in the Community guidelines on state aid for environmental protection.

The initial support scheme was applicable for the period between 2010-2023, but the European Commission extended its application in its Decision no. 9774, dated 20 December 2021, prolonging the aid until 31 December 2033.

The amendments to the scheme concern: (i) the duration of the CHP support scheme for selected beneficiaries; (ii) an increase in the support scheme budget; and (iii) an amendment to the rules applicable to companies experiencing financial difficulty. The remaining elements of the existing aid scheme, as approved in the Commission decisions of 2009 and 2016, remain unaltered.

The level of the bonus received by the producers for each MWh produced in high efficiency cogeneration capacities, and delivered in the grid, is set annually by ANRE.

The bonus covers the difference between the production costs of electricity from high efficiency CHP and the market price of electricity, including a reasonable return on investment. The premium is calculated ex-ante separately for three types of CHP: (i) solid fuel-based CHP; (ii) CHP fuelled by gas supplied directly through the transmission network; and (iii) CHP fuelled by gas supplied through the distribution network.

In terms of the bonus value, electricity and thermal energy prices are adjusted annually based on average annual fuel prices, the annual average CO₂ certificate price, the average annual electricity trading price on the day-ahead market and inflation coefficient of variation. If they lead to a variation of the bonus level, the prices of thermal or electrical energy are adjusted by more than 2.5%.

The bonus is calculated based on the following formula:

$$\text{Bonus} = (\text{Total costs} - \text{Revenues el.} - \text{Revenues h}) / \text{Electricity}$$

where:

Total costs = variable costs + fixed costs + return on capital

Revenues el = income from the sale of the electricity delivered by a typical CHP plant at the electricity market price.

Revenues h = income from the sale of the heat produced in a typical CHP plant at the heat price.

Electricity = electricity delivered annually by the CHP plant.

8. Offshore Wind

There have been several initiatives by state-owned companies and private companies to explore the possibility of investing in offshore wind capacities in Romania.

A draft law for offshore wind energy was approved by the Romanian Senate at the end of 2020.

The draft law lays the ground-rules to build and commercially operate offshore wind parks. The Ministry of Energy plays an important part in this process, as it is tasked with issuing licenses and coordinating with other authorities for the full permitting process.

However, the draft law has received several negative observations from Parliamentary committees and the central Government, and as such has not been adopted.

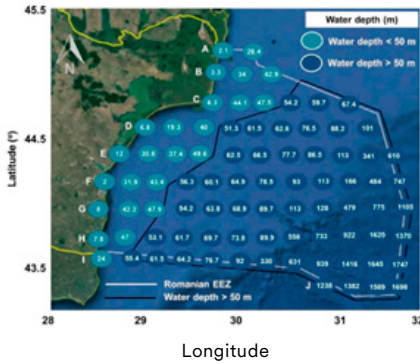
A second offshore wind draft law was registered with the Chamber of Deputies in October 2022. However, the second draft law has also received several negative observations from the Parliamentary committees and the central Government and will not be adopted either.

The former Ministry of Energy declared in March 2023 that a new draft of the wind offshore law will be submitted to Parliament for approval in 2023.

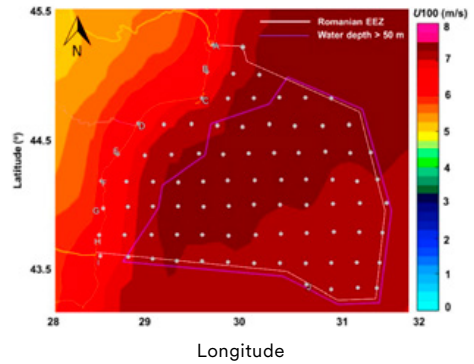
In November 2023, a new draft offshore wind law was published on the Ministry of Energy website. The draft law was registered on the dockets of the Senate, as first decisional chamber, in December 2023. The deadline for the tacit approval of the draft law is 11 March 2024. Following the approval of the draft law by the Senate, the Chamber of Deputies will decide on the approval of the draft law as the final decisional chamber of the Parliament.

Below we see part of a study that reveals a potentially excellent opportunity for offshore wind production capacities.

Water depth in the commercial areas of the Black Sea



Wind speed at a height of 100 m



9. Green Hydrogen

In Romania, the Dobrogea region (near the Black Sea) meets the prerequisites to host a hydrogen technology cluster, as it has both an exceptional capacity to produce clean hydrogen through wind energy, and a potentially significant hydrogen demand from existing refineries, the steel industry, district heating, urban public transport and decarbonising port activities, as well as naval transport in the port of Constanta.

Law 155/2020 aligned Romania with EU legislation by defining hydrogen producers and regulating its commercial exploitation.

In 2021, ANRE also introduced rules for Setting-Up Authorisations and commercial exploitation licences for hydrogen.

The licence gives investors the right to collect tariffs for services provided in connection with the operation of hydrogen installations, including hydrogen storage facilities.

Of particular importance for the authorities is the establishment and maintenance of protection and safety areas associated with the normal operation of hydrogen production facilities.

Recently, a “Green Valley” producing green hydrogen was announced for planned construction in Galati County. The project is valued at EUR 32 million and will be funded directly from European Commission funds. Furthermore, the Ministry of Energy approved projects for seven (7) companies, in order to build green hydrogen production facilities in Romania.

On 31 May 2023 the Ministry of Energy submitted a draft of the National Hydrogen Strategy and Action 2023-2030 on its website for public consultation. On 8 November 2023, the Ministry of Energy submitted an updated draft National Hydrogen Strategy for public consultation. However, as at the date of publication of this Guide, the approval thereof by Government Decision has not occurred.

The general objectives set out in the draft National Hydrogen Strategy are to facilitate the development of green hydrogen use and production in Romania in 2030, to support technological development and transfer to industrial applications and finally, to support the balanced and stable development of the National Energy System. Besides green hydrogen, the use of clean hydrogen will also be promoted in the industrial sector.

9.1 Support scheme for green hydrogen

The Romanian Ministry of Energy has recently opened public consultation on the state aid scheme aimed at boosting investments in the construction of green hydrogen production capacity in electrolysis plants, which is financed through the National Recovery and Resilience Plan (“NRRP”). This draft state aid scheme aims to support the expansion of green hydrogen production capacity, reduce greenhouse gas emissions and increase the share of renewable energy sources in Romania’s energy mix.

Projects eligible under this scheme are expected to enable the installation of at least 100MW of green hydrogen production capacity in electrolysis plants, and to produce at least 10,000 tons of hydrogen annually from renewable sources (wind, hydro or solar power) by 31 December 2025.

Moreover, as part of the green hydrogen technology process, storage capacity must be proportional to production capacity. However, during the project’s implementation, storage capacity expenses of up to 20% of the cost of the production facility will be reimbursed.

With respect to the amount of aid granted, the total estimated budget rises to the Romanian-leu equivalent of EUR 149.5 million. The budget is comprised of EUR 115 million in non-reimbursable European funds provided by the Recovery and Resilience Mechanism under the National Recovery and Resilience Plan, and EUR 34.5 million in national funds by applying an over-contracting percentage of 30%.

The maximum aid that can be granted to any one company is EUR 50 million. The difference between this and the total value of the project must be met by the beneficiary. In addition, state aid for investment granted under this scheme cannot be cumulated with any other state aid for the same investment, including *de minimis* aid, for the same beneficiary and the same eligible expenditure.

This state aid scheme for investments in the construction of green hydrogen production capacity in electrolysis plants will apply from the date of its entry into force until 30 June 2024.

On 8 August 2022, the European Commission approved a state aid scheme for Romania worth EUR 149 million, in order to support the production of hydrogen from renewable sources. This scheme is in line with the objectives of the EU strategy to encourage the development of hydrogen and the Green Pact of the EU. The scheme will also contribute to the objectives of the REPowerEU plan to reduce the EU's dependence on Russian fossil fuels and accelerate the green transition.

9.2 Enactment of new legislation for the integration of green hydrogen in the industry and transportation sector

At the end of July 2023, a new law for the integration of green hydrogen was enacted. The new law establishes the obligation of suppliers of fuels to secure non-biological renewable fuels from hydrogen suppliers. Thus, from 2030 onwards, fuel suppliers are obligated to ensure that the energy value of the quantity of non-biological renewable fuels supplied on the Romanian market and used in the transport sector during a year, is at least equal to 5% of the energy content of all fuels supplied by them for consumption or use on the Romanian market in the transportation sector. The quota of non-biological renewable fuels that shall be supplied by fuel suppliers is set at 0.5% in 2025, 1% in 2026, 2% in 2027, 3% in 2028 and 4.5% in 2029 of the energy content of all fuels placed on the market in Romania in that year.

The fuels supplied for consumption on the Romanian market by the supplier used for determining the quota shall include petrol, diesel, natural gas, biofuels, biogas, non-biological renewable fuels used in transport and recycled carbon-based fuels supplied or any other liquid or gaseous fuel supplied in transport.

In addition, the law establishes the obligation of industrial hydrogen consumers to acquire non-biological renewable fuels and green hydrogen from hydrogen suppliers. Therefore, each industrial consumer of hydrogen used in industry for energy and non-energy purposes shall ensure that:

- a. from the year 2030 onwards, at least 50% will be fuel from non-biological renewable sources or green hydrogen;
- b. from 2035 onwards, a minimum of 75% will be fuel from non-biological renewable sources or green hydrogen.

10. Trends and Challenges on the Romanian PPA market

10.1 Short overview

The PPA market is still in its infancy in Romania, given that long-term PPAs were banned in Romania in 2012, because they drove some companies to insolvency on the market. The ban was lifted in 2020 when the law provided that PPAs could be signed for power plants put into operation after June 1st of that year.

Presently, there is an interest for PPAs on the part of developers who want to secure a future income stream for their project and thus assure lenders that they can repay any loan financing. Hence, PPAs can improve the bankability of a project in the absence of stable income guaranteed by government subsidy or support schemes.

Long-term offtake options are still limited compared to other markets with only a handful of players offering fixed price PPAs for longer tenors.

Corporate appetite is emerging on the Romanian market but mostly concentrated on international companies with previous PPA experience. This reduced appetite could be explained by the fact that these PPAs have an inherent number of risks that corporates are not used to working with. It can be assumed that after Romania finalises (in 2025) its membership in the Association of Issuing Bodies – which will make possible the trading of guarantees of origin along with energy -- that this will lead to greater interest from corporate off-takers. Utility PPA demand is recovering after the energy crisis turmoil and volatility extremes. Because they have a rather low liquidity, utilities are not willing to offer PPAs for a duration of longer than 3-7 years and at a lower price than expected by developers of renewable power plants. Such PPAs concluded conditionally with utilities up to the date the developer obtains the commercial operating license are negotiated and concluded either with or without assumption of balancing costs.

Options among Romanian energy traders are: a) PPAs with physical delivery and tailor made solutions; b) virtual PPAs with sleeving solutions with different price structures; or c) corporate PPAs with corporate and industrial clients.

In 2023, few PPAs were signed and made public for a total capacity of almost 77 MW. Among these we can list:

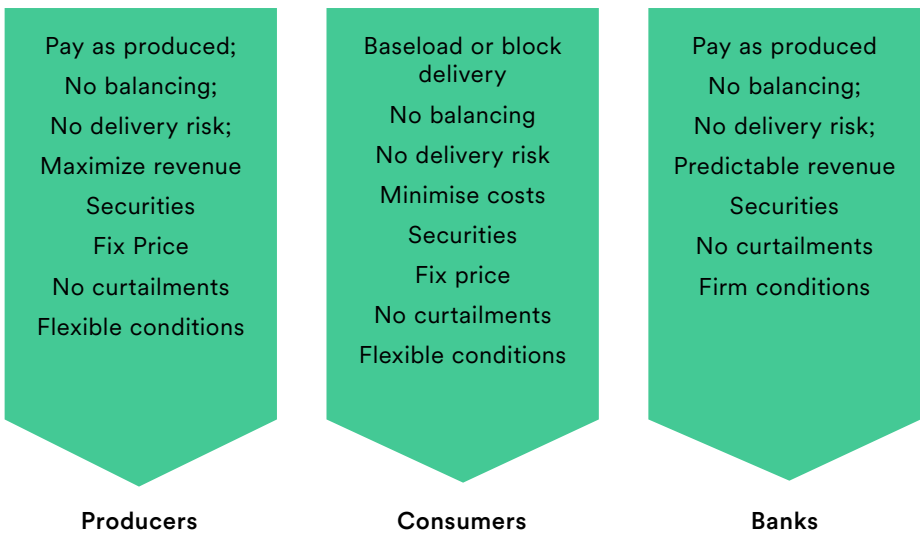
- virtual PPA signed in July 2023 between Energy and Ursus Breweries for a capacity of 50MW (PV technology) for a tenor of 12 years;
- virtual PPA signed in August 2023 between Engie and Orange for a capacity of 20MW (PV technology) for a tenor of 6 years;
- on-site PPA (energy as a service) signed in November 2023 between the Switzerland-based Connect44 Group's member, company NextE and RAAL, manufacturer of complete cooling systems and heat exchangers for a capacity of 7.4MW (PV technology) for a tenor of 6 years;
- on-site PPA (energy as service) signed in January 2024 between NextE and a Romanian consumer for a capacity of 51.5 MW (PV capacity). The tenor and the consumer's name are not known from public sources.

10.2 Challenges and Opportunities for PPAs in Romania

RES suppliers and corporate buyers are exposed to volatile electricity prices. A corporate PPA can be a solution for both parties if the buyer can achieve prices lower than current market prices at an acceptable risk and the renewable power plant owner secures an acceptable return on their project over a suitable period.

A PPA could be signed several months before electricity production and delivery starts. For a corporate buyer and utility company it is important to manage the risk from signing up to the commercial operation date. In a situation where the project does not reach the commercial operation date, it faces a lack of capacity without reinforcement works or the project timeline is delayed, this could cause substantial financial loss to the buyer, since the market conditions could change significantly. It is therefore important that the buyer secures guarantees to cover these potential losses. The size of this guarantee will depend on the market conditions, the counterparty and the stakeholders.

Below is a summary of what contracting parties negotiating the terms and conditions of a PPA would typically like to achieve in a PPA:



The PPA is therefore a tool to set a baseline for prices that can be considered as revenues by the renewable producer and banks. However, in the case of financial PPAs, there is still an element of price risk exposure to the agreed settlement market for wholesale electricity.

Authors:



Bryan Jardine
Partner

E bryan.jardine@wolftheiss.com
T +40 21 308 81 02



Adina Aurel
Counsel

E adina.aurel@wolftheiss.com
T +40 21 308 81 64



Vladimir Plugarescu
Senior Associate

E vladimir.plugarescu@wolftheiss.com
T +40 21 3088 122

**Generating Electricity
from Renewable Sources
in CEE & SEE**

Energy Industry Group

Serbia

Country General Information

Capital: Belgrade

Location: Serbia is a landlocked country situated at the crossroads between Central and South-Eastern Europe. It lies in the southern Pannonian Plain and the central Balkan Peninsula, which links Western and Central Europe with the Middle East, Asia and Africa. Serbia borders Hungary to the north, Romania to the northeast, Bulgaria to the east, Croatia and Bosnia and Herzegovina to the west, Montenegro to the southwest, and North Macedonia and Albania (through the disputed territory of Kosovo) to the south. It lies between latitudes 41° and 46° N and longitudes 18° and 23° E.

Surface: At 88,499 km² (77,589 km² excluding Kosovo), Serbia is a mid-sized European country. Belgrade, the capital of Serbia, is one of the largest cities in South-Eastern Europe.

Population: estimated at 6,641,197 (excluding Kosovo).

Climate: temperate continental climate with gradual transitions between the four seasons of the year.

Resources: Natural resources include rich and arable farmland, water (the river Danube, a variety of other rivers, lakes, underground natural and thermo-mineral water sources), wind, sun, forests, oil, gas, coal, iron ore, copper, zinc, antimony, chromite, gold, silver, magnesium, pyrite, limestone, marble and salt. The Serbian countryside is highly diverse in flora and fauna, making up a significant part of the richness and diversity of Europe's natural heritage. Serbia has an exceptionally varied terrain: rich fertile plains in the north, limestone ranges and basins in the east, and ancient mountains and hills in the southeast.

Electricity Grid: The total length of the national electricity grid comprising overhead lines is 10,914.01km (9,861.78km excluding Kosovo). The transmission system in Serbia consists of overhead power lines, cables, substations and switching stations with a nominal voltage of 400 kV, 220 kV and 110 kV, besides the 110 / kV substations that form part of the distribution system. The transmission system is connected to production facilities on the one hand and to the distribution system and customer facilities (industrial complexes and railway transformer stations). on the other. The transmission system is interconnected with all neighbouring countries.

Electricity Transmission, Distribution and Supply: Electricity transmission is operated by state-owned company Akcionarsko društvo Elektromreža Srbije Beograd (EMS). In December 2020, the electricity distribution network and system operator, Elektrodistribucija Srbije

d.o.o. Beograd (EDS), was separated from Javno preduzeće Elektroprivreda Srbije (EPS). Consequently, the electricity distribution system is now operated by EDS, which has branch offices in several cities, while public supply is carried out by EPS through its branch offices. EPS's branch office EPS Snabdevanje d.o.o. acts as a guaranteed supplier of households and small consumers; it also supplies commercial customers. As at 27 March 2024, there were also 76 local companies licensed to supply electricity and 86 local and foreign companies registered for the wholesale of electricity in the Serbian market.

Official Language(s): Serbian

EU Member: Candidate country to join the EU.

NATO Member: no

United Nations Member: A founding member of the United Nations as the legal successor to Yugoslavia. As Serbia, it has formally been a member since 2000.

Currency: Serbian Dinar (RSD)

Schengen: Serbia is not part of the Schengen area. However, since 30 October 2014 foreigners have been allowed to enter, transit and stay in Serbian territory under specified conditions without holding a Serbian visa if they have a valid Schengen visa.

Political System, Administrative Organisation and Economy: Serbia is a parliamentary republic with a political system divided into legislative, executive and judiciary branches. A unicameral national assembly represents the legislative body, the Prime Minister is the head of the government, and the President of the Republic is the head of state. Serbia is a unitary state, with two autonomous provinces (Vojvodina province in the north and the Kosovo and Metohija province in the south), 29 administrative districts and 198 municipalities, cities and city municipalities. Serbia has an economy predominantly based on services and is an exporter of raspberries, steel, refined copper, automobiles, etc. Its strongest sectors are energy, manufacturing, automotive and mining.

1. RES potential in Serbia

The Serbian National Action Plan for RES, which was adopted in 2013, envisaged a 27% share of RES within final energy consumption in Serbia by 2020. This target was not met by 2020 and has still not been achieved. Based on the most recent reports from the European Commission, Serbia has made moderate progress in harmonising its legislation, governance, and processes with the EU *acquis*, but Serbia's share of RES as a percentage of its gross final energy consumption has unfortunately decreased by 1% year-on-year and was at 25.28% in 2021.

Still, Serbia has set very ambitious targets for decarbonisation and increasing RES in its generation capabilities. Serbia committed to an unconditional emissions reduction target in August 2023 of 13.2% compared to 2010 levels, or 33.3% compared to 1990 levels, to be achieved by 2030.

Notwithstanding the above percentages, the total installed capacity of RES projects is steadily increasing in Serbia. The total installed capacity of RES used for electricity generation (not including wind and big hydropower plants) increased to 190 MW in 2023. The current national energy strategy estimates that approximately EUR 200 million of investment is needed to reconstruct and modernise the district heating system and to achieve the shift from fossil fuels to RES (predominantly, biomass and natural gas). The share of electricity generation via oil in comparison to 2010 (baseline year) should decrease from 28.7% to 14.6% by 2030 and the share of generation via coal should decrease from 23% to 16.5%. By contrast, the share of generation via natural gas should increase from 48.3% to 56.4% and biomass from 3.2% to 12.5% by 2030.

The available potential of RES in Serbia is estimated to be 5.65 million tons of oil equivalent, with biomass amounting to 60% of the RES potential and 30% coming from hydropower. Total hydro energy potential in Serbia is approximately 25,000 GWh/year. Over 70% of this potential is concentrated in several large rivers: the Danube, the Drina, the Velika Morava, the Lim and the Ibar. By some estimates, there are more than 100 small-scale hydropower plants currently operating in Serbia, while more than 700 are designed or in construction. However, due to active and widespread criticism of small-scale hydro power plants (given their limited benefits and the expected detriment to Serbian flora and fauna) few projects on smaller rivers are expected to be developed.

At present, many wind projects are in various phases of development around the country, with several large wind projects having become fully operational in the past few years. The current focus however is on solar, including both large-scale

projects and industrial and household prosumers. Biomass remains a significant energy potential with an estimated 3.448 million tons, particularly in the rural areas of central Serbia and in the Vojvodina province.

One of the main obstacles to further RES development is the lack of human and technical resources in the Ministry of Mining and Energy's Department for Green Energy. Moreover, further development of the transmission and distribution grid requires considerable investment to connect new generation plants. Balancing costs and responsibility, as well as ancillary services, are an area of particular focus at the time of publication of this Guide.

The Serbian market can be described as very active with public and private project developments and project-driven M&A. Serbia is already home to many established foreign investors in the energy sector, including CWP, Fintel Energia, RWE Inoggi, Itochu, MET Group, Taaleri, REV Canada, DEG, Secci, Enlight Renewable Energy, Elicio and others. Appetite for it exists, particularly with regard to self-consumption and other energy efficiency projects. Such projects are regularly financed by a variety of lenders, from private equity funds and commercial banking syndicates, to international financial institutions such as the EBRD, IFC, KFW, and the OEEB.

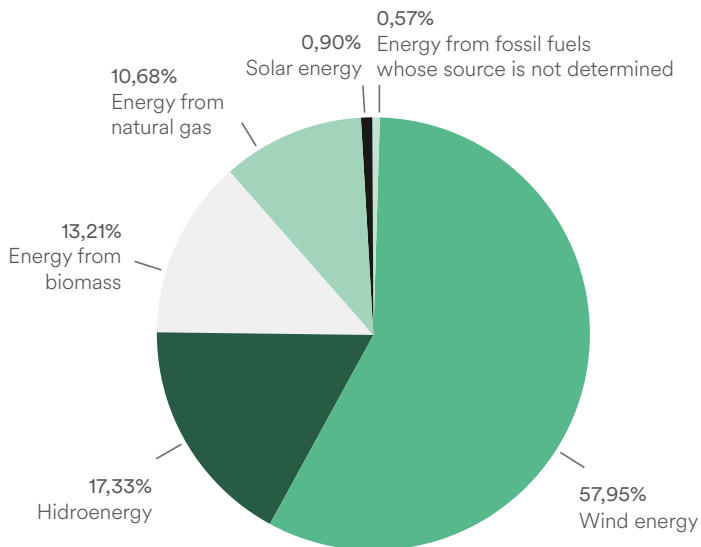
2. RES Market

2.1 The Market Over the Years

- The first Serbian Energy Law was adopted in 2004 and, after a few years, a new and improved version of this law was adopted in 2011. Both of these initial versions aimed to promote RES electricity generation through harmonisation of the local market with EU legislation.
- In 2009, the feed-in tariff model was introduced for RES electricity generation.
- In 2012, Serbia assumed an obligation towards the Energy Community to reach a 27% renewable energy share within gross final consumption of energy, as well as a 10% RES energy share within transport by 2020.

- In 2014, a renewed Energy Law transposing Directive 2003/54/EC concerning common rules for the internal market in electricity, and Directive 2001/77/EC on the promotion of electricity produced from RES, came into effect. This 2014 law provided for the implementation of all measures envisioned under the European Union's Third Energy Package (which is also Serbia's commitment under the Energy Community Treaty) ("**2014 Energy Law**").
- This 2014 Energy Law kept the feed-in tariff model, but introduced several novelties such as the possibility for RES producers to enter into a power purchase agreement ("**2014-Model PPA**") with the guaranteed public supplier at the moment they obtain the temporary status of privileged producer, and to sell their entire electricity output to the guaranteed public supplier at the feed-in tariff locked in at the time of the signing of the PPA (with annual indexation) for a 12 year period. RES producers also became entitled to build the grid connection point themselves, at their own expense, and on behalf of the transmission system operator as the investor that facilitated construction.
- In 2015, Serbia adopted its current Energy Strategy, which sets out targets and areas of special interest until 2025, with projections until 2030.
- In April 2016, Serbia signed the 2015 Paris Agreement, which was later ratified by parliament and came into force on 24 August 2017.
- During 2016 and 2017, under the feed-in tariff model, an additional 92.3 MW of RES plants were connected to the grid, and by December 2018 another 222 facilities for generation of RES were built. In 2021 alone, a total of 1,847,657.74 MW/h of electricity were generated in Serbia from RES producers benefiting from these feed-in tariffs.
- The allocation of electricity generated under the feed-in tariff model during 2021 can be illustrated as follows:

Structure of electricity generated in the incentives system in 2021



*Source: EPS

- The capacity of wind power plants operated by RES producers with 2014-Model PPAs in place equals 398 MW, with another 168 MW of capacity still under construction (i.e. they hold the status of temporary privileged power producer). The total capacity of hydro power plants of the same type of RES producers is 94.6 MW, with 18.2 MW under construction. In comparison, the capacity of solar power plants of the same type of RES producers is only approximately 9 MW, total capacity of biogas is approximately 33.2 MW (with another 77.4 MW still under construction), and biomass capacity is only 2.3 MW. High efficiency cogeneration plants have a total capacity of approximately 25.9 MW (with another 10 MW under construction). The City of Belgrade PPP Project for Energy from Waste remained the sole beneficiary of the feed-in tariffs approved for its landfill gas facility and leachate treatment facility (installed capacity of 3.9 MW) as well as its energy-from-waste facility (installed capacity of 30.2 MW).
- In November 2020, Serbia signed the Sofia Declaration on the Green Agenda for the Western Balkans, which forms part of the EU’s initiative to include Western Balkan countries in the efforts to make Europe carbon neutral by 2050. Subsequently, Serbia also enacted its Law on Climate Change with the key goal of decarbonising the industry and reducing greenhouse gas emissions.

- On 30 April 2021, the long-awaited amendments to the Energy Law came into effect with the new and separate RES Law. The new RES Law partially transposes the EU RED II Directive 2018/2001/EU and regulates: (i) guarantees of origin of electricity; (ii) RES electricity generation for own consumption and the possibility to achieve prosumer status; (iii) use of RES in heating and transportation; and (iv) international cooperation in the field of RES.
- The key change in the new RES Law is the introduction of market premiums awarded in a public auction process in the form of a contract for difference, compared to the previous feed-in tariff model. Feed-in tariffs are still available, but only for wind power plants of up to 3 MW, for other RES facilities of up to 500 KW, or for demonstration projects (i.e. non-commercial innovative projects demonstrating new technology).
- In June 2023, an auction plan for the period 2023 - 2025 with a total capacity of 1,300 MW was published. The first auctions for producers of electricity from renewable energy sources were then conducted in the summer of 2023. Out of the 400MW quota for wind projects, four projects filled the entire quota. On the other hand, out of the 50 MW quota for solar power, about half, or 25.2 MW, were awarded (some only after the appeals process).

2.2 Project Development in Serbia

Serbia is continuously instituting more and more e-government processes. It no longer takes months to obtain various documents from different authorities. Starting in 2023, companies can be incorporated through an entirely electronic process.

Focusing on construction, the online Unified Procedure Portal has significantly streamlined and simplified the process for investors compared to the arduous paperwork process which preceded it. In 2022, the average time for deciding on construction permit applications through the Unified Procedure portal was 10 calendar days. However, it should be noted that some cities and municipalities in Serbia work extremely efficiently and process such applications in a couple of days, whereas others can take several weeks to decide on permit issuance.

The number of services available electronically is also increasing along with the preparedness of administrations and authorities to respond to electronic applications.

EMS – the Serbian transmission system operator – uses its NERA platform to communicate with market participants and enter into contracts, such as balancing responsibility agreements. The Serbian Energy Agency has also established a channel of communication for receiving electronically signed documents. However, applications by foreign companies for electricity wholesale licenses must still be submitted by paper.

Despite positive examples, Serbia remains a very formalistic legal environment. Authorities still mainly require documents that carry a paper notarisation and apostille. Hard-copy translations by certified translators into Serbian are almost always required. Most regulations still grant vast discretionary authority to request additional documents and information which often prolongs the licensing process.

A key first step for project development in Serbia, particularly for wind and solar projects, is ensuring that the required real property rights are in place. However, as is the case with most Western Balkans countries, this is often problematic in practice due to unresolved ownership issues or numerous private individual owners, particularly in rural areas where such projects are typically developed. Negotiations with the respective owners are often unpredictable and require a tailored approach on a case-by-case basis.

With regard to connection infrastructure, it should also be noted that the permits and real property rights required for its construction must be obtained in the name of the grid operator (i.e. transmission or distribution system operator). This requirement is eased by the legal possibility for the investor and future power producer to actually design and perform the construction works, even if the project is formally in the name and on behalf of the grid operator. Therefore, the coordination of activities with the grid operator in this process is of considerable importance. The contracts with grid operators for this purpose are concluded based on their standard templates and are generally not negotiable.

General Market Data

Overall, Installed General Capacity Including RES +(Overall Production) In 2019, overall electricity production was 34.52 TWh

Installed Capacity by Technology

- Wind – 566 MW
- Hydro – 113 MW
- Biogas – 111 MW
- Waste and landfill gas – 34.1 MW
- Solar – 9 MW
- Biomass – 2.3 MW

Key Authorities

- Line ministry: Ministry of Mining and Energy
- Regulator: Serbian Energy Agency (AERS)
- Transmission System Operator: Elektromreža Srbije (EMS)
- Distribution System Operator: Elektrodistribucija Srbije (EDS)
- Public supplier: Elektroprivreda Srbije (EPS)

RES Support Schemes

Feed-in Tariffs under 2014 Energy Law Under the 2014 Energy Law, feed-in tariffs were available until the end of 2019 and were awarded to RES Producers. Many RES Producers in the market are still under the 12-year term of the 2014-Model PPA and benefit from these feed-in tariffs for the duration of those PPAs.

Feed-in Tariffs under Current RES Law Currently available for:

- wind power plants of up to 3 MW;
- other RES facilities of up to 500 KW; and
- demonstration projects.

Market Premium under Current RES Law	<p>This is a support mechanism in the form of an addition to the market price of the electricity that the RES Producer delivers to the market, expressed in euro cents per KWh.</p> <p>Market premiums are awarded in an auction process based on the available quotas prescribed by the Serbian government. The premium can be obtained for all or part of the RES Facility's capacity and is paid monthly based on the RES-Electricity delivered to the grid.</p>
Auction Process for Market Premium	<p>The right to a market premium is acquired in an auction procedure conducted by the Ministry.</p> <p>Phases: qualification, bidding, and selection of best bidder. In the bidding phase, participants compete to offer the lowest market premium without exceeding the established maximum incentive purchase price. Participants are ranked from the lowest to the highest market premium (i.e. electricity purchase price) and are listed in that order until the quota for their type of facility is full.</p> <p>The first auctions were held in July 2023.</p>
Market Premium Agreement	<p>The model Market Premium Agreement is prescribed in a separate decree as a contract for difference. Unlike the 12-year 2014-Model PPA, the market premium agreement is entered into between EPS and the RES Producer for an incentive period of 15 years from the first market premium payment (or first negative premium).</p>
Assumption of Balancing Responsibility	<p>Unlike under the 2014 Energy Law, the balancing responsibility is now only assumed by the public supplier until a liquid intraday market is established in Serbia.</p>
Other Incentives	<p>Other incentives to RES Producers include:</p> <ul style="list-style-type: none"> Guarantees of origin for power produced from RES, issued by the transmission system operator upon request Right of priority access to the transmission / distribution / closed distribution system

Grid Connection Specifics

Specifics	<p>The grid (distribution or transmission) operator is the owner of the connection infrastructure, and all permits and licences for the connection infrastructure are issued in the grid operator's name.</p> <p>Access to the grid is granted by the transmission system operator EMS.</p>
Stages of Grid Connection Process	<p>Opinion by the (distribution or transmission) grid operator on the conditions and possibilities for connection;</p> <p>Power plant connection study;</p> <p>Contracts on preparing planning and technical documents and obtaining permits;</p> <p>Contract on monitoring interconnection construction;</p> <p>Contract on exploitation of the power plant;</p> <p>Approval to connect the power plant (can be obtained only after acquiring the power plant construction permit).</p> <p>The duration of the grid connection process varies in practice and is closely linked with permitting and construction procedures.</p>

2.3 Main Permits required for RES-Electricity Generation Facilities

Environmental Impact Assessment; Consent	<p>An Environmental Impact Assessment (EIA) may be required in some cases. In such cases, it is a pre-requirement for the issuance of both the energy permit and the location conditions which are required for the Construction Permit.</p>
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An EIA must be carried out (and approved) prior to the construction of an electrical energy or heat energy plant exceeding 50 MW. For a plant between 1 MW and 50 MW, the competent authority may request an EIA, except in the case of a hydropower plant, where the lower limit is 2 MW, and in the case of a wind project, where the lower limit is 10 MW total capacity. For a plant below 1 MW and below the above-mentioned limits for wind and hydroelectric plants, no EIA is requested, regardless of the source of energy (with the exception of nuclear energy).

Energy Permit

An Energy Permit (*енергетска дозвола*) is required to construct industrial plants that exploit natural resources or to conduct energy activities, except in PPP projects. Obtaining an Energy Permit is a precondition for obtaining a Construction Permit, where applicable.

**Water Conditions;
Water Consent**

If the energy plant uses water from rivers, lakes or underground rivers, or releases water or other materials into them, a Construction Permit will be issued only after being granted Water Conditions (*водни услови*) and then Water Consent (*водна сагласност*).

**Construction
Permit**

Depending on the capacity of the power plant, a Construction Permit (*грађевинска дозвола*) is issued by the local municipality, the Ministry of Construction, Transportation and Infrastructure, or the Autonomous Province of Vojvodina. A construction permit should formally be issued within five days during the so-called unified procedure, which is conducted electronically. To obtain a construction permit for a wind power plant, the approval of the Agency for Flight Control, confirming that the wind power plant does not endanger flight safety, is also required.

Water Permit

If the energy plant uses water from rivers, lakes or underground rivers, or releases water or other materials into them, the Water Permit (*водна дозвола*) is the third step towards obtaining a Building Use Permit, following the first two steps of being granted the Water Conditions and Water Consent.

Building Use Permit	The Building Use Permit (<i>употребна дозвола</i>) certifies that the plant, as constructed, is in full conformity with the Construction Permit and other technical requirements. It is issued by the same authority that issued the Construction Permit, within five days of receiving the Technical Inspection Commission's Report.
Energy Licence	Electricity generation is subject to obtaining an Energy Licence from the Energy Agency. This Energy License can only be issued to a Serbian legal entity and is non-transferable.

3. Key changes introduced by the New RES Legislation

Although many legal instruments are still in development at the time of writing this Guide, we summarise below the key changes introduced into Serbian legislation to date, compared to the former legal regime applicable under the 2014 Energy Law.

3.1 Market Premiums and New Quotas

Under the RES Law, the following power plants are considered as RES electricity-generating facilities and their operators can benefit from RES Law incentives (**RES Producer(s)**):

1. Hydro power plants with an installed power of up to 30 W (other than reversible power plants);
2. Biomass power plants
3. Biogas power plant
4. Wind power plant
5. Solar power plant
6. Geothermal power plant
7. Biodegradable waste power plant
8. Landfill gas power plant
9. Power plant using gas from urban wastewater treatment plants
10. Power plant using other renewable energy sources

RES Producers also have a right of priority for access to the grid and may enjoy certain other subsidy, tax, customs and other privileges.

3.2 Guarantees of Origin for RES-Electricity

The system of guarantees of origin in Serbia had already been introduced by the 2011 Energy Law. However, due to technical issues, this system was not implemented in practice for a long period of time.

A guarantee of origin is currently issued as an electronic document by EMS (the operator of the transmission system) upon the request of a RES Producer. This guarantee certifies the attributes of 1 MWh of electricity produced. Their purpose is to provide reliable information to electricity consumers on the origin of the electricity they purchase. Guarantees of origin have gained in popularity more recently as they allow commercial electricity consumers to meet relevant goals under their ESG policies.

Serbia also acknowledges guarantees of origin issued in other countries, but only under the condition of reciprocity. The decision to recognise these guarantees is made by the transmission system operator. Exceptionally, if the transmission system operator is a member of any European association of issuing bodies, then

the guarantees of origin will also be valid in accordance with the rules of that association. In that respect, EMS is a full member of the Electricity Scheme Group of the European Association of Issuing Bodies.

Guarantees of origin are transferable independently from the generated electricity they refer to.

3.3 Prosumers

Production of electricity from RES for own consumption is introduced through the institute of ‘purchaser-producer’ (*κγναυ ηπρσυβεσσηαυ*) – i.e. the prosumer. The prosumer has the right to produce electricity and to store it for their own consumption, but also to deliver the surplus produced electricity to the electricity system for sale. Prosumers are entitled to a reduction of their next monthly electricity bill or to compensation from the electricity supplier for the surplus electricity that was sold.

This transposition of the RED II Directive has been a welcome addition in the Serbian market thus far and has already led to an increased interest from commercial customers and citizens alike. The ‘prosumer boom’ is already underway. Many companies are already exploring the options available to them in terms of producing energy for their own needs from RES (e.g. by installing rooftop solar panels), connecting to the grid and selling their surplus electricity to suppliers. However, some practical concerns remain, including the impact on EMS capabilities to balance the system.

The Serbian Decree on Criteria, Conditions and Manner of Calculation of Receivables and Payables Between the Producer-Consumer and Supplier regulates this process in detail.

3.4 RES Communities

Continuing on the prosumer regulation, the RES Law allows individuals, legal entities and local government units to form a RES community in order to use RES to meet their energy needs in a way that is sustainable, environmentally conscious and economically and socially beneficial for its members.

4. Significant and/or expected changes in 2024

4.1 Amendments to the Energy Law

Amendments to the existing Energy Law are expected. As one of the most anticipated changes, the market awaits the introduction of a concept of ‘active customer’, i.e. an end customer or a group of end customers who: (i) act together; (ii) use or store electricity produced within their facilities located within certain boundaries; or (iii) independently sell produced electricity or participate in flexibility services or energy efficiency measures, where these activities do not represent their basic commercial or professional activity.

These amendments, if enacted, will allow larger industrial facilities to install and connect large scale generation capacities which exceed the limitations currently imposed on prosumers. Such large commercial generators will most likely be required to fully regulate and take responsibility for load balancing with grid operators.

4.2 Promoting RES in District Heating and Transportation

For years, the Energy Strategy of the Republic of Serbia (envisaging a shift from fossil fuels (coal and oil) to RES (biomass and natural gas) in the heating of public buildings and public transport) has been a dormant document. With the enactment of amendments to the Energy Law and the new RES Law, concrete steps are now contemplated to implement this strategy.

Local municipalities are required to enable the transparency of data on the share of RES in heating. Further secondary legislation is expected to regulate incentives and subsidies available to consumers utilising RES for heating. The switch to biomass in district heating systems in several municipalities is already underway with the commissioning of reconstructed biomass-fuelled boiler rooms.

Similarly, suppliers of fuel have a responsibility to ensure a share of electricity generation via RES that complies with the targets in the integrated national energy and climate plans. Significant investments may be expected in this field, as incentives are enabled for the producers of biofuels.

4.3 Focus on Hydrogen

The new RES Law places particular focus and opens the door more widely to improving the energy efficiency of public transport and the use of innovative technology. In particular, the new RES Law lays the groundwork and provides a legal basis for incentives in the development of clean fuels, such as green hydrogen.

A separate set of regulations on hydrogen in the Serbian energy sector is pending.

4.4 Electricity Storage

After years of stagnation, electricity storage projects have gained traction in Serbia. The Energy Law finally recognises and regulates the separate energy activity of electricity storage.

With ever increasing installed capacities, especially from wind power plants, it is expected that electricity storage projects initially based upon battery technology will begin to increase and attract even more attention from investors.

4.5 Power Purchase Agreement (PPA)

The rules and market standards for corporate PPAs are slowly falling into place in Serbia. While local regulations still do not allow on-site physical PPAs, financial PPAs have started becoming more common in the market. Generally, EPS as the guaranteed and main market supplier acts as a 'sleeper' in most contractual arrangements. It is expected that market participants will become more familiar with the concepts and possibilities of PPAs with producers, particularly due to the extremely volatile market prices. The energy crisis has led to PPAs in Serbia being entered into for periods of 6 months to a year. At the time of this Guide, the price of electricity for industrial consumers towards EPS, as the main supplier in full supply contracts, is EUR 120 MWh (well over the European average) and this price will apply until end of April 2024.

Author:



Andjelka Todorovic

Partner

E andjelka.todorovic@wolftheiss.com

T +381 11 330 2900

Wolf Theiss Bulevar Mihajla Pupina 6/18, 11000 Belgrade, Serbia

T +381 11 3302 900 E beograd@wolftheiss.com

**Generating Electricity
from Renewable Sources
in CEE & SEE**

Energy Industry Group

Slovak Republic

Wolf Theiss

Country General Information

Capital: Bratislava

Location: The Slovak Republic is a landlocked country in the eastern part of Central Europe. It is bordered by Poland to the north, Ukraine to the east, Hungary to the south, Austria to the southwest, and the Czech Republic to the northwest.

Surface: 110,993 km²

Population: 5, 735,454

Climate: Slovakia's climate falls within the temperate and continental climate zones with relatively warm summers and cold, cloudy, humid winters. It has four distinct seasons.

Resources: The Slovak Republic has been blessed with a wide variety of natural resources such as arable land, forests, and minerals. One of the Slovak Republic's most important natural resources is its arable land which make up roughly 28.75% of the country's territory. In 2022, forests covered roughly 41.4% of the Slovak Republic's territory. The Slovak Republic has several essential minerals such as iron, coal, and gold. One of the most critical minerals is coal. The coal mined in the Slovak Republic is mainly used locally to produce energy. The most common types of coal are lignite and brown coal. Compared to 2005 and 2022, there has been a 65% decline in lignite and 62% decline in magnesite, as well as a 92% decline in ores. Nonetheless (according to the latest data from the US Geological Survey) the Slovak republic ranked 9th in the global ranking of countries with the highest share of magnesite mining in 2022. The country is otherwise not a significant global producer of mineral commodities. There are numerous mineral springs; according to estimates there are approximately two thousand (2,000) mineral water resources in the Slovak Republic. Furthermore, there are deposits of limestone, dolomite, cement, bentonite, basalt, travertine, salt, magnesite, perlite and zeolite.

Electricity Grid: The total length of the national electricity grid is 3,050.649 km. The grid comprises overhead power lines with a nominal voltage of 400 KW, 220 KW, 110 KW and electrical stations with a voltage of 400 KW, 220 KW and 110 KW.

Electricity Transmission, Distribution and Supply: Electricity transmission is a regulated natural monopoly and is provided by SEPS, a.s. The electricity distribution market is controlled by three (3) major distribution companies (ZSE, SSE and VSE), their total market

share is greater than 80%. The electricity supply is provided by more than thirty (30) private providers. Electricity is traded, for example on the PXE (POWER EXCHANGE CENTRAL EUROPE) stock exchange, which was established in 2007 and allows trading in electricity with a place of delivery in the Czech Republic, Slovak Republic, Hungary, Poland and Romania.

Official Language(s): Slovak

EU Member: since 1 May 2004.

NATO Member: since 2004.

United Nations Member: since 1993.

Currency: Euro

Schengen: since 2007.

Political System, Administrative Organisation and Economy: The Slovak Republic is a parliamentary democratic republic with a multi-party system. The country is divided into eight (8) regions, each of which is named after its principal city. These regions have enjoyed a certain degree of autonomy since 2002. Their self-governing bodies are referred to as Self-governing (or autonomous) Regions or Upper-Tier Territorial Units. The regions are subdivided into many counties. The Slovak Republic currently has seventy-nine (79) counties. According to the Slovak Constitution, the economy is built on the principles of a socially and ecologically oriented market economy. In practice, it is a mixed market economy, with state interventions typical of Western-type economies. The Slovak government encourages foreign investment, which it is one of the driving forces of the economy. The Slovak Republic is an attractive country for foreign investors mainly because of its low wages, low tax rates, well-educated labour force, favourable geographic location in the heart of Central Europe, strong political stability and good international relations reinforced by the country's accession to the European Union. The main industry sectors are car manufacturing and electrical engineering.

Slovak Republic: targets to reach by 2030

Greenhouse gas emissions (compared to 1990)	No national targets
Emissions in the ETS Sector (compared to 2005)	No national targets
NON-ETS Greenhouse gas emissions (compared to 2005)	- 20 %
Total share of renewable energy sources	19.2 %
Share of renewable energy sources in transport	14 %
Energy efficiency	30.3 %
Interconnection of electricity systems	52 %

1. Defined Terms for the Main Permits required for RES-Electricity Generation Facilities

Accreditation	Licence to generate renewable energy sources (“RES”) issued by the Regulatory Office for Network Industries (“RONI”) on the basis of a written application in which the applicant states (i) the activity; (ii) the territory or part thereof in which the requested activity is to be performed; and (iii) the period for which the licence is requested;
Building Permit	<p>The zoning permit approves the locating of the building on the designated plot of land and confirms its compliance with the zoning requirements under urban plans. To obtain a zoning permit, the developer must submit several statements of approval from different authorities, bodies and public utilities, such as telecommunications and energy suppliers;</p> <p>After completion of construction, but prior to the occupation of the building, the applicant must receive an occupancy permit, which certifies that the building complies with the planning and construction permits and approves its use/operation for the designated purposes;</p>

Connection Certificate	The connection of a new offtake or electricity generation facility shall be made based on a connection agreement to the system concluded with the owner of the offtake electricity or electricity facility after fulfilment of the technical conditions and business conditions of the system operator;
Environmental Approval	Administrative deed issued by the local Environmental Authority evidencing the compliance of the RES-Electricity facility with the environmental requirements as provided by law;
Grid Connection	Actions performed and administrative deeds issued by the grid operator to connect a new generating facility or to modify or replace the connection of a generating facility to the grid;
Liability and Responsibility for Grid Connection and/or Capacity Upgrades, Improvements or Expansion of Grid	The electricity producer's facility shall be connected to the distribution system if the distribution system is technically capable of being connected, is closest to where the electricity generating facility is located and the other system does not show a technically and economically superior connection point. The costs of connection and the costs of extension of the distribution system shall be borne by the electricity producer and the grid operator. The operation order of the grid operator shall include the conditions for the extension of the distribution system.
Licence of RES-Electricity Facilities	Authorisation for construction of an energy facility granted by the Ministry of Economy. A power generating facility may only be built in the Slovak Republic with the prior approval of the Ministry of Economy, which examines the compliance of the applicant's investment plan with the nation's long-term energy policy. If the project complies with the energy policy, the Ministry issues a certificate approving the construction of the power plant. Approval is not required for a facility to produce solar power with a capacity that does not exceed 500 KW;

Priority Access to the Electricity Grid given to RES-Electricity	Priority access shall be granted to any RES-Electricity producer, regardless of the installed capacity, (subject only to the preservation of the security, reliability and stability of the grid connection);
RES-Electricity	Electricity obtained from RES sources such as wind, solar, aerothermal, geothermal, hydrothermal, biomass and biogas, biomethane;
RES Support Scheme	<p>State aid scheme to promote production of RES-Electricity, approved by the European Commission. This support is provided as an investment support for SMEs and major enterprises. The beneficiary shall be reimbursed for eligible expenses, to a maximum limit of EUR 15 million, based on a received payment request and upon submission of accounting documents. This scheme is prepared in accordance with the Operational Programme Quality of Environment, which is financed by the European Regional Development Fund (ERDF) and the Ministry of the Environment;</p> <p>Feed-in premium (Green Bonus) – this support applies to electricity produced at the electricity producer’s facilities with a total installed capacity of between 10 KW and 50 MW, including those selected by auctions;</p> <p>Right to supplement – high efficiency cogeneration installations with a total capacity not exceeding 1 MW (inclusive), of which at least 60% of the heat produced is used to supply heat by means of a centralised heat supply and the primary energy saving is at least 10%;</p> <p>The right to the off-take (Feed-in tariff) of the electricity generated at a price equal to the sum of the off-take price and the supplement pertains to those installations with a capacity of up to 250 KW. The off-take price is set by the RONI (Decree No. 18/2017 Coll.);</p>

Setting Up Permit

Authorisation for construction of an energy facility granted by the Ministry of Economy. A power generating facility may only be built in the Slovak Republic with the prior approval of the Ministry of Economy, which examines the compliance of the applicant's investment plan with the nation's long-term energy policy. If the project complies with the energy policy, the Ministry issues a certificate approving the construction of the power plant. The undertaking must fulfil the following criteria:

- compliance with the targets set in documents approved by the Government of the Slovak Republic;
 - compliance with the priorities of the long-term energy policy concept;
 - compliance with the priorities of the Slovak Republic's energy security strategy.
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2. Envisaged need of investments in the Slovak Republic

Member States of the EU are required to modify their legislation so that it reflects the decision-making of the European Commission regarding energy gains from renewables. In 2018, the EU Renewable Energy Directive was issued with a target of at least 32% by 2030. In 2023, the Directive was revised and the EU's goal was raised to a minimum of 42.5%, with an aspiration of up to 45% energy production from RES by the year 2030. The Slovak National Climate and Energy Plan for 2021-2030 set the target of a 19.2% share from RES as part of total energy consumption, to be achieved by no later than 2030.

The total investment cost for achieving the RES targets is estimated at EUR 4.3 billion. These investment costs include the electricity and heating sectors.

The Slovak Republic will strive to maximise the use of existing infrastructure in accordance with the rules adopted in the new and amended EU documents that are included in the "Clean Energy for All Europeans" package and the REPowerEU Plan. In this context, the deployment of intelligent energy and electricity storage systems is particularly important.

- The principle stated in the Energy Policy of the Slovak Republic, which considered the principle of cost minimisation through an integrated approach to the use of RES and the reduction of greenhouse gas emissions, remains valid for the upcoming period. Maintaining this principle will mean that setting up support for RES will ensure that the objectives set are achieved in a cost-effective manner and avoid significant negative effects on electricity prices. In order to achieve the RES objectives, it is essential to exploit all available options, one of the options with the greatest potential is the development of waste recovery in the production of biomethane and energy recovery of waste that cannot be recycled and thus ends up in landfills. The energy potential from geothermal and solar energy, biomass and biomethane will be used in district heating systems.
- Investments promoting low-power equipment to produce electricity and heat in detached houses and apartments;
- Investments in the development of biofuels II. generation;
- Investments promoting the production of RES-electricity;
- Investments in creating a promotion mechanism to increase the share of RES in the heating sector and in district heating systems, as well as through production from RES in high-efficiency cogeneration;
- Investments in promoting the production of biomethane and hydrogen;
- Investments in promoting RES facilities, energy distribution and storage facilities;
- Investments in exploitation of geothermal energy and in promoting the development of local heat supply systems;
- Investments in the promotion of the transport infrastructure for charging electric vehicles and refilling hydrogen into vehicles, as well as for the electrification of public transport;
- Investments in modernising and renovating the electricity distribution network.
- Investments in new wind electricity generation and a water-based electricity plant located on the Danube River.

In view of the high share of nuclear sources in electricity production and the high share of natural gas in the heating industry, the Slovak Republic has one of the lowest energy emission levels in the EU. Some possibilities for the decarbonisation of energy include the replacement of coal with low-emission sources, as well as with alternative fuel sources, energy efficiency measures and the decarbonisation of transport.

REPowerEU Plan aims to reduce dependence on Russian fossil fuels and combat the climate crisis. In this way, the Slovak Republic took advantage of the European Commission's opportunity to include this chapter in the recovery plan and receive extra funding for new green measures. These are divided into four key areas: (i) energy and permitting processes; (ii) building renovation and management; (iii) sustainable transport; and (iv) green skills development. These measures aim to save energy, promote a faster uptake of renewable energy and diversify the energy supply.

In the energy section, new measures include the simplification of the environmental permitting processes, support for sustainable energy, the creation of two pilot zones for wind energy development in Slovakia, better use of geothermal energy and bio-waste treatment, modernisation of transmission lines and investment in regional distribution systems.

The renovation and management of building areas includes a reform of government building management, the creation of a database on the energy performance of buildings and the strengthening of the renovation of family homes (specifically targeting households that suffer from energy poverty).

Within the framework of sustainable transport, there are plans to purchase 5 sets of electric trains for eastern Slovakia, in order to implement two new sections of trolleybus lines and to purchase 10 new trams in Bratislava.

The new chapter also counts on the development of green skills. The educational programmes at secondary vocational schools will be adjusted to reflect the needs of the labour market and the future - RES, circular economy or electromobility.

3. Executive Summary-RES Market Status and Development of RES Facilities

3.1 Market Overview – Factsheets

- The Slovak Republic became self-sufficient with regard to electricity production in 2023, mainly due to lower electricity consumption. In the past, the country covered part of its electricity consumption with imports.
- The Slovak RES-Electricity market has been under development since 2009 and is constantly progressing; the Act on Promotion of RES (Act No. 309/2009 Coll., “**RES Act**”) adopted in 2009 introduced FiT, long-term PPAs with mandatory purchase and preferential connection to the grid;
- In May 2012, the Slovak government adopted two main legislative acts governing energy law in the Slovak Republic (i) the Energy Act; and (ii) the Network Industries Regulation Act. Their principal aim was the implementation of the latest EU directives and regulations, namely the Third Energy Package (“**TEP**”). In relation to the RES regulatory framework, (particularly the RES Promotion Act), the implementation of the TEP did not result in any significant changes. The only change was the mandatory installation of flow metering devices for electricity metering in solar energy generators. In January 2013, the RES Promotion Act was amended with effect from 1 March 2013 – only those solar energy generator operating facilities with up to 30 KW (instead of the former 100 KW) of capacity that are located on roof tops or the facades of buildings, were eligible for the promotion in the form of a supplement. Promotion in the form of a supplement and the off-take of electricity does not apply to the equipment of energy producers using hydro power with an overall capacity greater than 5 MW, as an energy source;
- In 2013, the regulator adopted regulation No. 221/2013 Coll. which set price regulations in the electro-energy sector. Regulation No. 221/2013 Coll. was later replaced in 2017 and once more in 2023. Therefore, as of 1 January 2024, regulation No. 370/2023 Coll. establishing price regulation in the field of electricity production support, and certain related conditions for the performance of regulated activities, is currently in force.
- In October 2014, the National Council approved an act on energetic effectiveness, No. 321/2014 Coll. (“**Act on Energy Efficiency**”), which replaced the former Act No. 476/2008 Coll. The latter represents a partial transposition of EU Directive No. 2012/2007/EU on energy efficiency;

- In 2014, Act No. 326/2005 Coll. on forests, which defined the establishment of energy stands and forest plantations, and created conditions for the cultivation of reproductive material for these purposes, was amended. The energy stand is defined as a forest stand with a maximum production function, generally during the first fifteen (15) years, the benefits of which are mainly used for energy production;
- In 2015, the total percentage of RES-Electricity as part of the supply mix was greater than 12%, while the current status is 17.5%;
- Since 1 January 2019 a system of green bonuses was adopted, which refers to electricity produced in an electricity generating plant with a total installed capacity of between 10 KW and 50 MW. The applicants may ask for green bonuses in auctions;
- In February 2019, the Slovak government adopted the Strategy of the Environmental Policy of the Slovak Republic until 2030 (Greener Slovakia) setting out the state policy in the field of environmental protection;
- Under the National Plan for Energy and Climate Change for 2021-2030 (with an outlook through 2050), the Slovak Republic has committed to a target of a 19.2% share from RES as part of total energy consumption, by no later than 2030;
- Since 1 January 2020, the Slovak Republic has been a member of the Association of Issuing Bodies. The Issuing Body of the Slovak Republic is OKTE, a short-term electricity market operator based in Bratislava. The guarantees of origin issued after 1 January 2020 must be in accordance with AIB rules. OKTE is responsible for carrying out activities related to the issue, transfer, recognition, application and cancellation of guarantees of origin of electricity from RES (EECS® certificate).
- Since 1 March 2021, the Slovak Republic has implemented a new foreign direct investment (FDI) screening procedure into Act No. 45/2011 Coll. on critical infrastructure (the “**Critical Infrastructure Act**”). The FDI regime requires that acquisitions of shares or businesses designated as elements of critical infrastructure under this act are to be notified to the Ministry of Economy and approved by the Slovak government. Unofficial reports in the media suggest that only a couple dozen major companies in the sectors under the competence of the Ministry of Economy have been designated as elements of critical infrastructure, which would make those entities subject to FDI screening.

- In June 2021, the European Commission adopted a positive assessment of Slovakia's recovery and resilience plan. This is an important step towards the EU disbursing €6.3 billion in grants under the Recovery and Resilience Facility (RRF). The plan represents a comprehensive and adequately balanced response to Slovakia's economic and social situation.
- In September 2021, the Slovak National Council adopted Act No. 371/2021 Coll. on major investments (the "**Major Investments Act**"). The main objective of this act is to redefine the conditions, procedures and control over the issuance of major investment certificates. These certificates may continue to be issued for investments in the field of industrial production, services, research and development, or in the field of public services. The increased legal certainty stemming from the terms precisely defined under the Major Investments Act is expected to stimulate the construction of strategic parks, which would facilitate the influx of new investment, especially in less developed regions.
- On 1 April 2022, a comprehensive amendment to Act No. 251/2012 Coll. on Energy Industries and on Amendments to Certain Acts ("**Energy Industries Act**"), Act No. 250/2012 Coll. on Regulation in Network Industries ("**Network Industries Act**") and the RES Act became effective, introducing various measures for the purpose of increasing the resiliency of the Slovak energy market against the looming energy instability of European energy markets.
- On 30 July 2022, a comprehensive amendment to the Energy Industries Act, the Network Industries Act and Act No. 455/1991 Coll. Trade Act (the "**Trade Act**") became effective with certain provisions becoming effective on 1 October 2022, 1 April 2024 or 31 December 2028. The major changes introduced by this amendment were implemented under the Energy Industries Act, with the objective of implementing a so-called Winter Energy Package containing measures labelled as the Clean Energy for all Europeans Package ("**CEP**").
- On 19 October 2022, Act No. 363/2022 Coll. Amending the RES Act was passed. The main objective of this amendment was the transposition of Directive (EU) 2018/2001 dated 11 December 2018 on the promotion of the use of energy from renewable sources (recast), amending the criteria & thresholds of sustainability and issuance of guarantees of origins

- 3.2 On 27 April 2022, Act No. 201/2022 Coll. the Construction Code, and Act No. 200/2022 Coll. on planning, were passed. The new laws introduced a completely new framework for the zoning, planning and permitting of construction. The laws were supposed to enter into effect on 1 April 2024, but because the implementation is not fully ready, it is expected that their entry into effect will be postponed until at least 1 April 2025. RES Market Status, Permitting, Grid Connection, Licensing of RES-Electricity Facilities in the Slovak Republic

General Market Data

RES Target 2020 provided by (out of final consumption) 14%, in 2022 an achievement of 17.5% was reported.

Overall installed General Capacity including RES (overall production) In 2022, overall energy production was 7,761 MW (26,916 GWh).

Installed capacity by technology

- Hydro – 2,545 MW
- PV – 530 MW
- Biomass – 200 MW
- Biogas – 95 MW
- Wind power – 3 MW
- Fossil – 2,352 MW
- Nuclear – 1,940 MW

RES Support Scheme

Beneficiaries of RES Support Scheme

Feed in tariff (FiT):

- promotion applies to the electricity generated in the electricity facility of a producer at a price equal to the sum of the off-take price and the supplement pertaining to those installations, the capacity of which is up to 250 KW.

	<p>Surcharge:</p> <ul style="list-style-type: none"> ○ in the facilities of electricity producers with total installed capacity of up to 500 KW included for hydropower, geothermal, biogas, landfill gas or sewage treatment plant gas; ○ high-efficiency cogeneration in a cogeneration plant with a total installed capacity of up to and including 1 MW, of which at least 60% of the heat produced is used to supply heat by centralised heat supply, and energy savings amount to at least 10%. <p>Feed in premium (Green Bonus):</p> <ul style="list-style-type: none"> ○ applies to the electricity generated in the electricity facilities of producers with a total installed capacity of between 10 KW and 50 MW, ○ by auctions.
<p>Priority and guaranteed off take into the grid</p>	<p>Priority access shall be granted to any RES-Electricity producer, regardless of installed capacity, subject only to the preservation of the security, reliability and stability of the grid connection.</p>
<p>Other incentives</p>	<ul style="list-style-type: none"> ○ Guarantees of origin; ○ Special loans (1% interest) available from the Environmental Fund; ○ Deviation Assumption by the regional distributor for deviations from the injection schedules submitted by the producer.
<p>Other conditions</p>	<ul style="list-style-type: none"> ○ Authorisation for construction of an energy facility above 1 MW granted by the Ministry of Economy except for facilities for the production of solar power which may not exceed 500 KW; ○ No installed capacity limit as long as the grid allows this from a technical point of view; ○ Licence granted by RONI for anyone who wishes to conduct business by trading with electricity.

Grid Connection Specifics

Approvals

- Access to the grid is allowed by the transmission system operator or by the distribution system operator upon conclusion of a contract on connection to the system, provided that the technical and business conditions for access and connection to the system are met, and after the payment of the price for connection to the distribution system has been made. The distribution system operator is obligated to ensure priority connection of the facility of the electricity producer to the distribution system;
- RES-Electricity producers are, under the RES Act, entitled to priority connection to the regional distribution network;
- **The grid operator may refuse access to the transmission system due to lack of capacity of the grid;**
- The grid operator is responsible for a connectivity study (functional test) within the period of thirty (30) days from the date of delivery of the request to the electricity producer and for issuing the connection approval.

Permitting

Timing: depending on the installed capacity and connection to the grid, an investor could obtain the necessary approvals in approximately six (6) months to two (2) years.

- environmental approval;
- zoning permit for location of the building;
- set-up authorisation (above 1 MW);
- building permit;
- licence;
- connection agreement with the grid operator

Licensing

Procedure	<ul style="list-style-type: none"> ○ Authorisation for construction of an energy facility granted by the Ministry of Economy; ○ Licence for energy business granted by RONI; ○ Registration of the authorised activity into the Commercial Register within a period of thirty (30) days.
Duration of administrative procedure	Within sixty (60) days from the submission of the full documentation; this period may be extended by thirty (30) days.
Licence's validity	Fixed period or unlimited.

4. Key changes to the RES Support Scheme since 2016

On 17 October 2018, the Slovak parliament adopted Act No. 309/2018 Coll. amending the **RES Act**. This amendment introduced some significant changes into the promotion of RES-Electricity:

4.1 Central Administration of the System of Promotion

The amendment follows the decentralisation between the three regional distribution system operators, which increases administrative costs as well as the costs of forecasting and the subsequent management of imbalances. Due to this fact, the competence for administration of the system for promotion of RES-Electricity and high-efficiency cogeneration, namely support administration, data management and support financing, has been entrusted to short-term electricity market operator, OKTE, a.s.

4.2 Modification of the Promotion System to a More Market-Oriented Type of Promotion (Green Bonus)

The basic form of promotion for all new installations with an installed capacity exceeding 500 KW is by means of the so-called green bonus, granted by the operator of the short-term electricity market, whereby the producer is solely responsible for the sale of electricity to the trader on the basis of a voluntary bilateral agreement. The producer will also be responsible for the deviation itself, having the right to delegate the deviation responsibility to another electricity market participant, which is the subject of the settlement pursuant to a contract. The success of the tender is a prerequisite for the provision of promotion in the form of a green bonus for all new installations with an installed capacity exceeding 500 KW.

4.3 New Legal Framework for Provision of State Aid to Enterprises

State aid is granted in the form of compensation, (i. e. by reimbursing part of the fees related to the financing of promotion to produce electricity from renewable sources). The aid should be limited to sectors where the competitive position is at risk in relation to the costs arising from the financing of renewable energy promotion.

4.4 New Definitions Requiring the Transition to a New System of Promotion

Tariff for operating the system – this is a fixed price per unit of electricity linked to a technical unit, taking into account the proportion of the costs of producing electricity from renewable energy sources, including the correction of costs incurred in accounting promotion for the production of electricity from renewable energy sources.

Tariff for the production of electricity from renewable energy sources – this is a fixed price per unit of electricity linked to a technical unit, which takes into account the proportion of the costs of producing electricity from renewable energy sources and constitutes a component of the tariff for operating the system.

Tariff for system services – this is a fixed price per unit of electricity linked to a technical unit, considering the TSO’s “eligible costs for the purchase of ancillary services and the TSO’s other allowed system services.

4.5 Access to the System for Electricity Generating Producers

In order to avoid double payment, the price regulation of access for electricity-generating producers will only apply to one of them.

4.6 Extended RES Support

An amendment to the RES Act, which came into effect in August 2021, aimed to reduce the annual financial costs associated with producing RES-Electricity by extending the support period and reducing the electricity price set for renewable energy producers at the beginning of their operation. These changes apply following a decision made by the RONI, subsequent to a request from the producer.

5. Significant and/or expected changes in 2024

5.1 Strategy of the Environmental Policy of the Slovak Republic through 2030

According to the Greener Slovakia strategy, in the next ten (10) years renewable energy production will be preferred, which by its nature does not burden the environment and contributes to the long-term sustainable development of the Slovak Republic.

This means that the impact of hydropower plants on the hydrology of river ecosystems will be mitigated by the removal of barriers on water courses, for example, by modifying release schedules with appropriate flow rates and with regard to impacted habitats. Solar power stations will be, in terms of the implementation of mitigating measures, mainly located on the roofs of buildings, car parks, brownfields or lower quality soil and not on high quality soil or habitats of national and European importance. Regarding geothermal energy, it is necessary to

focus on the reinjection of water into the rock environment and to minimise outlets into surface streams. The setting of protection zones of geothermal sources, and subsequently their compliance with conditions of use by geothermal users will be determined by law. Sustainability criteria will not apply to projects that have already launched.

5.2 The Slovak National Climate and Energy Plan for 2021-2030

Under the Slovak National Climate and Energy Plan, the Slovak Republic has committed that by 2030, it will have a 19.2% share from RES-Electricity as part of its final energy consumption.

Other measures set by this document are:

- Increase the share of RES in the area of heating and cooling – under this obligation it will be necessary to transpose Directives EU Nos. 2018/2001 and 2018/2002, as well as certain regulatory measures. The aim will be to introduce incentive mechanisms for district heating and cooling system operators aimed at increasing the share of RES in the fuel mix. Moreover, centralised heat systems (“CHS”) will be promoted also in the form of biomethane, derived mainly from waste from plant and animal production, from the biodegradable fraction of municipal waste, biodegradable kitchen and restaurant waste and wastewater treatment plant waste. The development of geothermal energy will also be supported;
- Mandatory amount of RES in centralised heating systems;
- Mandatory connection to efficient CHS using RES;
- Promotion of prosumers – RES prosumers and RES energy producing communities will be entitled to install their own RES heating production facilities, which will ensure the production of heat for their own consumption, enable the storage of heat produced from RES and the sale of overproduction. The intentions and form of national legislation with regard to ensuring the participation of consumers in the energy system and the benefits of their own electricity production and new technologies, including smart measures, arises, *inter alia*, from the transposition of EP and Council Directive (EU) No. 2019/944 into the Slovak Republic, by the transposition period concluding at the end of 2020;

- Waste and waste heat recovery;
- Promotion of Clean mobility – fifteen (15) measures that fall under the category of direct support for the use of low-emission vehicles and the possibilities of a financial mechanism to support the development of charging infrastructure, as well as incentive promotion. The current incentive to purchase vehicles is promoted by benefits such as distinctive vehicle identification, the possibility of using lanes reserved for public transport, allowing entry into low-emission zones or using parking lots for a restricted group of users;
- Promoting the energy efficiency of buildings.

5.3 New FDI Screening Procedure

The Slovak Republic implemented a new foreign direct investment (FDI) screening mechanism effective from 1 March 2023 based on EU framework regulation (EU) 2019/452). Under the new FDI regime, acquisitions by foreign (non-EU) investors or by those benefiting from foreign financing of local target companies that are active in particular sectors designated by the legislation, may require prior consent of the Slovak Ministry of Economy.

The implicated sectors include *inter alia*: (i) manufacturing of firearms or military technology; (ii) dual-use items; (iii) media; (iv) life sciences and (v) energy. Implementation of a transaction without prior consent of the Ministry of Economy may result in substantial fines of up to the value of the foreign investment or 2% of turnover of the foreign investor's corporate group.

5.4 Amendment to the RES Act – enhancing protection of small business and households from price instability

On 1 April 2022, a comprehensive amendment to the Energy Industries Act, Network Industries Act and the RES Act became effective and introduced various measures for the purpose of increasing the resiliency of the Slovak energy market, especially given the energy instability of European energy markets.

The amendment implements a comprehensive promotion system for RES installations by end consumers. The installation of these local RES installations is allowed up to an amount equal to the maximum allowed capacity for their own consumption purposes, with the option to extend the excess energy up to the amount of 1 000 MWh annually to the distribution network.

Notably, the amendment removes limits on these types of local productions of energy from RES. These changes aim to increase local energy production also from RES. As a result, producers of energy from RES may provide end consumers of electricity, and themselves, cheaper forms of electricity free of any further regulatory fees.

Another important change implemented by this amendment is that all operators of local distribution networks that are or will be connected to the regional distribution network are obligated to enter into connection agreements with the regional distribution networks. Without these agreements, the entities are not eligible to operate local distribution networks.

5.5 An Amendment to the Energy Industries Act and the RES Act - implementing EU Clean Energy Package

On 30 July 2022, a comprehensive amendment to the Energy Industries Act, the Network Industries Act and the Act No. 455/1991 Coll. Trade Act (the “Trade Act”) became effective with certain provisions becoming effective on 1 October 2022, 1 April 2024 or 31 December 2028. The major changes introduced by this amendment were implemented under the Energy Industries Act, with the objective of implementing the so-called Winter Energy Package, containing measures labelled as the Clean Energy for all Europeans Package (“CEP”).

The amendment to the RES Act extends the competences of the RONI. Importantly, the RONI is authorised to regulate all aspects concerning new market participants under this amendment, and to play a more active role in the field of consumer protection.

Furthermore, the amendment provides for closer cooperation of the RONI with authorities of other Member States, the European Commission and the Agency for the Cooperation of Energy Regulators of the European Union (“ACER”). This includes cooperation with the regional coordination centres and issuance of relevant decisions on the national level (such as the RONI).

Other covered areas include (for example) the partial de-regulation of the price of energy supplies by means of extending market competition with new participants and greater data processing.

Another important change is the regulation of the energy dispute resolution process, which also includes disputes between new electricity market participants. In this regard, the competences of the RONI are extended so they may act as the adjudicator in such disputes. The RONI is also competent to prepare extensions of the substantive regulation, in order to reflect the relevant changes.

5.6 An Amendment to the RES Act: implementing Directive (EU) 2018/2001, amending the criteria & thresholds of sustainability and the issuance of guarantees of origins

On 19 October 2022, Act No. 363/2022 Coll. Amending the RES Act was passed. The main objective of this amendment was the transposition of Directive (EU) 2018/2001, dated 11 December 2018, on the promotion of the use of energy from renewable sources (recast).

By means of the transposition of this EU Directive, the following changes will be implemented:

- criteria for sustainability and the levels of required greenhouse gas emission savings for biomass fuels used in the electricity and heating sector, for the purposes of ensuring that the savings from these emissions are high when compared to fossil fuel alternatives;
- increasing the minimum threshold of greenhouse gas savings for biofuels, bioliquids and biogas for transport, which are produced in new installations, for the purposes of improving the overall greenhouse gas emission balance; and
- establishing a new legal framework for issuing guarantees of origin for renewable gas. This is intended to improve the transnational trade of said gas. Furthermore, guarantees of origin will become available for other types of gas beside biomethane.

The currently applicable principles of attributing promotions of RES remain unaffected by the implementation of Directive (EU) 2018/2001.

This amendment entered into force on 1 December 2022, with certain provisions entering into force on 1 January 2023, and others on 31 December 2023.

5.7 Comprehensive changes to the construction legislation

On 27 April 2022, the new Construction Code and new Planning Code were passed. This marks the first major overhaul of Slovak construction legislation in 50 years. In relation to this, the Slovak Government also passed Act no. 205/2023 Coll. on the amendment of some laws in connection with the reform of construction legislation on 9 May 2023, which introduced comprehensive changes to the construction legislation.

This Act introduced the following notable changes to the Energy Industries Act: (i) changes related to the introduction of binding opinions of the concerned authorities, the concerned legal persons and the related changes in the procedures for obtaining authorisations, consents and similar confirmations based on which construction and related activities are being authorised, (ii) the introduction of a coordination authority for trans-European energy infrastructure under construction among the competences of the Office for Spatial Planning and Construction of the Slovak Republic; and (iii) changes related to the establishment of a new information system, which will be used for spatial planning & construction and establishing of the basis for future use of this platform in the Slovak Republic.

However, the entry into effect of the new construction legislation has been postponed until at least 1 April 2025.

6. Overview of the Technical Innovations in Electricity Storage and Applicability of sAID Storage Technologies in the Slovak Republic

Under the Slovak National Climate and Energy Plan (“NCEP”) for 2021-2030 the Slovak Republic considers the introduction of intelligent energy and electricity storage systems as being particularly important.

The Slovak Republic has the intention to set rules and create conditions for providing ancillary services, such as electricity storage services. Their goal will be to enable providers of electricity storage systems to become regulatory service providers. The objective is to ensure full and equal access to balancing markets for all technologies and providers, including RES.

The NCEP states that the integration of local energy storage in storage appliances, energy storage and electric vehicles or gas distribution networks with their storage capacities is therefore an important element of the smart grid. Firstly, it is important to maintain and promote the existing capacity and operation of pumped-storage power plants and, second if necessary, to assess the possible increase in storage capacity by building a new pumped-storage power plant.

In order to develop electricity storage systems, one of the main requirements is for further research and innovation in the area of RES, along with the development of energy storage and energy conversion technologies (POWER to X) for the interconnection of sectors.

The most common energy-storage system in the Slovak Republic is still pumped-storage hydroelectricity.

Recently, the Slovak accelerator InoBat and Czech energy company CEZ have agreed to jointly develop the technology for the saltwater and iron flow battery. They want to adapt its application to European conditions. The project will also be promoted by the Ministry of Economy of the Slovak Republic.

Slovak company NAFTA, a.s., the main reservoir of gas in the Slovak Republic, is a universal energy cache and sees the future of energy storage in the form of gas. In addition, the company is also active in the exploration and production of

hydrocarbons. They became a partner of the Underground Sun Storage project, created in accordance with the Power to Gas concept. Underground Sun Storage was a unique project to verify the possibility of storing energy from renewables in underground geological structures in the form of a natural gas and hydrogen mixture.

7. Power purchase agreements (PPAs)

In recent years, there has been a noticeable increase in the use of power purchase agreements (PPAs) for the offtake of RES electricity. This trend indicates not only a shift towards a low-carbon economy, but also underscores a growing commitment to RES development. PPAs have emerged as a favoured mechanism for fostering the growth of renewable energy.

PPAs entail contractual arrangements between renewable energy developers and buyers, often large corporations, or institutions. Under these agreements, developers commit to supplying electricity at a predetermined price (either fixed or indexed) over a specified period. This structure affords buyers predictability in their energy costs while ensuring the origin of the electricity.

The most prevalent variants of PPA contracts include:

On-site PPAs, where the RES facility (typically a solar power plant in Slovakia) is situated on the buyer's premises or is directly connected to the point of consumption.

Off-site PPAs with a "pay as produced" model, where the contract entails the supply of RES electricity without a direct physical connection to the point of consumption. Here, the buyer agrees to purchase a certain percentage of the electricity produced, with variations due to external factors such as sunlight or wind. The advantage for the buyer lies in the lower price compared to the "pay as contracted" option.

Off-site PPAs with a "pay as contracted" model, where the contract involves the supply of RES electricity without a direct physical connection to the point of consumption. In this scenario, the producer guarantees a specific supply size according to a pre-agreed delivery schedule. Typically, this option comes at a higher price compared to the "pay as produced" model.

PPAs in various regions often span from 10 to 15 years. It is common for RES facilities to be developed only after a PPA has been signed.

PPAs empower businesses to actively support renewable energy projects, thereby curbing greenhouse gas emissions and contributing to efforts aimed at mitigating climate change. This aspect strongly resonates with companies striving to bolster their environmental credentials and fulfil sustainability objectives.

8. Support scheme for cogeneration

The support scheme for cogeneration is regulated by the RES Act. Specifics of cogeneration promotion are set in the RONI Decree No. 490/2009 Coll. In 2017, the total installed capacity for high-efficiency cogeneration was 1,241.85 MW, representing 9% of total electricity production in the Slovak Republic.

The incentive scheme is identical with the promotion of RES-Electricity and consists of:

- Priority access – shall be granted to any RES-Electricity producer, regardless of the installed capacity, subject only to the preservation of the security, reliability and stability of the grid connection;
- The right to the off-take of the electricity generated – at a price equal to the sum of the off-take price and the supplement – pertain to those installations with capacities of up to 250 KW;
- Right to supplement – high efficiency cogeneration installations with a total capacity not exceeding 1 W, of which at least 60% of the heat produced is used to supply heating by centralised heat supply and the primary energy saving is at least 10%;

Feed-in premium (Green Bonus) – the support applies to electricity produced at the electricity producer's facilities with a total installed capacity of between 10 KW and 50 MW, selected by tendering.

9. Renewable hydrogen (Green Hydrogen)

There is no specific legislation in Slovakia to promote hydrogen technology and related projects. However, the Slovak “National Hydrogen Strategy Prepared for the Future” offers useful perspectives on advancements in this field. As outlined in the strategy, the Slovak Government intends to expedite the adoption of legislation and financial provisions to facilitate the introduction of hydrogen technologies into the Slovak energy mix. This objective will primarily involve enacting legislation and safety protocols to enhance the gas infrastructure’s preparedness for transporting, distributing, and storing hydrogen, while also addressing regulatory obstacles currently hindering the implementation of hydrogen-based solutions.

The pivotal advancement of hydrogen projects in Slovakia relies on the Slovak Ministry of Economy and its Slovak Renewable Energy Agency. These agencies play essential roles in spearheading and coordinating initiatives within the renewable energy sector, as well as managing the allocation of relevant government and European funds. The National Hydrogen Association, as a joint initiative, supports hydrogen technology implementation in Slovakia’s transition to a low-carbon economy. Its two main goals are to shape effective public policy and provide timely updates on regulatory decisions, policies, and technologies in the hydrogen sector to its members.

Although the market for green hydrogen in Slovakia is at its inception, there are already certain developments in progress or in the planning phase. As an example, a hydrogen fuelling station currently operates in Bratislava, offering a filling pressure of 200 bars. Another station is scheduled for construction in Trenčín, set to provide a filling pressure of 350 bars in the near future.

10. Energy storage and hybrid projects – storage obligations, storage types and regulations

Energy storage facilities, crucial for storing renewable energy, mitigate issues like grid stability, load balancing and a consistent energy supply on the grid. Hence, when combined with renewables, storage solutions can be a “game changer”. Batteries are the preferred method for electricity storage, addressing grid fluctuations and enabling “energy islands.” Though large-scale battery-based storage remains costly, emerging technologies offer promise. The EU is developing a legislative framework to facilitate battery and closed grid adoption, aiming to cut deployment costs and enhance energy independence. In Slovakia, the business sector is already embracing energy islands.

In practice, the Slovak electricity supplier Slovenské elektrárne - energetické služby, acquired battery storage units totalling 3.24 MWh from the Slovak technology firm FUERGY. These units will be installed at unregulated customer sites interested in battery storage or leased photovoltaic systems under the Energy as a Service program. The storage facilities will optimise electricity consumption and production at the customer’s location, while also managing fluctuations on the transmission grid.

From a regulatory standpoint, Act No. 251/2012 Coll. addresses energy storage obligations. Additionally, Decree No. 207/2023 Coll., issued by the Office for Regulation of Network Industries, elaborates on these obligations by outlining rules for the internal electricity market, operational guidelines for system operators, management of short-term electricity markets and commercial terms and conditions within system operator regulations. Notably, the law makes a clear distinction between electricity and gas storage.

Authors:



Bruno Štefánik

Partner

E bruno.stefanik@wolftheiss.com

T +421 2 591 012 30



Vladimír Šimkovič

Senior Associate

E vladimir.simkovic@wolftheiss.com

T +421 2 591 012 45

Generating Electricity from Renewable Sources in CEE & SEE

Energy Industry Group

Slovenia

Wolf Theiss

Country General Information

Capital: Ljubljana

Location: Located in the southern part of Central Europe, bordering Italy to the west, Austria to the north, Hungary to the northeast, Croatia to the southeast, and the Adriatic Sea to the southwest. Slovenia is situated at geographic coordinates 46 07 N and 19 49 E.

Surface: With an area of 20,273 km², Slovenia is the thirty-ninth largest country in Europe.

Population: 2,123,103 (October, 2023)

Climate: Mediterranean climate on the coast, continental climate with mild to hot summers and cold winters in the plateaus and valleys to the east. A short coastal strip on the Adriatic, an alpine mountain region bordering Italy and Austria, mixed mountains and valleys with numerous rivers to the east.

Resources: Water (hydropower) and forests (about 66% of the total land area is forested) are Slovenia's most important natural resources, with some deposits of lignite, lead, zinc and building stone.

Electricity Grid: The total length of the national electricity transmission grid is 3.113,9 km (at the end of 2022); this refers to the grid owned by ELES, d.o.o. ("ELES) – operator of the combined transmission and distribution grid. The grid consists of transmission lines with a nominal voltage of 400 kV (828 km), 220 kV (328,1 km) and 110 kV (1,926 km), as well as 110 kV cable lines (31,3 km). The Slovenian electricity grid system is connected to Austria (by means of two 400 kV lines and one 220 kV line), Italy (by means of one 400 kV line and one 220 kV line), Croatia (by means of four 400 kV lines, two 220 kV lines and three 110 kV lines) and Hungary (by means of one 400 kV line). The Slovenian electricity market is a part of the Single Day Ahead Coupling co-operation.

Electricity Transmission, Distribution and Supply: The main players in Slovenia are ELES, Borzen, d.o.o. (electricity market organiser), several distribution network owners, (i.e. Elektro Ljubljana d.d., Elektro Primorska d.d., Elektro Maribor d.d., Elektro Celje d.d. and Elektro Gorenjska d.d. and several supply companies, i.e. Elektro Maribor Energija Plus d.o.o., E 3 d.o.o., ECE, energetska družba, d.o.o., GEN-I, d.o.o., Petrol d.d., Elektro Energija d.o.o., Javno podjetje energetika Ljubljana d.o.o. (most of which are directly or indirectly

state-controlled), SunContract oskrba in trgovanje z energijo d.o.o., Bisol Energija d.o.o., and HEP Energija d.o.o.). However, there are also some newcomers, such as NGEN, energetske rešitve d.o.o., a provider of energy solutions using pooling production technology, storage and consumption units used for auxiliary services.

Official Language(s): Slovenian. In addition, Italian and Hungarian are official languages in municipalities where Italian/Hungarian national communities reside.

EU Member: since 1 May 2004.

NATO Member: since 29 March 2004.

United Nations Member: since 22 May 1992.

Currency: EUR (since 1 January 2007).

Schengen: since 21 December 2007.

Political System, Administrative Organisation and Economy: The Republic of Slovenia is a parliamentary democracy with a multi-party system. The head of state is the president, who is elected by popular vote. The executive and administrative authority in Slovenia is held by the Government of Slovenia (*Vlada Republike Slovenije*), headed by the Prime Minister and the Council of Ministers or Cabinet, who are elected by the National Assembly (*Državni zbor Republike Slovenije*). The legislative authority is held by the Parliament of Slovenia. The country is divided into 212 municipalities (of which 12 have the status of urban municipalities). Municipalities are the only form of local government in Slovenia. Slovenia has a developed economy and is per capita the richest of the Slavic countries in terms of GDP (nominal) per capita, but ranks behind in terms of GDP (PPP) per capita. Nearly two-thirds of the working population is employed in the service sector, and over one-third in industry and construction. Slovenia benefits from a well-educated workforce, well-developed infrastructure, and its location at the crossroads of major trade routes.

1. Defined Terms for the Main Permits required for RES-Electricity Generation Facilities

Centre for RES/CHP	Centre organised within the company Borzen d.o.o., (which is the operator of the organised electrical power market and centre for RES/CHP).
CHP	Cogeneration or combined heat and power (CHP – <i>Soproizvodnja toplote in elektrike (SPTE)</i>) is the simultaneous conversion of fuel energy into heat and electricity. The main energy sources of such cogeneration are natural gas and wood biomass.
Electricity Supply Act	<i>Zakon o oskrbi z električno energijo (ZOEE)</i> – Official Gazette of the Republic of Slovenia, No. 172/21.
Energy Act	<i>Energetski zakon (EZ-1)</i> – Official Gazette of the Republic of Slovenia, No. 17/14, as subsequently amended.
Energy Agency	Slovenian Energy Agency (Agencija za energijo).
Energy Efficiency Act	<i>Zakon o učinkoviti rabi energije (ZURE)</i> – Official Gazette of the Republic of Slovenia, No. 158/20.
Gas Supply Act	<i>Zakon o oskrbi s plini (ZOP)</i> – Official Gazette of the Republic of Slovenia, No. 204/21, as subsequently amended.
Slovenian Environment Agency	Slovenian Environment Agency (<i>ARSO – Agencija Republike Slovenije za okolje in prostor</i>).
Environmental Impact Assessment	Assessment of the long-term, short-term, direct or indirect impacts of the planned construction on human beings, land, water, air, biodiversity and valuable natural features, climate and landscape, as well as on buildings and cultural heritage and their interrelationships.
Environmental Protection Consent	Consent issued by the Ministry of the Environment, Climate and Energy (<i>Ministrstvo za okolje, podnebje in energijo</i>) pursuant to an environmental impact assessment of the project.

Environmental Protection Permit	Permit issued by the Ministry of the Environment, Climate and Energy for an indefinite operational period of any facility in which an activity is carried out that causes industrial emission. The Ministry reviews the Environmental Protection Permit every 10 years and, if necessary, amends it <i>ex officio</i> . In addition, the investor must obtain an environmental protection permit for the operation of any other facility if it is required by the regulations regarding (i) emissions of pollutants into the air, water or soil; (ii) activities that have a negative impact on the environment; or (iii) waste management.
Building Permit	Permit issued by the competent administrative unit (depending on the location of the facility) allowing the construction of a facility, and which is generally required for the construction of a facility (however, a small facility within an existing facility may not require a building permit).
Use Permit	Permit issued by the same administrative body that issued a building permit for a facility, showing that construction work has been carried out in accordance with the Building Permit and that the project has been completed.
Energy Permit	An energy permit issued by the Ministry of Infrastructure (<i>Ministrstvo za infrastrukturo</i>) must be obtained for the construction of electricity generating installations with a capacity greater than 10 MW. It must be obtained before the building permit can be issued.
Water Permit	Under Article 125 of the Water Act, a water permit must be obtained for the operation of hydroelectric power plants with an installed capacity of less than 10 MW. Under the regulations on spatial planning and building construction, a water permit must be obtained before an Environmental Protection Permit can be issued. A water permit is issued by the Slovenian Water Agency for a defined period of time.

Authorisation Under Energy Law/Permit (Concession) to Exploit Natural Resources	A mandatory tender procedure for granting the concession to exploit natural resources in cases of hydro power plants with an installed capacity of 10 MW or more (if less than 10 MW, no concession is required and only a water permit is required).
Guarantees of Origin	Guarantees of Origin issued by the Energy Agency constitute proof that a certain amount of electricity was produced in a certain power plant during a specific time period.
Renewable Energy Act	Act on the Promotion of the Use of Renewable Energy Sources (<i>Zakon o spodbujanju rabe obnovljivih virov energije (ZSROVE)</i>) – Official Gazette of the Republic of Slovenia, No. 121/21, as subsequently amended.
RES-Electricity	Electricity generated from renewable non-fossil sources (RES) such as wind, solar, aerothermal, geothermal, hydrothermal, ocean power, hydropower, biomass and biogases.
RES Support Scheme	A scheme providing funds for RES and CHP installations, with two types of support: (i) guaranteed purchase of electricity by the Centre for RES/CHP at regulated feed-in tariffs (applicable to installations with a rated capacity of less than 500 kW); and (ii) financial support for operation (i.e., “operating premium”, where the producer sells their energy on the market while the scheme only pays a premium as a difference between the full (“guaranteed purchase”) price and the market price, which is determined <i>ex ante</i> on a yearly level, based on plant type). RES installations can benefit from one of these schemes for up to fifteen (15) years from the launch of operations of the installations. The guaranteed purchase price is calculated on a case-by-case basis.
Rules on Support	Regulation on support for electricity generated from RES and from high-efficiency cogeneration (<i>Uredba o podporah električni energiji, proizvedeni iz obnovljivih virov energije in v soprodukciji toplote in električne energije z visokim izkoristkom</i>) – Official Gazette of the Republic of Slovenia, No. 26/22.

Non-discriminatory Access to the Electricity Grid Given to RES-Electricity	Set of rules pursuant to which the network operator must not reject the connection of the RES-Electricity installation to the electricity grid because the connection would cause the network operator disproportionate costs.
Water Act	<i>Zakon o vodah (ZV-1)</i> – Official Gazette of the Republic of Slovenia, No. 67/02, as subsequently amended.
Environmental Protection Act	<i>Zakon o varstvu okolja (ZVO-2)</i> – Official Gazette of the Republic of Slovenia, No. 44/2022, as subsequently amended.

2. Envisaged need of RES investments in Slovenia

2.1 Solar Energy

Electricity production in solar power plants represents the largest environmentally acceptable potential for increasing RES-Electricity production in Slovenia. With respect to sustainable use of space, future development should prioritise the integration of solar power plants into existing buildings, industrial sites, and degraded areas. However, a key constraint is the availability of land and the ability to integrate newly built solar power plants into the existing grid systems. As a result, the existing electricity distribution network will need to be upgraded and given the limitations of the grid system, priority will be given to the development of larger (community) solar power plants in locations where additional grid investment is not required. Increasing electricity storage capacity shall be further encouraged.

To achieve the RES-Electricity goals envisioned in the draft National Energy and Climate Plan, dated February 2024 (the “**NECP 2024**”, *Celoviti nacionalni energetski in podnebni načrt (2024)*), solar powered units with an estimated capacity of up to 350 MW will have to be constructed annually.

In accordance with the NECP 2024, the various scenarios for solar energy production provide for different levels of solar energy development, which would increase electricity production between 2 and 3.8 TWh (1.8-3.5 GW) by 2030 and between 3.2 and 9 TWh (2.8-8 GW - to 7 TWh in a nuclear scenario) by 2040. This would require an annual average installation of 350 MW of additional solar energy capacity.

2.2 Wind Energy

There is currently some uncertainty regarding wind energy projects in Slovenia, particularly regarding the placement of wind turbines. The placement of wind turbines is usually postponed due to environmental protection concerns. The main concerns are the protection of endangered animal species, and also the perceived “social unacceptability” of these projects. In general, there are only a limited number of locations with suitable wind conditions where the placement of wind turbines is permitted by law.

Slovenia’s wind power potential is therefore estimated at 147 MW by 2030 and between 430 and 530 MW by 2040. To date, no large-scale projects have been implemented and only a small number of individual wind turbines have been built. In order to realise the full potential of this technology in Slovenia, new and advanced technologies with lower noise emissions and bird and bat impact avoidance systems are needed and will be supported. In addition, due to the “social unacceptability” of wind projects in Slovenia, it is necessary to increase social acceptance, including through greater involvement of local communities in investments (investment in community power plants and participation in the generated energy).

2.3 Hydro Energy

To minimise negative impacts on nature, priority should be given to maximising the production of existing smaller hydropower plants, using new and more efficient technologies and revitalising inactive small hydropower plants. The location of new (smaller) hydropower plants should be limited to existing structures such as dams and bridges, and no new barriers should be built on waterways. It is therefore envisaged that the existing capacity (164 MWe) of small hydropower plants could be increased up to 171 MWe by 2030 and up to 196 MWe by 2040. This would mean an increase in current electricity production by small hydropower plants to around 425 GWh in 2030 and 490 GWh in 2040.

With regard to large hydropower plants, 4,020 GWh of electricity is expected to be generated (at the generator) in 2030 and in 2040, respectively, in the scenario with existing measures. In the scenario with additional measures, 4.292 GWh by 2030 and 4.539 GWh by 2040 is expected to be generated (at the generator). This would mean that the installed capacity of large hydropower plants by 2030 and 2040 would be 81 MW in the scenario with existing measures and 81 MW by 2030 and 142 MW by 2040 in the scenario with additional measures.

2.4 Biomass and Biogases

The use of sustainable wood biomass (preferably residues from the wood processing industry, logging residues, etc.) should focus primarily on the production of synthetic gas and hydrogen. The gas produced should then be injected into the gas pipelines. This would minimise the energy conversion and the potential energy loss of wood biomass, as well as cogeneration of electricity and heat in industry, district heating systems and services, where they can make the best use of the available heat to achieve the highest overall efficiency. The potential for energy production from forest biomass in Slovenia is estimated at 6,598 GWh of heat and 326 GWh of electricity.

Due to the relatively well-developed livestock sector, livestock manure also has considerable potential for biogas production in Slovenia. Theoretical calculations show that up to 315 GWh of electricity and 245 GWh of heat could be produced from cattle, pig and poultry manure. In particular, the current capacity (113 GWh were produced from such biogas in 2020) of electricity generated from all types of biogas could be increased up to 130 GWh by 2030 and up to 180 GWh by 2040. Some feedstocks are also used to produce biogas, which can replace natural gas. There is also potential for bioethanol production. The total biogas production potential is around 370 GWh by 2030 and up to 515 GWh by 2040, including biogas production from wastewater treatment plants, waste treatment and landfill gas capture, and agricultural gas production.

2.5 Transport

Transport is a sector that has a significant impact on energy consumption in Slovenia and thus on efforts to achieve the goals of energy and environmental transformation, in particular in achieving the targeted share from RES as part of gross final energy consumption. Key investments in this sector should focus on electromobility, improving public transport, car-sharing opportunities, increasing freight transport, developing rail transport, and adapting people's behaviour to new social and business models related to transport. Transport accounts for 38% of Slovenia's final energy consumption. In 2021, the main energy products in this sector were oil products, which accounted for 93% of the total energy used in transport, while other energy sources included renewable energy (biofuels) with 2%, electricity with 1.1% and natural gas with 0.3%. However, the year 2021 is not fully comparable due to the impact of measures taken to prevent the spread of SARS-CoV-2 on traffic flows and thus on transport energy consumption.

3. Executive Summary-RES Market Status and Development of RES-Electricity Facilities

3.1 Market Overview-Factsheet

- In 2009, Slovenia introduced a feed-in tariff support scheme providing funds for RES and CHP – the RES Support Scheme. Under the RES Support Scheme, state aid is granted to producers of electricity produced from RES and in CHP units by compensating the difference between the cost of generating electricity from RES and CHP units and the proceeds from the sale of the electricity on the market.
- In March 2014, the new Energy Act entered into force. The new Energy Act significantly amended the previous law, as more than 100 provisions were amended. Changes were also made to the RES Support Scheme, in particular the fact that support can now only be granted in a public tender procedure. In this way, the RES Support Scheme has been harmonised with the EU Guidelines on State Aid for Environmental Protection and Energy 2014-2020.

- Most of the principal EC Directives related to RES have been implemented into the Slovenian legal system via the Slovenian Energy Act.
- Since 2014, with the adoption of the new Energy Act, a licence is no longer required to generate RES-Electricity.
- Since November 2019, Slovenia, together with Romania, Bulgaria, Croatia, the Czech Republic, Hungary and Poland, have successfully linked their intraday markets with fourteen (14) countries active in operational work since June 2018.
- In November 2020, the new Energy Efficiency Act, implementing Directive 2012/27/EU on energy efficiency, came into force. In addition, in August 2021, the new Renewable Energy Act, transposing Directive 2018/2001/EU, entered into force. Actual electricity production in Slovenia in 2022 amounted to 12,192 GWh (30.9% came from RES). Compared to 2021, electricity production decreased by 2,231 GWh in 2022.
- The target of a 25% share of renewable electricity by 2020, as set out in the 2009 Action plan on RES, was not met. The share of renewable energy in Slovenia, excluding statistical transmission, was 24.1% in 2020.
- As part of the National Energy and Climate Plan, which was adopted on 27 February 2020, Slovenia committed to achieving a 27% share of RES-Electricity as part of final energy consumption by 2030, with climate neutrality by 2050. The NECP 2024, however (which is planned to be adopted by spring 2024), envisages an increase in the RES-Electricity share between 30-35% by 2030.
- In 2022, new Rules on Support were adopted, which replaced those that were adopted in 2016. Only units with a rated power less than 10 MW are now eligible for the RES Support Scheme, except for wind energy production units, for which a limit of up to 50 MW has been set.
- In 2022, a total of 3,718 installations with a total capacity of 395 MW were included in the RES Support Scheme. The installations produced a total of 800.8 GWh of electricity for which a total of EUR 94.8 million has been paid out. Most of the included installations are solar power plants (3,245 out of the total 3,718). A total of EUR 70.3 million was paid for electricity produced from RES, representing 74.2% of the total amount paid, and EUR 24.5 million for electricity produced from fossil fuel CHP, representing 25.8% of the total amount paid. In terms of RES payments, support for electricity from solar power plants continues to dominate with EUR 52.6 million or 55.5% of the total.

- In 2023, a total of 3,566 installations with a total capacity of 386.4 MW were included in the RES support scheme. The installations produced a total of 800.8 GWh of electricity for which a total of EUR 107 million has been paid out.
- In addition to the production in large power plants, the Slovenian electricity system also includes some small production units, mainly small hydropower plants and CHP industrial facilities. Since 2009, the number of small solar power plants has increased significantly, mainly due to lower prices for photovoltaic modules, relatively favourable purchase prices, and operating subsidies for electricity produced by small solar power plants. The number of facilities producing RES-Electricity from other renewable sources (biomass, landfill gas) has also increased.
- The number of community self-supply installations (this can be a solar, wind, water or geothermal plant that generates electricity, or a CHP facility) is also expected to increase in the coming years. The first community self-supply installation was connected in 2019 with a capacity of 14 kW. In 2020, four such plants with a total capacity of 86 kW were connected, 25 plants with a total capacity of 1100 kW were connected in 2021 and 29 more plants with a total capacity of 2,000 kW were connected in 2022. By the end of 2022, there will already be 59 installations operating in this way, with a total installed capacity of 3,200 kW.

3.2 RES Market Status, Permitting, Grid Connection, Licensing of RES-Electricity facilities in Slovenia

General Market Data	
RES Target 2020 (out of final consumption)	25% (as at 2020, 24.10% was achieved)
RES Target 2030 (out of final consumption)	at least 30-35% of RES (envisaged change from 27% under the NECP 2024)
Overall installed General Capacity including RES	3,983.4 MW (in 2022)

Overall production including RES	12,853 GWh (in 2022)
Primary production by source (in 2022)	Fossil – 3,279.6 GWh Nuclear – 2,651.1 GWh (50% of NEK’s production) Hydro – 3,356.7 GWh Biomass – 122.2 GWh Photovoltaics – 628.2 GWh Wind – 5.7 GWh Biogas – 159.8 GWh

RES Support Scheme

General overview	<p>There are two types of support: (i) guaranteed purchase of electricity according to an agreement concluded with the Centre for RES/CHP support at regulated feed-in tariffs (generally applicable to installations with less than 500 kW rated capacity); and (ii) financial support for operation (i.e., “operating premium”, where the producer sells its energy on the market while the scheme only pays a premium as a difference between the full (“guaranteed purchase”) price and the market price, which is determined ex ante annually, based also on plant type). RES-Electricity installations can benefit from one of these schemes for up to fifteen (15) years. The guaranteed purchase price is calculated on a case-by-case basis. This support is intended for RES generating installations utilising the following sources:</p> <ul style="list-style-type: none"> ○ energy potential of watercourses (hydropower); ○ wind energy used in onshore installations; ○ solar energy used in photovoltaic production plants; ○ geothermal energy; ○ energy from biogas derived from biomass and biodegradable waste specified in the Rules on Support;
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- energy derived from biodegradable waste specified in the Rules on Support; and
- wood biomass RES production units specified in the Rules on Support which are based on the CHP technologies and achieve the required efficiency for high-efficiency cogeneration.

Beneficiaries of RES Support Scheme	Beneficiaries are selected through a public tender procedure, while only units with a rated power of less than 10 MW are eligible for the RES Support Scheme, (except for wind energy production units, for which the limit is set at less than 50 MW). Under the Renewable Energy Act, support may also be granted directly to production facilities with a capacity of less than 500 kW, but the Rules on Support or other regulations do not yet clarify the level of support for such facilities.
Non-discriminatory and guaranteed off take into the grid	Under the Electricity Supply Act, the electricity network operators (i.e. operators of the distribution and transmission grid); the company ELES as the operator of the combined transmission and distribution grid may not reject an application for connection of a facility that produces RES-Electricity or a high-utilisation cogeneration facility on the grounds that the connection would cause disproportionate costs for the electricity network operator.
Other conditions	In the case of RES-Electricity, the cost of connection to the grid is borne by the owner of the facility or the investor. The costs of upgrades and network adjustments are borne by the network operators.
Special allowance/ tolerance for intermittent generation in relation to balancing charges	No special allowance/tolerance.

Permitting

Environmental Impact Assessment and Environmental Protection Consent

In most cases, before the commencement of an activity that is likely to have a significant impact on the environment, an Environmental Impact Assessment of that activity must be carried out. The Environmental Impact Assessment process shall identify and assess the long-term, short-term, indirect or direct impacts of the proposed development on human beings, soil, water, air, biodiversity and natural values, climate and landscape, as well as on human immovable property and cultural heritage, along with their interrelationships. Following the Environmental Impact Assessment, an Environmental Protection Consent is issued by the Ministry of the Environment, Climate and Energy. The Ministry must issue its decision on the Environmental Protection Consent within three (3) months of receiving the completed application. The deadline for issuing the decision is suspended during the period of public consultation (thirty (30) days) and during any period agreed with any other EU Member State for which the planned activity may have a significant environmental impact.

Environmental Protection Permit (if required)

In general, an investor must obtain an Environmental Protection Permit for the operation of an installation that can cause industrial emissions, prior to the commencement of such construction. In addition, the investor is required to obtain an Environmental Protection Permit for the operation of any other installation, if the regulations so require, with respect to: (i) emissions of pollutants into the air, water or soil; (ii) activities that have a negative impact on the environment; or (iii) waste management. The Ministry of the Environment, Climate and Energy must issue the Environmental Protection Permit within six (6) months of receiving the complete application. The application for a permit and the draft decision on the Environmental Protection Permit must be made available to the public, and the public must be given the opportunity to express its opinion and comments thereon for a period of thirty (30) days. A Building permit may be issued only after the Environmental Protection Permit has become final.

Building Permit	A Building Permit is issued by the competent administrative unit for the area where the facility is to be built. If the Building Permit is issued pursuant to a short procedure, it must be issued within thirty (30) days of the submission of a complete application. Otherwise, it must be issued within sixty (60) days. The administrative fee depends on the value of the investment. Several consents and opinions may be required for obtaining a Building Permit, depending on the exact type and location of the installation. A Building Permit may not be required for smaller/simpler projects.
Detailed design (<i>Projekt za izvedbo – PZI</i>)	More detailed project of the technical works which are needed for constructing the installation/building in accordance with the Building Permit.
Use Permit	The investor must apply to the administrative unit that has issued the Building Permit to issue a Use Permit for the installation. In this process the investor must prove that the construction works have been carried out in accordance with the Building Permit and that the project has been completed. If the competent administrative unit establishes that the application for the Use Permit meets all the conditions, it authorises the commission for technical inspection (<i>Komisija za tehnični pregled</i>) to examine the compliance of the construction with the Building Permit, the building regulations, and other applicable regulations. After the inspection, a Use Permit for the facility is issued.
Energy Permit	For installations with rated capacity of more than 10 MW that are connected to the public electricity power grid, an Energy Permit for production capacities must be obtained. The Energy Permit must be obtained before the Building Permit can be issued or before the spatial plan can be prepared (if required). An Energy Permit must also be obtained for any reconstruction of the above-mentioned facilities, if the reconstruction changes the energy parameters of the facility to such an extent that a subsequent Building Permit is required. The Energy Permit is issued by the Ministry of Infrastructure within one (1) month of the receipt of the complete application. The validity of the Energy Permit is five years.

Permit (concession) to exploit natural resources (or alternatively a Water Permit) if required Under the Water Act, the concession to exploit water resources to produce electricity in a hydropower plant with an installed capacity of 10 MW or more may only be granted on the basis of a prior tender procedure. A concession is not required for hydropower plants with an installed capacity of less than 10 MW for which a Water Permit must be obtained. Furthermore, no tender procedure is required for the extension of the concession period or for the increase in the scope of concessions already granted. Under the Environmental Protection Act, the state or a municipality grants a concession for the management, use or exploitation of a natural asset on the basis of a public tender, provided that the conditions for environmental protection are met. The competence of the state or a municipality depends on whether the natural asset is owned or managed by the state or the respective municipality.

The basis for granting the concession is a concession deed in the form of a government or municipality regulation. Under the Water Act, the tender procedure may also be triggered by an unsolicited proposal from an interested private entity. In this respect, the unsolicited proposal must contain all the elements necessary to define the content of the concession deed, namely its subject, scope, type and term. Consequently, the Government shall notify the applicant within three (3) months upon receipt of the unsolicited proposal, as to whether it will initiate the procedure for the adoption of the concession deed, which (if adopted) will serve as the basis for the public tender for the granting of the concession.

Grid Connection Specifics

Approvals Approval issued by the owner of the distribution network for connection to the grid based on previously obtained documentation (needed for construction of the project). Declaration for the individual unit issued by the Energy Agency. This declaration is mandatory for the purpose of receiving support from the RES Support Scheme.

Other	Registration of the production unit in the Energy Agency's register. Guarantee of Origin obtained from the Energy Agency. Agreements on connection to the grid, supply of electricity and access to the distribution network concluded with the respective network distribution operator.
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Licensing

No Licence is required

4. Key changes to the RES Support Scheme since 2016

4.1 Derogation of the Rules on Support

The Rules on Support for RES-Electricity and high-efficiency cogeneration were adopted in 2022, replacing the previous rules adopted in 2016.

4.2 Reduced Unit's Power Limit for Guaranteed Purchase of Electricity from RES Unit

The power limit for the guaranteed purchase of RES-Electricity has been reduced from 1 MW to 500 kW or less of the rated capacity.

4.3 Obligatory RES Contribution

From 2017 onward, the end users of electricity, solid, liquid and gaseous fossil fuel and district heat are required to pay a contribution from which RES projects are financed.

4.4 Compensation for Users of Real Property on which the Energy Infrastructure is under Construction

Specific procedures have been developed to compensate users of real property on which the energy infrastructure is already under construction, but for which no decision has been issued on expropriation and easements in favour of public or other rights to build. The compensation is assessed by a court-certified appraiser and determined at the market value of the lease of such or comparable real property, taking into account the extent to which it is actually used for construction. This requirement is based on a decision of the Constitutional Court of the Republic of Slovenia.

4.5 Higher Fines for Violation of Mandatory Share of RES Fuels in Sales

A higher fine has been set for fuel distributors who violate the rules on mandatory shares of biofuels and RES in their sales. The fines are set at between EUR 50,000 to 2% of the annual turnover from the sale of fuel to end-customers (for small size companies) or at between EUR 150,000 to 2% of annual turnover from the sale of fuel to end-customers (for medium or large size companies).

4.6 Amendments to the Energy Act

Despite having recently been amended, the Ministry for Infrastructure on 21 November 2019 proposed further amendments to the Energy Act. The proposed changes will transpose into the Slovenian legal system the provisions of Directive (EU) 2019/692 amending Directive 2009/73/EC concerning common rules for the internal market in natural gas. Directive (EU) 2019/692 was published in May 2019 and the deadline for its implementation was 24 February 2020. However, the changes were not implemented on time. On 30 January 2020, the Slovenian Government submitted to the National Assembly its proposed amendment of the Energy Act, which came into force in May 2020. The provisions of this amendment have since been amended and partly repealed with the adoption of the following acts: (i) the Act on Energy Efficiency which entered into force in November 2020, (b) the Renewable Energy Act which entered into force in August 2021, (c) the new Electricity Supply Act, which entered into force in November 2021, (d) the new Gas Supply Act, which entered into force in January 2022, and (e) the Heat Supply from Distribution Systems which entered into force in April 2022.

Furthermore, the Slovenian Government submitted on 8 December 2023 to the National Assembly its proposed amendment of the Energy Act (i.e. *Energetski zakon – “EZ-2”*), EZ-2 sets out the principles and measures for the management of energy policy at the national and local level, regulates the powers and functioning of the energy regulator (the Energy Agency), the powers of the energy inspectorate, the relationship in relation to energy infrastructure, the management of capital investments under the responsibility of the government, and introduces the basis for a more efficient allocation of incentives for investment in renewable energy sources and energy efficiency or for investment to support carbon-dependent regions and areas and modernisation towards a just, green transition. EZ-2 also includes provisions, developed on the basis of crisis management experience, which will allow faster action in the event of future energy crises. EZ-2 is currently in the second reading at the National Assembly working body (Committee on infrastructure, environment and spatial planning) and is subject to possible further changes.

4.7 New Acts on Energy Efficiency and Use of Renewable Energy Sources

In 2020 and 2021, two new acts repealing special chapters of the Energy Act entered into force:

- In November 2020, the new Energy Efficiency Act came into force. This Act regulates energy efficiency, general measures to promote energy efficiency, measures to increase energy efficiency, energy efficiency requirements for products and for ensuring the energy efficiency of buildings. It transposes Energy Efficiency Directive 2012/27/EU into the Slovenian legal system.
- In August 2021, the new Renewable Energy Act entered into force. This new Act: (i) transposes Directive (EU) 2018/2001; (ii) regulates the implementation of state and municipal policies on using renewable energy sources; and (iii) sets binding targets for the share of energy from renewable sources as part of gross final consumption in Slovenia.

4.8 New Law on the siting of installations for generation of electricity from renewable energy sources

On 3 August 2023, the new Act on the siting of installations for generation of electricity from renewable energy sources (*Zakon o uvajanju naprav za proizvodnjo električne energije iz obnovljivih virov energije (ZUNPEOVE)*), Official Gazette of the Republic of Slovenia, No. 78/23) entered into force. It aims to achieve climate neutrality and comply with targets for the share of energy from renewable sources as part of gross final consumption in the Republic of Slovenia. In this regard, it introduced a series of changes, including: (i) the establishment of priority areas for the siting of renewable energy installations; (ii) changes to spatial planning and permits for solar and wind energy installations and structures; (iii) so-called regulatory sandboxes; and (iv) special rules for legal relationships related to the installation of photovoltaic installations on co-owned and condominium properties.

4.9 New Law on energy policy

In September 2023, the new Law on Energy Policy was published for public discussion. The draft law regulates in further detail the principles of energy policy, measures for energy policy management, competences, organisation and functioning of the Energy Agency, competences of the Energy Inspectorate and powers and conditions of the Energy Inspector. It also defines energy infrastructure and regulates other general issues in the field of energy. The proposed law will transpose into the Slovenian legal system the provisions of Directive (EU) 2019/944, amending Directive 2012/27/EU on common rules for the internal market for electricity, Directive (EU) 2009/73/EC amending Directive 2003/55/EC on common rules for the internal market in natural gas and Directive (EU) 2018/2001 on the promotion of the use of energy from renewable sources.

5. Significant and/or expected changes in 2024

5.1 Important Changes Introduced by the New National Energy and Climate Plan

The National Energy and Climate Plan was confirmed by the government on 27 February 2020. However, there is currently a process underway to adopt NECP 2024 (the deadline for adoption is spring 2024). The NECP 2024 foresees the following renewed instruments from the National Energy and Climate Plan, as well as new instruments to promote changes in favour of RES projects:

Renewed instruments

- **Promoting local energy communities or RES communities** by removing administrative and regulatory barriers, ensuring that the electricity operator works with communities to facilitate energy transmission within them, ensuring equal treatment of the RES community in the electricity market, providing tools to facilitate access to finance and information, providing regulatory support to municipalities to establish RES communities, and providing various types of financial support for the establishment and/or operation of local energy communities;
- **Preparation of a new or upgraded RES Support Scheme and its implementation** (projected for the period 2024-2030), with:
 - new forms of incentives;
 - simplified procedure for smaller production facilities;
 - transition to non-refundable grant funds for RES technologies, which are close to being competitive at the end-customer price level;
 - introduction of concession schemes for the revitalisation of degraded areas and their use for energy purposes;
 - support for PPA projects;
 - implementation of various programmes, including NOO, REPowerEU; and
 - identification of investor(s) for the construction of the transmission and distribution connection infrastructure for large concentrated RES generation plants and identification of financing sources.

- **Promoting self-supply of RES-Electricity**, mainly by implementing and updating the new support scheme, examining (for the old scheme) the introduction of the possibility of sharing the electricity generated with other consumers (energy sharing, EV charging at another location, with the energy poor, etc.) and examining the possibility of integrating micro and small wind farms as self-sufficient power plants and providing appropriate financial incentives;
- **Promoting multifunctional uses of deep geothermal energy (GGE):** Implementation and harmonisation of regulations, acceleration of research and preparation of the technical basis and financial initiatives (e.g. drilling of boreholes, conversion of existing boreholes and use of GGE in district heating systems) and establishment of a legal basis for monitoring the use of GGE;
- **Promoting better grid integration of RES facilities and adaptation of offtake, in particular by:**
 - establishing a regulatory framework and appropriate incentives for the grid integration of RES in locations with higher electricity consumption;
 - establishing a regulatory framework and appropriate incentives for local production and consumption - local market flexibility; and
 - ensuring the availability of information on grid availability for connecting the RES units to the grid.

New instruments

- **Promoting the development of sustainable use of shallow geothermal energy** (mainly for large-scale heating pumps) by developing a methodology with criteria for the identification of priority areas and the preparation of geothermal energy projects, designing support mechanisms and defining criteria for the granting of support for geothermal energy production, assisting in obtaining risk insurance for the viability of projects, developing geothermal maps, identifying priority areas, harmonising regulations with modern standards and amending legislation (i.e., the Environmental Protection Act) to regulate the relevant permitting procedures (construction, operation, removal from the environment after decommissioning), record keeping for all installations, creating publicly available data for investments in shallow geothermal energy, and establishing a one-stop-shop for technical assistance, a training programme, and a register of geothermal heat pumps;

- **Improvement of the RES Support Scheme**, mainly through the removal of administrative barriers, the improvement of the single point of contact (to offer relevant information to facilitate the preparation of RES projects), the possibility of establishing a single entry point with regard to RES, including *inter alia* the setting of clear deadlines for the whole procedure as well as for all administrative steps necessary for the granting of permits for the construction and operation of RES projects, the digitalisation of procedures, the improvement of the preparation of documentation and the optimisation of procedures and the possibility of updating technical specifications of RES projects in the procedures by allowing applicants to update certain technical specifications of their projects in the period between the submission of the application for a permit and the construction of the project;
- **Development of technical criteria and regulations for the production of hydrogen and synthetic gases from RES-Electricity**, in other words technical criteria, procedures and tariffs for connecting synthetic and biomethane to the grid;
- **Promoting hydrogen self-sufficiency** by providing financial incentives to set up own hydrogen production when installing RES power plants for industrial consumers (small hydrogen valleys, energy communities, etc.);
- **Promoting cross border and regional cooperation in joint RES-Electricity projects** by identifying possible projects and preparing the necessary regulations and other bases for co-operation;
- **Promoting the renovation, construction and reconstruction of small hydropower plants**, in particular through technological and operational improvements of existing small hydropower plants, the construction of new plants on existing sites and the improvement of regulations for more efficient (less burdensome) administrative procedures and spatial planning of small hydropower plants.
- **Monitoring the use of the electricity consumption in agriculture**, that is to say, preparing the legal basis in the agricultural legislation for energy monitoring and the monitoring of renewable energy sources in agriculture;
- **Promoting the construction of electricity storage facilities (units)**, in particular:

- increasing the construction of electricity storage facilities in line with the increase in RES-Electricity production (preferably pumped storage hydroelectric power stations and battery systems),
- providing a legal basis for the mandatory installation of electricity storage facilities (units) on new photovoltaic installations with at least 25% of their capacity (MW) and at least 2 hours of full operation and exploring the possibility of additional reversible generators on existing hydropower plants;
- promoting and integrating battery-based electricity storage with new RES-Electricity capacity to provide balancing services and operational flexibility at the system site;
- promoting the development of electricity storage facilities based on conversion to hydrogen and onwards to synthetic gaseous or liquid fuels; and
- preparing a legal basis for a 10-year moratorium on network charges for all electricity storage facilities.

6. Overview of the Technical Innovations in Electricity Storage and Applicability in Slovenia of such Storage Technologies

One of the goals set out in the National Energy and Climate Plan, which is further emphasised in the NECP 2024 (see point 5.1. above), is the development of energy storage technologies, infrastructure (e.g. smart grids) and services that will improve the efficiency and safety of electricity production and supply. New technologies are particularly important in respect of the available natural sources (i.e., wind and solar power).

It is envisioned that the demonstration and pilot projects for centralised and decentralised electricity storage will be implemented by 2030. Those projects will include installation of battery storage solutions and other technologies for storing RES-Electricity, such as storing it in a solid state. In order to maximise the share of RES as part of final energy consumption, a sufficient number of energy storage facilities will have to be constructed by 2030. In addition to the measures foreseen in section 5.1 above, the NECP 2024 also projects securing the construction of two large electrolyzers for the storage of excess electricity in hydrogen.

New technical innovations in electricity storage solutions will be needed as the number of RES production units increases. The development and implementation of said solutions is foreseen in the NECP 2024. In this respect, there are good opportunities for investors to enter the Slovenian energy market. For example, in 2021 the total value of ELES' investments in smart grids amounted to approximately EUR 37.35 million, representing 24.5% of the total value of the company's investments. Of this, more than half (54.7%) is attributable to the installation of battery energy storage in the SINCRO.GRID project.

7. Support scheme for cogeneration

A support scheme – feed-in tariffs (preferential prices) – is available for fossil fuel powered CHP units with a rated capacity no greater than 10 MW. Individual support may be granted to new high-efficiency cogeneration electricity production installations for up to ten (10) years.

The following CHP units are eligible for the RES Support Scheme:

- combined cycle gas turbines with heat recovery;
- counter pressure steam turbines;
- extraction condensation steam turbines;
- gas turbines with heat recovery;
- internal combustion engines;
- microturbines;
- Stirling engines;
- fuel cells;
- steam engines;
- organic Rankin cycle turbines; and
- other types of technology or combinations thereof, used for the cogeneration of heat and electricity with high efficiency.

CHP plants producing electricity from biofuels or other liquid biofuels derived from biomass are not eligible for support under the current RES Support Scheme.

The support scheme for cogeneration in Slovenia is the same as for other RES technologies. Therefore, investors investing in CHP units / facilities may apply for support in the form of either (i) guaranteed purchase of electricity by the Centre for RES/CHP support at regulated feed-in tariffs (generally applicable to facilities with a rated capacity less than 500 kW); or (ii) financial support for the operation of the unit.

8. Power Purchase Agreement (PPA)

8.1 Nature of the PPA

A Power Purchase Agreement (“PPA”) is generally a contract between an electricity producer and a buyer of electricity, usually a utility or a large consumer, to purchase electricity at a fixed or variable price for a specified time-period. PPAs, however, are also entered into by developers of renewable energy projects and by small and medium-sized electricity consumers. These agreements are typically signed for a longer time-period, usually 10 to 20 years. Recently, agreements have been signed for shorter periods as well. Developers hope to be able to finance their projects more cheaply and to minimise their risks, while the consumers hope to receive (green) electricity at a secured price.

The concept of a PPA is very broad and can include different combinations of stakeholders and off-takings of electricity. As PPAs are usually bilateral agreements, they are subject to freedom of contract and their structure and subject matter depend on the parties involved and vary from case to case. In general, the most important provisions of PPAs are the price (or a price range) at which the generator will sell electricity to the client and the volume of electricity to be purchased from the generator at that price. In addition, PPAs can include provisions on who bears what risks, required accounting and penalties for non-compliance. Depending on the arrangement between the parties, some regulatory requirements may apply (i.e., registering as energy supplier or producer).

8.2 Types of PPA

There are numerous types of PPAs and, given the novel nature of the agreements, different types of contracts continue to be developed. These contracts can be categorised by, among other things, ownership, location, operation, and payment structure.

There are generally three main types of PPAs:

- On-site (physical) power purchase agreements are characterised by the physical supply of electricity and the physical proximity of the generator and the consumer. The generating plant is located behind the consumer's metering point. This means that electricity can be supplied without using the public grid.
- Off-site power purchase agreements are concluded for the purchase of electricity, on a net basis, for a physical quantity of electricity defined in the contract. The electricity is not delivered directly to the consumer, but via the public grid. Therefore, the place of generation and consumption need not be in proximity. Settlement takes place through balancing groups. These (sleeved PPAs) include an energy service provider, which is a member of a balancing group as a party, or its involvement is required to act as an intermediary between the producer and the customer. The energy service provider may also take on additional tasks for a fee, such as supplying additional quantities requested by the customer or marketing surplus quantities.
- Virtual PPAs (synthetic PPAs or financial PPAs), where the generator sells electricity on the wholesale market and receives the market price. The buyer pays the generator a fixed or variable price for each unit of electricity produced, irrespective of the actual delivery or consumption. This means that the electricity is not delivered directly, but it is included in the balancing group by an energy service provider and traded on the relevant market. The difference between the market price and the contract price is settled financially between the parties. Virtual PPAs do not require the physical purchase of a comparable amount of electricity. The buyer usually is responsible for securing its own electricity supply from the market.

However, virtual PPAs are not yet common in Slovenia.

The types of PPAs are often also differentiated according to end customer, with end customers being either industrial companies (corporate PPAs), energy supply companies (utility PPAs), municipalities (municipal PPAs) and local communities (community PPAs). In a corporate PPA, a corporation mostly agrees to purchase (a fixed amount of) electricity for a fixed price for the agreed period of time. This serves to hedge against rising electricity prices and to meet sustainability goals. In addition, municipalities and communities can reduce their reliance on fossil fuels and support local renewable energy projects by entering into PPAs. With respect to utility PPAs, the retailer agrees to buy a certain amount of electricity from the utility and resell it to its customers, giving them access to renewable energy without having to install their own RES.

PPAs can provide financial certainty to renewable energy developers, as in the case of utility PPAs, the utility typically pays a fixed price for a specified amount of electricity from the developer over a fixed time-period. There may also be the involvement of a financial institution whose purpose is to finance the construction of renewable energy projects. In such cases the financial institution provides the financing for the project and the developer agrees to sell a certain amount of electricity to the financial institution in return, or to transfer claims on the electricity sold. In practice, there is no clear division between these types of PPAs and a combination may be used. This requires careful consideration of the parties involved, including from a legal, accounting, financial and tax perspective.

8.3 Development of PPAs in Slovenia in recent years

PPAs are not yet widely used in Slovenia, but in line with the strong growth of the European PPA market in H1 2023, they are gaining traction in practice as an option for financing renewable energy installations, particularly solar power plants, where the initial investment is high but the operating costs are relatively low.

The developer and end user typically agree on a fixed price for the electricity produced for a fixed period, with the possibility of an adjustment if the plant is included in the RES Support Scheme. Furthermore, PPAs are becoming an attractive option for corporate decarbonisation efforts, allowing companies to mitigate energy price volatility with long-term contracts that provide certainty of renewable energy supply and potentially lower future electricity costs.

For example, Idrija-based Kolektor and Swiss company Axpo signed the first financial PPA for renewable energy in Slovenia in September 2023. Under the 10-year agreement, Axpo will provide a long-term fixed price for up to 0.2 TWh of electricity to the companies of the Kolektor Mobility Group in Idrija, while Kolektor's subsidiary sETup will provide the physical energy supply. In addition, several municipalities, including the Municipality of Ljubljana, have entered into agreements that include elements of a PPA for the installation of solar power plants on buildings or land owned by them.

Authors:



Klemen Radosavljević

Partner

E klemen.radosavljevic@wolftheiss.com

T +386 1 438 0023



Neja Nastran

Senior Associate

E neja.nastran@wolftheiss.com

T +386 1 438 0012



Matej Kraner

Associate

E matej.kraner@wolftheiss.com

T +386 1 438 00 31

**Generating Electricity
from Renewable Sources
in CEE & SEE**

Energy Industry Group

Ukraine

Wolf Theiss

Country General Information

Capital: Kyiv

Location: Situated in the central part of Eastern Europe, Ukraine is the second largest country within European territory, with an area totalling 603,550 km². Ukraine borders the Russian Federation, Belarus, Poland, Slovakia, Hungary, Romania and Moldova.

Surface: 603,550 km²

Population: 41.3 million

Climate: continental, with four distinct seasons.

Resources: As of 2016, 70.8% of the territory of Ukraine was classified as agricultural land and 17.6% of the area was covered by forests. Ukraine has limited fossil-fuel energy reserves. The country is reliant on imports of oil, gas and coal. Nevertheless, the country has high potential for (i) wind power; (ii) expanded biomass use for energy purposes; and (iii) solar PV equipment that can be efficiently operated throughout the year (northern and southern regions).

Electricity Grid: In 2021, Ukraine generated 156,575 GWh of electricity, with state-owned enterprises accounting for most of that production. In the years 2022-2023, there was a notable decline in electricity production attributed to the destruction of numerous energy-generating facilities as a result of Russian military attacks. Additionally, the seizure of the Zaporizhyya nuclear power plant by Russian troops exacerbated the situation, further impacting energy output. Currently, Ukrenergo has four regional power systems covering Ukraine: It operates high voltage equipment and manages more than 19,000 km of trunk and cross-border high voltage transmission lines. Each year, Ukrenergo transmits hundreds of thousands of GWh of electricity.

On 24 February 2022, Ukrenergo completed the planned transition of the Ukrainian power system to an isolated mode of operation – (i.e. the power system was disconnected from the Russian, Belarusian, and European power systems). Due to Russia's military invasion of Ukraine on 24 February 2022, it was decided not to return to synchronous operation with Russia and Belarus, and to accelerate synchronisation with the European Network of Transmission System Operators for Electricity (ENTSO-E). The emergency synchronisation of the power systems of Ukraine and Moldova to the ENTSO-E Continental Europe power grid was approved on 16 March 2022. Ukrenergo (the Ukrainian TSO) became the 40th member of ENTSO-E starting on 1 January 2024.

Electricity Transmission, Distribution and Supply: Supply and distribution is managed by either regional electricity supply and distribution companies, known as oblenergos (public and private ownership, including foreign-owned entities, with significant shares belonging to 5-7 individuals) or Distribution System Operators and Suppliers.

Official Language(s): Ukrainian

EU Member: n/a

NATO Member: n/a

United Nations Member: since 1945.

Currency: Ukrainian Hryvnia (UAH)

Schengen: no – but has joined the Deep and Comprehensive Free Trade Area (DCFTA). Autonomous Trade Measures (ATMs) suspending import duties and quotas on Ukrainian exports to the EU for the duration of the war with Russia have been in place since June 2022.

Political System, Administrative Organisation and Economy: Ukraine is a unitary state. State power in Ukraine is exercised on the principles of its division into legislative, executive and judicial power. The President of Ukraine is the Head of State and a guarantor of national sovereignty, territorial integrity and adherence to the Constitution. The only legislative body of Ukraine is the Parliament. Ukraine undertook decentralisation reforms in 2014, in order to create a capable institution in the form of local Governments. This reform created the basic level – communities - and the middle (sub-regional) level – districts - and thereby moved more power to these institutions. Following a period of stabilisation and consistent growth, the Ukrainian economy encountered a significant setback as a result of the Russian invasion in 2022, which led to the blockage of vital export and import routes, the occupation of certain territories and the destruction of production facilities. Despite these challenges, the government implemented internal financial measures, which coupled with substantial foreign financial aid, helped stabilise the economic situation. Furthermore, in 2023, the economy showed signs of resilience, experiencing some growth amidst the adversity.

1. Defined Terms for the Main Permits required for RES-Electricity Generation Facilities

Balancing Group Entry	Legal requirement for RES producers to enter into the balancing group of the SE "Guaranteed Buyer" (" Guaranteed Buyer ") in order to sell electricity on the new electricity market under a feed-in tariff or at auction price;
Construction Permit	Administrative deed issued by the local body of the state architectural and construction control (" SACC ") (applicable to facilities qualified as SS2 or SS3 class of harmful consequence facility);
Commissioning Certificate	Administrative deed issued by the local body of SACC in order to authorise the commissioning of the relevant RES Facility (applicable to facilities qualified as SS2 or SS3 class of harmful consequence facility);
Construction Project Examination	Mandatory examination conducted by authorised expert organisations in case the relevant RES Facility qualifies as a SS2 or SS3 class of harmful consequence facility;
Environmental Approval	Administrative deed issued by the local Environmental Authority evidencing the compliance of the RES-Electricity facility with the environmental requirements as provided by law;
Grid Connection	Actions performed and administrative deeds issued by the grid operator to connect a new generating facility or to modify or replace the connection of an existing generating facility to the grid;
Guaranteed Purchase of Electricity Produced from RES Facilities	Set of rules and conditions based on which a Guaranteed Buyer is obligated to purchase all RES-Electricity within quotas acquired by the Producers at RES auctions;

Licence for Electricity Production	Administrative deed issued by the National Regulatory Commission on Energy and Utilities (" NEURC ") for electricity production according to the licensing conditions for commercial electricity production, approved by NEURC Resolution No. 1467 dated 27 December 2017. Under this Licence, the producer has the right to operate an RES-Electricity facility and to sell the generated RES-Electricity on the market;
NEURC	The National Energy and Utilities Regulatory Commission of Ukraine is the single authority for regulating gas and electricity in Ukraine. One of the NEURC's main functions is to issue licences to business entities operating in the fields of energy and public utilities and to exercise control over their licensed operations;
RES-Electricity	Electricity obtained from RES sources such as solar, wind, aerothermal, geothermal, hydrothermal, wave, tidal, hydropower, biomass, landfill gas, sewage treatment gas and biogas;
RES Support Scheme	State-aid measures in two forms (i) feed-in-tariff (or "green tariff", as specified by the Ukrainian legislation) effective until 31 December 2029 for RES Electricity producers that commissioned their facilities by 31 December 2023 at the latest; (ii) RES auction mechanism introduced in 2019, aiming to replace the green tariff scheme. State support will be provided by means of guaranteed purchase through a Guaranteed Buyer of all electricity produced from RES Facilities within the quota acquired at the auction.

2. Envisaged need of RES investments in Ukraine

Ukraine has demonstrated significant commitment to reforming its energy sector, in order to reach the sustainable growth targets set by numerous international obligations. The country joined the European Energy Community in February 2011 and in October 2014 set the goal of increasing its renewable energy share as part of the national power mix to 11% by 2020. In 2022, a new Ukrainian Energy Strategy was adopted through 2050 (the full text of the strategy has not yet been made public due to public safety considerations) and aims to ensure sustainable economic development through access to reliable, modern energy sources. By 2050, the strategy aims to achieve climate neutrality, promoting clean energy adoption, overcoming energy poverty, and developing decentralised systems. Aligned with the National Economic Strategy and international commitments, key goals include reducing coal dependence, modernising infrastructure, improving resource efficiency, integrating with EU markets, ensuring energy security, and fostering innovation in alternative energy solutions.

Ukrainian cities are among the key players that are poised for changes in the sustainable growth of the country in the renewable energy field. The city of Zhytomyr (located in the northwest of Ukraine) approved a plan in 2018 to achieve 100% renewable energy by 2050. This ambitious goal was also followed by the cities of Kamianets-Podilskyi, Chortkiv and Lviv. The State Agency of Ukraine on Exclusion Zone Management, which manages the Chernobyl zone, agreed that within the implementation of Ukraine's commitment under the Kyoto Protocol, a photovoltaic power station will be constructed in Chernobyl. Moreover, the Government allocated seven (7) hectares of land in 2018 for the construction of wind energy facilities within the zone's territory, where initial phases of the project were already commissioned.

Investments into RES Facilities officially began in 2008, when numerous (including foreign) players entered the market. Since then, RES projects (mostly solar and wind) have been mushrooming around the country. Such a rapid development of the RES sector during 2008-2022 can be explained by the adoption of the green tariff in 2008, which essentially guaranteed prices until the end of 2029 and was the highest in Europe.

By the end of 2021, a total of 8.1 GW of RES capacity had been officially installed. However, starting in 2022, several RES facilities were damaged by Russian attacks and fighting on the frontlines. Establishing the current total capacity of operational renewable energy facilities remains an ongoing process. According to the Minister of Energy, Ukraine has lost about 80% of its wind power generation due to Russian military aggression.

The Government has made significant efforts to stimulate and encourage the flow of foreign investment in RES projects (e.g. granted VAT exemptions on the import of certain RES equipment, simplified the process of land allocation, etc.).

Despite the development of the RES market over the years, Ukraine has faced problems regarding the attractiveness of RES incentives and the support scheme. In the last two years before the full-scale Russian invasion of 2022, over 3 GW of green capacity have been put into operation at an increased feed-in green tariff (mostly solar), at the highest tariff in Europe. As a result, the energy system of Ukraine started facing difficulties with balancing green generation capacities. There have also been defaults on payments by the Government to investors in the RES sector. However, despite the ongoing war, the Ukrainian government has managed to reduce its debt to RES producers for the supplied electricity. As at February 2024, these producers have received 77.3% of the funds owed to them for the electricity they supplied in 2023.

Therefore, it seems inevitable that substantially more investment will be required in renewable energy (RES) electricity once the conflict with Russia is resolved. Moreover, legislation and regulations governing the RES market are expected to undergo significant changes in the near future, so as to adapt to the evolving landscape both domestically and internationally, as well as to spur post-war reconstruction of the RES energy sector in Ukraine. It is clear that local communities will play an ever-increasing role in this process, since they will need to formulate their own development and recovery strategies, identify priorities and develop a list of specific projects.

Starting on 1 January 2020, investors or future RES producers may enter the Ukrainian renewable market in two ways: (i) by investing into existing RES projects that are entitled to operate under the green tariff regime; (ii) by investing into RES projects operating under the new Auction Law.

3. Executive Summary-RES Market Status and Development of RES Facilities

3.1 Market Overview-Factsheets

- After the introduction of a special green tariff, tax and customs relief, as well as incentives for purchasing locally made equipment in 2008, the RES sector in Ukraine started to grow rapidly at an average of 31% annually;
- The Energy Strategy of Ukraine has sought to increase the overall share of renewables to 12% by 2025, and to 25% by 2035, including RES-Electricity generation. According to the new Strategy adopted in 2022, by 2050 Ukraine should achieve climate neutrality, promote clean energy adoption, overcome energy poverty, and develop decentralised systems;
- RES producers exploiting equipment of Ukrainian origin enjoy a higher green tariff or auction price (by up to 20%), provided the respective equipment is commissioned between 1 July 2015 and 31 December 2024;
- There is no import VAT on certain RES-related equipment and materials imported into Ukraine;
- In 2018, after a sharp fall in the cost of equipment for the construction of RES projects, the Government insisted on an urgent reduction of the green tariff from 1 July 2019;
- Ukraine's new electricity market model was introduced by the Ukrainian Law No. 2019-VIII, "On the Electricity Market", dated 13 April 2017, and was put into operation on 1 July 2019;
- In 2018, Ukraine became a member of IRENA. In 2019, Ukrainian law was amended to introduce state support auctions (instead of the green tariff) for RES-Electricity facilities commissioned after 1 January 2020;
- With these recent changes in the electricity market, Ukrenergo has become responsible for compensating the Guaranteed Buyer for the green tariff. Considering the difficulties with payments, the Guaranteed Buyer faced challenges in meeting its obligations to green energy producers and investors. However, despite the ongoing war, as at February 2024 RES producers have received 77.3% of the funds owed to them for the electricity they supplied in 2023;

- The installed capacity of RES-Electricity generating facilities in January 2022 stood at 8,199.30 MW nationwide. The largest increase in RES-Electricity generation during 2020-2021 was by solar power farms (67.8%), followed by wind farms (47.5% increase).
- Beginning in 2022, numerous Renewable Energy Source (RES) facilities suffered damage due to Russian military attacks and conflict on the frontlines. Determining the present aggregate capacity of operational renewable energy facilities continues to be a work in progress. As stated by the Minister of Energy, Ukraine has experienced a reduction of approximately 80% in its wind power generation due to the Russian military aggression. In spite of this, certain smaller solar and wind facilities were put into operation even during the war;
- Currently, solar and wind projects constitute the vast majority of the RES projects in Ukraine.

4. RES Market Status, permitting, Grid Connection, Licensing of RES Facilities in Ukraine

4.1 RES Market Status, Permitting, Grid Connection, Licensing of RES-Electricity facilities in Slovenia

General Market Data	
RES Target 2050	Achieving climate neutrality
Overall installed General Capacity including RES (overall production) as of 2021	56,297 MW (generating capacity excluding Crimea)
8,199 MW (RES capacity excluding the currently occupied territory of Crimea)	3,983.4 MW (in 2022)

RES Support Scheme

Beneficiaries of RES Support Scheme	Business entities intending to generate RES-Electricity, regardless of the facility's installed capacity and the RES source (except for blast furnace and coke-oven gas, and in case of hydropower use with only micro, mini and small hydro plants) ¹ .
Priority and guaranteed off take into the grid	RES-Electricity is not granted priority connection.
Other incentives	<ul style="list-style-type: none"> ○ Guaranteed purchase of RES-Electricity; ○ Premium green tariff for the use of equipment manufactured in Ukraine (up to 20%); ○ Exemption from import VAT on certain RES equipment; ○ Simplification of the designated purpose land requirement; ○ Exemption from zoning requirements; ○ Exemption from the requirement for a construction permit for wind plants.
Other conditions	<ul style="list-style-type: none"> ○ Green tariff rates decreased significantly since 2020 in an effort to relieve the burden on the state budget created by a large number of RES facilities going online within a short period of time to benefit from high green tariff rates.

Grid Connection Specifics

Approvals	Electricity distribution and transmission system operators cannot deny access to their grids provided that the applicant meets the technical requirements.
Permitting	<ul style="list-style-type: none"> ○ Construction permits for construction works, design documentation (including its examination) and connection to the grid.

¹ Construction of wind plants has been given SS1 class of harmful consequence facility, thus construction works may be undertaken without a specific construction permit.

Timing	○ It takes around 5-10 days after filing the relevant application, and subject to compliance with all applicable requirements, for connection to be made.
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Licensing

Procedure	The Licence for electricity production is issued after the construction and commissioning phases (i.e. after obtaining the Commissioning Certificate) are finished. The RES producer applies for a Licence for electricity production by submitting a standard form application to the NEURC along with the supporting documents.
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Duration of administrative procedure	Ten (10) working days following the submission of the application.
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Licence's validity	N/A
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5. Key changes to the RES Support Scheme since 2016 - Implementation of the Auction Scheme

5.1 New Electricity Market Model

Ukraine's new electricity market model was introduced by Ukrainian Law No. 2019-VIII, "On the Electricity Market", dated 13 April 2017, and was put into operation on 1 July 2019. The new model provides for direct (without intermediaries) and diversified electricity purchase arrangements between producers and power supply companies. It also contains such elements as intra-day, day-ahead and balancing markets.

Under Law No. 2019-VIII, the Guaranteed Buyer has been registered as an independent entity responsible for increasing the share of RES-Electricity by purchasing the produced electricity from RES Producers eligible for the green tariff, or within the quota acquired at a RES auction. Additionally, Law No. 2019-VIII sets requirements for the unbundling of the functions of the distribution system operator. Law No. 2019-VIII also introduced responsibility for imbalances.

5.2 Introduction of RES Auctions

In 2019, Ukrainian law was amended to introduce state support auctions for RES-Electricity facilities instead of the green tariff. Under the auction scheme, the Ukrainian state will purchase all electricity produced by the RES project within the limits of the quota purchased at auction, based on the feed-in premium (FIP) mechanism, as described below. The auctions are mandatory for entities operating RES Facilities with a capacity of at least 1 MW for solar facilities or 5 MW for wind facilities. Operators of facilities under 1 MW and other types of facilities may voluntarily participate in the auctions. RES facilities already working under a green tariff are not eligible for the auction support scheme.

RES auctions are conducted through a dedicated online platform within the annual auction support limits approved by the Ukrainian Cabinet of Ministers each year. The Guaranteed Buyer is responsible for organising and holding the auctions and for establishing and documenting relations with the auction winners. In order to establish contractual relations with the Guaranteed Buyer after the auction, RES Producers will have to provide, among other things, evidence of title or lease rights to land and a grid connection agreement.

RES auctions are held regularly by the Guaranteed Buyer and should be held until 31 December 2029. State support will be extended for a period of 12 years, commencing from the first day of the calendar month following the commissioning of the power facility and its connection to the power grid.

6. Significant and/or expected changes in 2023/2024

6.1 The RES support regime has undergone a significant overhaul

On 30 June 2023, Ukraine passed the Law "On Amendments to Certain Laws of Ukraine on the Restoration and Green Transformation of the Energy System of Ukraine" No. 3220-IX (the "Law No. 3220-IX"), which introduces amendments to certain Ukrainian laws aimed at enhancing energy security and promoting the green transformation of the country's energy system, and which significantly amended Ukrainian law provisions concerning RES electricity generation.

6.1.1 Certain important changes to the incentive mechanisms

The government may allocate funds in the state budget to support RES Producers, specifically for green tariff payments, based on calculations by the NEURC. If budget provisions are made for RES Producers, the NEURC will incorporate these costs into transmission tariffs. Otherwise, the NEURC will set tariffs to cover RES support.

RES Producers under the green tariff must join the Guaranteed Buyer's balancing group upon the NEURC's secondary legislation adoption. Repairs to RES plants without capacity increases won't impact the green tariff – this is very important given the large number of damaged electricity generating facilities that require reconstruction or repairs.

RES producers under the green tariff scheme have the option to leave the Guaranteed Buyer's balancing group with a 20-day notice (however they can return upon 60-days' notice). They can then suspend their PPA and opt for a Contract for Difference (CfD) to increase their share of RES electricity, facilitated by a standard form regulated by the NEURC for the green tariff duration. Alternatively, RES producers can terminate their PPA and potentially renegotiate it at a later date. This scheme may also be described as a feed-in premium (FIP) and is also applicable to producers eligible for state support under the auctions scheme.

CfD is designed to encompass electricity sold by RES producers through bilateral contracts, as well as in day-ahead and intraday markets. Payments under CfD seem to be calculated based on the difference between the established green tariff or the auction price and the higher of the average index prices in either the day-ahead market or regulated bilateral contracts market, as specified by the law. Should the larger average market price surpass the auction price / green tariff, the producer would be responsible for paying the difference to the Guaranteed Buyer. Transitioning between different forms of support does not alter the established green tariff rate. Additionally, RES producers are expressly allowed to export and import electricity from/to Ukraine.

6.1.2 Introduction of Guarantees of Origin

The NEURC is designated as the authority responsible for issuing Guarantees of Origin (GOs) in Ukraine, which certify the renewable origin of electricity. These electronic GOs will be provided at no cost and will contain detailed information about the renewable energy source, operating period, location, issuance date, country of origin, and identification code.

GOs for electricity generated from renewable sources are freely tradable and can be transferred to any participant in the electricity market. While they can be exported from and imported to Ukraine, their recognition abroad or by foreign GOs in Ukraine will be determined by agreements between Ukraine and other countries.

The purchase and sale of GOs will be conducted on a market basis at negotiated prices. For producers benefiting from feed-in tariffs, GOs will be sold to the Guaranteed Buyer alongside the corresponding electricity volume. The price paid by the Guaranteed Buyer will cover the value of the GOs, and the Buyer can then sell these GOs separately from the electricity.

The NEURC developed procedures for issuing, transferring, and utilising GOs, which are pending approval by the Cabinet of Ministers of Ukraine. The operational register of GOs is expected to be established within six months following the approval of these procedures, ensuring transparency and accountability in the renewable energy market.

6.1.3 Aggregators

Under the new legislation, the aggregator, operating under a license, serves as an important market entity that unifies power generation or storage facilities with consumers, facilitates the purchase and sale of electricity, and also provides ancillary and/or balancing services. This entity establishes an aggregated group governed by the terms outlined in the aggregator group participation agreement. The aggregator is responsible for maintaining the balance of electrical installations within its aggregation, excluding those serving consumers obtaining electricity elsewhere.

While it is not involved in the transmission, distribution, or market operator functions, the aggregator engages in electricity trading, including buying and selling, and offers balancing and ancillary services as stipulated by relevant regulations. Aggregators play a vital role in consolidating consumers and small electricity producers (with capacities up to 20 MW) into a virtual power plant, thereby enabling electricity trading and service provision in the market.

Each electrical installation is exclusively associated with one aggregation group, ensuring that no installation is part of multiple groups. Within each aggregated group, the electrical installations are collectively considered as a single aggregated installation.

6.2 Important regulation enacted

On 24 January 2024, the NEURC adopted Resolution No.178, which introduces a number of legislative acts in line with Law No. 3220-IX.

The regulation provides, inter alia that in order to sell electricity under the green tariff, RES producers must enter into (i) a power purchase agreement (the PPA) with the Guaranteed Buyer, on the basis of a new standard agreement approved by the NEURC and (ii) a new standard agreement approved by the NEURC on participation in the Guaranteed Buyer's balancing group. The Resolution lays down new requirements for RES producers entering into PPAs and receiving payments under the green tariff. For example, they must:

1. Enter into an agreement with the transmission system operator aimed at reducing the load (if the capacity of any generation installation equals or exceeds 1 MW);
2. Provide documents confirming the commissioning of the generation facilities, including the passport for the distribution point (required from prosumers) and so on.

The procedure for the Guaranteed Buyer to acquire electricity from RES producers expressly covers the feed-in premium mechanism (FIP) for both producers under the green tariff and auction winners. The procedure for entering into agreements on rendering services under the FIP is expected to be established by a respective procedure approved by the Cabinet of Ministers of Ukraine.

6.3 PPAs under the new rules

As a result of these previously mentioned legal amendments (and due to the gradual phasing out of the green tariff) PPAs are currently primarily entered into by two main categories of entities: (i) those which have secured agreements prior to 2020 and have completed or are completing the construction of their RES facilities, and (ii) smaller industrial producers and household RES electricity producers.

The new form of PPA has been approved by the NEURC's Resolution No.178. To facilitate the buying and selling of electricity under the green tariff, a candidate for a seller under the green tariff enters into the green tariff PPA with the Guaranteed Buyer. The green tariff PPA is concluded for the entire validity period of the green tariff. NEURC regulations outline a comprehensive procedure for the conclusion of green tariff PPAs, specifying those documents that must be submitted to the regulator. These documents include those pertaining to grid connection and evidence of the completion of construction of the power generating facility.

Pursuant to the new rules, RES auction winners, as well as producers operating under the green tariff who opt to do so, engage in Contracts for Difference (CfDs). CfDs are concluded between the Guaranteed Buyer and the auction winner or the producer under the green tariff. The procedure for the conclusion of CfDs, while sharing similarities with the process for PPAs, was only introduced in January 2024 and has not yet been subject to practical testing.

Author:



Sergii Zheka

Senior Associate

E sergii.zheka@wolftheiss.com

T +38 044 3 777 500

Our Offices

Albania

Murat Toptani Street
Eurocol Business Center
1001 Tirana
T +355 4 2274 521
E tirana@wolftheiss.com

Austria

Schubertring 6
1010 Vienna
T + 43 1 51510
E wien@wolftheiss.com

Bosnia and Herzegovina

Zmaja od Bosne 7
71000 Sarajevo
T +387 33 953 444
E sarajevo@wolftheiss.com

Bulgaria

Office Park Expo 2000, Phase IV, floor 1
55 Nikola Vaptsarov Blvd,
1407 Sofia, Bulgaria
T +359 2 8613 700
E sofia@wolftheiss.com

Croatia

Ivana Lučića 2a/19th
10 000 Zagreb
T +385 1 4925 400
E zagreb@wolftheiss.com

Czech Republic

Pobřežní 12
186 00 Prague 8
T +420 234 765 111
E praha@wolftheiss.com

Hungary

Kálvin tér 12-13
1085 Budapest
T +36 1 484 8800
E budapest@wolftheiss.com

Poland

ul. Marszałkowska 107
00 - 110 Warsaw, Poland
T +48 22 378 8900
E warszawa@wolftheiss.com

Romania

4 Vasile Alecsandri Street
The Landmark, Building A
011062 Bucharest
T +40 21 308 81 00
E bucuresti@wolftheiss.com

Serbia

Bulevar Mihajla Pupina 6/18
11000 Belgrade
T +381 11 3302 900
E beograd@wolftheiss.com

Slovak Republic

Aupark Tower, Einsteinova 24
851 01 Bratislava
T +421 2 591 012 40
E bratislava@wolftheiss.com

Slovenia

Gospodsvetska cesta 11
1000 Ljubljana
T +386 1 438 00 00
E ljubljana@wolftheiss.com

Ukraine

5A/10 Ihorivska St.
04070 Kyiv
T +38 044 3 777 500
E kiev@wolftheiss.com



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