

# 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 km<sup>2</sup>, 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

<b>Centre for RES/CHP</b>	Centre organised within the company Borzen d.o.o., (which is the operator of the organised electrical power market and centre for RES/CHP).
<b>CHP</b>	Cogeneration or combined heat and power (CHP – <i>Soproizvodnja toplote in elektrike (SPTÉ)</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.
<b>Electricity Supply Act</b>	<i>Zakon o oskrbi z električno energijo (ZOEE)</i> – Official Gazette of the Republic of Slovenia, No. 172/21.
<b>Energy Act</b>	<i>Energetski zakon (EZ-1)</i> – Official Gazette of the Republic of Slovenia, No. 17/14, as subsequently amended.
<b>Energy Agency</b>	Slovenian Energy Agency (Agencija za energijo).
<b>Energy Efficiency Act</b>	<i>Zakon o učinkoviti rabi energije (ZURE)</i> – Official Gazette of the Republic of Slovenia, No. 158/20.
<b>Gas Supply Act</b>	<i>Zakon o oskrbi s plini (ZOP)</i> – Official Gazette of the Republic of Slovenia, No. 204/21, as subsequently amended.
<b>Slovenian Environment Agency</b>	Slovenian Environment Agency ( <i>ARSO – Agencija Republike Slovenije za okolje in prostor</i> ).
<b>Environmental Impact Assessment</b>	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.
<b>Environmental Protection Consent</b>	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.

---

<b>Environmental Protection Permit</b>	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.
<b>Building Permit</b>	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).
<b>Use Permit</b>	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.
<b>Energy Permit</b>	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.
<b>Water Permit</b>	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.

---

<b>Authorisation Under Energy Law/Permit (Concession) to Exploit Natural Resources</b>	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).
<b>Guarantees of Origin</b>	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.
<b>Renewable Energy Act</b>	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.
<b>RES-Electricity</b>	Electricity generated from renewable non-fossil sources (RES) such as wind, solar, aerothermal, geothermal, hydrothermal, ocean power, hydropower, biomass and biogases.
<b>RES Support Scheme</b>	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.
<b>Rules on Support</b>	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 soproizvodnji toplote in električne energije z visokim izkoristkom</i> ) – Official Gazette of the Republic of Slovenia, No. 26/22.

<b>Non-discriminatory Access to the Electricity Grid Given to RES-Electricity</b>	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.
<b>Water Act</b>	<i>Zakon o vodah (ZV-1)</i> – Official Gazette of the Republic of Slovenia, No. 67/02, as subsequently amended.
<b>Environmental Protection Act</b>	<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	
<b>RES Target 2020 (out of final consumption)</b>	25% (as at 2020, 24.10% was achieved)
<b>RES Target 2030 (out of final consumption)</b>	at least 30-35% of RES (envisaged change from 27% under the NECP 2024)
<b>Overall installed General Capacity including RES</b>	3,983.4 MW (in 2022)

<b>Overall production including RES</b>	12,853 GWh (in 2022)
<b>Primary production by source (in 2022)</b>	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

<b>General overview</b>	<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"> <li>○ energy potential of watercourses (hydropower);</li> <li>○ wind energy used in onshore installations;</li> <li>○ solar energy used in photovoltaic production plants;</li> <li>○ geothermal energy;</li> <li>○ energy from biogas derived from biomass and biodegradable waste specified in the Rules on Support;</li> </ul>
-------------------------	---

- 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.

---

<b>Building Permit</b>	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.
<b>Detailed design</b> ( <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.
<b>Use Permit</b>	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.
<b>Energy Permit</b>	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.

<b>Other</b>	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.
--------------	---

### 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](mailto:klemen.radosavljevic@wolftheiss.com)

T +386 1 438 0023



**Neja Nastran**

Senior Associate

E [neja.nastran@wolftheiss.com](mailto:neja.nastran@wolftheiss.com)

T +386 1 438 0012



**Matej Kraner**

Associate

E [matej.kraner@wolftheiss.com](mailto:matej.kraner@wolftheiss.com)

T +386 1 438 00 31