

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

Energy Industry Group

Slovak Republic

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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.

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