KINSTELLAR

Energy Trends 2026

CEE, SEE, CENTRAL and SOUTHEAST ASIA

Introductory note

We are delighted to share with you the **second edition** of **Kinstellar's Energy and Natural Resources Trends in the CEE, SEE, Central and Southeast Asia Report**.

This report provides an overview of the latest and upcoming developments in the energy and natural resources sector, with a particular focus on opportunities and advances in renewable energy, battery energy storage systems, hydrogen, nuclear energy, and oil and gas.

It is tailored to the specific energy landscape of **Austria**, **Bulgaria**, **Croatia**, the **Czech Republic**, **Hungary**, **Kazakhstan**, **Romania**, **Serbia**, **Slovakia**, **Turkey**, **Ukraine**, **Uzbekistan**, as well as **Cambodia** and **Vietnam**, in collaboration with our sister law firms there.

Through this report, we aim to provide both new and existing investors in our markets with an overview of evolving trends and the most significant developments across the energy and natural resources sector in the regions we cover, drawing on the expertise and insights of our team of professionals.

Key developments in the first quarter of 2026:

- Growing concern as regards the conflict in Iran and the closure of the Strait of Hormuz, a critical chokepoint for global oil and LNG supply and that the effects on the energy markets may be deeper and longer-lasting than first anticipated.
- Governments across our jurisdictions taking action to shield industry and consumers from rising energy prices, including pump price caps, additional taxes, and other market interventions.
- Continued momentum in renewables, with projects advancing strongly to secure financing and grid connection.
- BESS moving rapidly to the forefront of investment, driven by its central role in grid stability.
- Nuclear and SMR projects progressing steadily, as more countries take concrete steps forward.
- Data centres emerging as a major new investment theme, with former industrial sites attracting interest due to existing infrastructure and spare grid capacity.

We hope you find this report insightful and valuable as we navigate the dynamic landscape of the energy and natural resources sector together. Please do not hesitate to reach out if you would like to discuss any of the topics covered or if we can provide any additional information.

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Information current as of January / February 2026. This brochure provides an executive summary of the latest energy trends across Kinstellar's jurisdictions. It is for general informational purposes only and does not constitute legal, professional or investment advice. For specific guidance or expert consultation, please contact our team.

Kinstellar at a glance

Kinstellar is a leading independent law firm in Central, Southeastern Europe, Central Asia, and, in collaboration with sister law firms, selected jurisdictions in Southeast Asia.

Operating as a single fully integrated firm, Kinstellar delivers consistently high quality services across its offices and, together with its sister-firm relationships, across selected additional jurisdictions, in an integrated and seamless manner. We are particularly well suited to servicing complex transactions and advisory matters with multi-jurisdictional elements.

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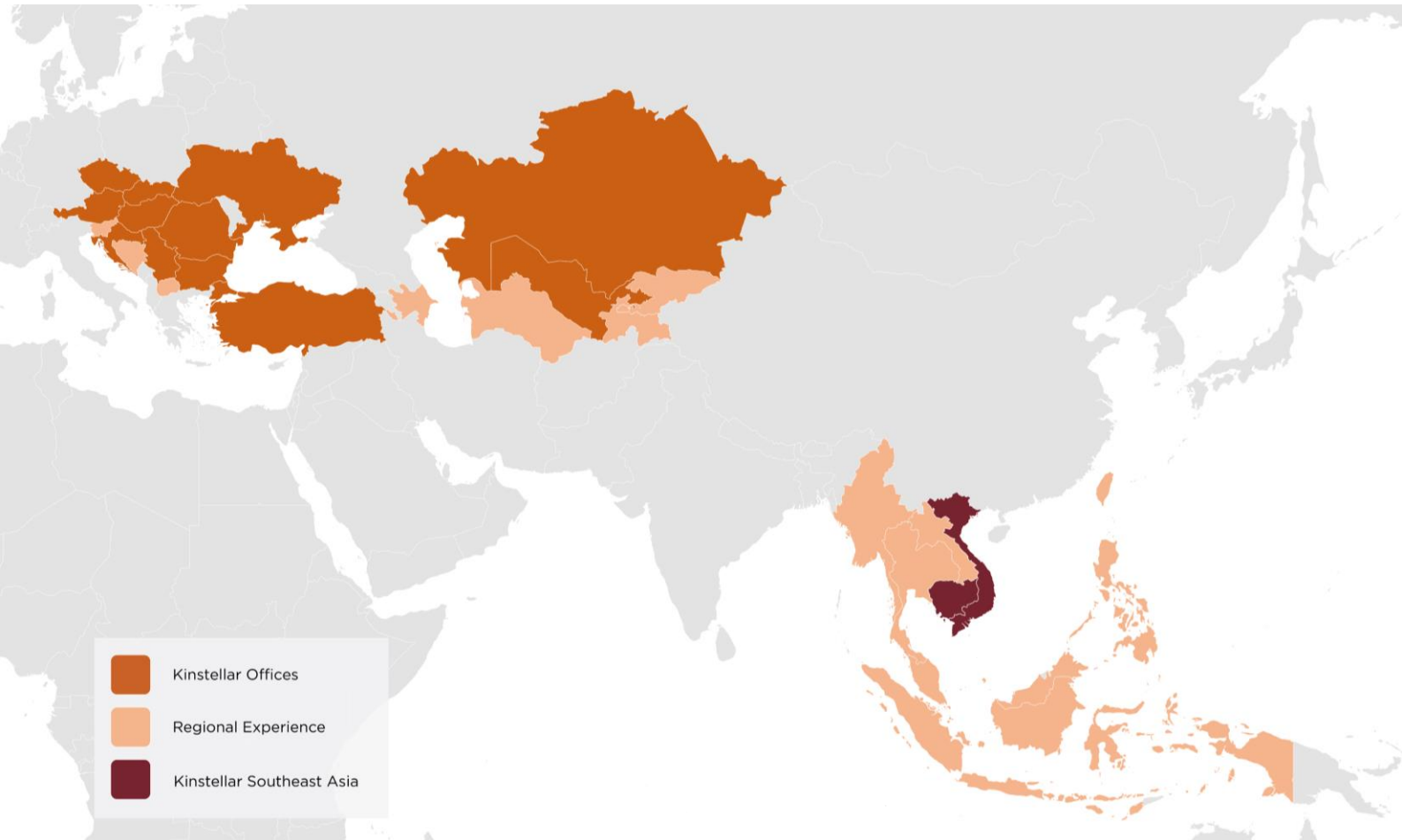

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AUSTRIA

Austria is one of the most decarbonised power markets in Europe. Renewables already cover roughly three-quarters of the country's electricity demand, mainly driven by hydropower but also by rapidly growing portfolios of onshore wind and photovoltaic energy. Austria's key strategic objective is to achieve 100% renewable electricity by 2030 and climate neutrality by 2040. This objective is anchored in the federal government's climate and energy strategy and is closely aligned with the EU Green Deal, the "Fit for 55" initiative, and the REPowerEU plan.

Electricity market reform

Austria's new Electricity Act (ElWG) is the main vehicle to implement at the national level the EU's electricity market-design reform, adopted by Regulation (EU) 2024/1106. Accordingly, it aims to decentralise renewable production, significantly upgrade the legal status of Battery Energy Storage Systems (BESS) and other storage systems, and modernise rules for grid access, congestion management, and system planning. Furthermore, it expands the framework for energy communities and introduces new concepts, e.g., peer-to-peer supply and clearer roles and obligations for professional organisers of energy-sharing schemes.

The Renewable Expansion Act (EAG) remains the core support framework for renewable electricity in Austria, providing market-premium support, investment grants, and rules for Guarantees of Origin (GOs) for wind, PV, hydro, and biomass. Most new plants therefore participate in tenders for sliding market premiums with technology-specific tenders for PV, biomass, and wind, while hydropower is largely supported by administratively determined premiums and investment subsidies. The EAG framework enables long-term power purchase agreements alongside subsidised programs, and market practice shows a growing PPA segment as companies seek price hedging and the procurement of green attributes in addition to GOs. For financiers, the co-existence of auction-backed market premiums, merchant volumes, and corporate PPAs is leading to more complex revenue-stacking and risk-allocation models, particularly for larger wind and PV portfolios.

The rise of Battery Energy Storage Systems

In Austria, energy storage facilities have historically been treated ambiguously, often classified either as generation or as final consumption, leading to exposure to grid-fee "double charging". This has constrained some stand-alone storage business models and complicated the co-location of BESS with renewables. The ElWG now recognises energy storage facilities as an independent asset class and allows all market participants to operate such facilities. However, it also clarifies that energy storage facilities should be treated as consumers or suppliers, depending on the direction of energy flow, and be subject to the corresponding rights and obligations. Consequently, the problem of double charging for grid fees remains. If an energy storage facility performs a system-related function, it exempt from grid-usage and grid-loss fees for 20 years from commissioning for the electrical energy that is stored.

Overall, even after the ElWG came into effect, the same investment challenges for energy storage facilities persist—particularly the grid tariff structure, technical grid connection rules, participation criteria for ancillary services markets, and the question of how storage will be treated in any future capacity mechanisms or grid-congestion management systems.

Natural gas

The natural gas sector remains a vital component of the national energy system in Austria, though recent years have seen a gradual decline in consumption due to increased energy efficiency measures, a shift toward renewables, and ongoing geopolitical challenges. Austria's gas market is liberalised, and several suppliers operate in a competitive environment under the supervision of the Austrian energy regulator, E-Control, and the Austrian trade authority. Trading is carried out transparently via the Central European Gas Hub (CEGH)—one of Europe's most important natural gas trading hubs.

Austria has extensive underground gas storage capacity in Haidach, Puchkirchen, and Auerbach, providing strong supply security and regional balancing functions. The total capacity exceeds 8 billion cubic meters, allowing Austria not only to cover domestic demand during peak periods but also to function as a strategic gas hub for Central and Eastern Europe. Following the reduction of Russian gas flows, Austria has diversified its supply routes via Germany, Italy, and Slovakia and actively participates in the EU's Vertical Gas Corridor initiative to improve North-South gas connectivity.

As part of Austria's commitment to achieving climate neutrality by 2040, the government is actively promoting the transition from fossil-based natural gas to green gases, particularly biomethane and green hydrogen. Several pilot projects are already underway to blend hydrogen into the natural gas grid and develop dedicated infrastructure for renewable gases.

Renewable Gas Act (EGG)

Austria's Renewable Gas Act (EGG) is a cornerstone but politically sensitive project intended to create binding green-gas quotas and promote domestic production of renewable gases such as biomethane and renewable hydrogen. A draft EGG envisaged increasing sales of domestically produced renewable gases on the Austrian gas market to 7.5 TWh by 2030 and imposed a quota requiring gas suppliers to source at least 9.75% of their gas from renewable resources. However, the draft bill was rejected in parliament, and its legislative future remains uncertain.

Hydrogen strategy

Austria is emerging as a frontrunner in Europe's hydrogen sector, aligning with the EU's broader energy transition goals. Austria's hydrogen strategy sets forth ambitious targets: by 2030, Austria aims to replace 80% of fossil-based hydrogen with climate-neutral alternatives in energy-intensive industries and to install 1 GW of electrolysis capacity to bolster domestic green hydrogen production. Looking ahead to 2040, projections estimate that Austria's hydrogen demand could reach between 67 TWh and 75 TWh annually, underscoring the anticipated central role of hydrogen in the country's energy landscape. The strategy prioritises hydrogen applications in sectors that are challenging to decarbonise, such as heavy industry (notably steel and chemicals), long-haul transport (including aviation and shipping), and energy storage for grid balancing. Conversely, the use of hydrogen for individual heating or light-duty vehicles is not a primary focus.

In 2024, the Hydrogen Promotion Act (WFöG) entered into force, establishing a support scheme with fixed premiums per kilogram of renewable hydrogen produced. The premiums are awarded via competitive auctions, and the scheme is backed by a total budget of approximately EUR 820 million and a support period of ten years per project. The first auction concluded in early 2024, with further auction rounds scheduled for 2026.

Carbon Border Adjustment Mechanism (CBAM) and interaction with ETS

The Carbon Border Adjustment Mechanism (CBAM), governed by Regulation (EU) 2023/956, entered its definitive phase on 1 January 2026, replacing the transitional reporting-only phase that began in October 2023. CBAM initially covers imports of cement, iron and steel, aluminium, fertilisers, electricity, and hydrogen, with a gradual extension to additional downstream products under evaluation until 2030. The Omnibus I package (Regulation (EU) 2025/2083), adopted in October 2025, introduces targeted simplifications and standard-value options to ease CBAM compliance ahead of the definitive phase, including revised calculation rules, broader use of default values, and streamlined reporting tools.

Austrian energy-intensive industries (e.g., steel, cement, fertilisers, aluminium) and energy-sector stakeholders will be affected by CBAM, as imported electricity from third countries without a comparable CO_2 pricing system will become more expensive due to the requirement to surrender CBAM certificates for the embedded emissions.

Carbon Capture Storage (CCS), Carbon Capture Utilisation and Storage (CCUS), Carbon Dioxide Removal (CDR)

Austria currently maintains a legal ban on CCS/CCUS and CDR under national law, which means that full implementation of Directive 2009/31/EC has not yet been achieved for domestic storage sites. This ban reflects long-standing political and societal concerns but is increasingly under scrutiny given the need to address hard-to-abate emissions and to meet climate-neutrality targets. The updated Austrian National Energy and Climate Plans, as well as the National Carbon Management Strategy, explicitly foresee lifting the storage ban and creating a basic legal framework for CCS/CCUS and CDR, including rules for capture, transport, and storage, and mechanisms to support these activities.

Geological assessments of Austrian oil and gas reservoirs identified a theoretical storage capacity of around 300 Mt CO_2 across 73 onshore reservoirs. Compared with large offshore saline aquifers elsewhere in Europe, these onshore Austrian sites are relatively small, but they benefit from existing infrastructure, detailed reservoir characterisation, and proximity to major emission sources.

Open issues that remain to be resolved include the transposition of the CCS Directive into Austrian mining law, liability and long-term stewardship, interaction with the EU ETS and CBAM, and the design of support schemes for capture, transport, and storage services.

Cybersecurity

The implementation of NIS 2 in Austria (NISG 2026) will significantly expand the number of covered energy undertakings and network operators and impose detailed cybersecurity risk-management, governance, and incident-notification duties aligned with Directive (EU) 2022/2555. For energy companies and grid operators, this includes mandatory technical and organisational security measures (e.g., network and access security, logging, vulnerability management, business continuity) and board-level responsibility, with enforcement via audits, corrective orders, and substantial administrative fines.

In parallel, Directive (EU) 2022/2557 requires Member States to identify "critical entities" in the energy sector (e.g., electricity, gas, oil, district heating, storage, LNG) and requires these entities to perform all-hazards risk assessments and implement proportionate physical and operational resilience measures, documented in resilience plans. Designated critical energy entities in Austria will also be subject to incident-reporting obligations for significant service disruptions and to ongoing supervisory oversight by the competent authorities. Directive (EU) 2022/2557 has been transposed into Austrian legislation by the Critical Infrastructure Resilience Act (RKEG).

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BULGARIA

Bulgaria's energy sector has historically been dominated by conventional sources such as coal, nuclear power and hydroelectric plants. In recent years, however, the country has begun a significant shift toward incorporating renewable energy sources into its electricity generation mix. This not only ensures a stable supply—Bulgaria has the most energy-intensive economy in Europe)—but also opens avenues for various trading opportunities, as Bulgaria is a net exporter of electricity.

The government intends to reduce its coal-fired power capacity and gradually replace it with renewable sources. During this transition, it plans to rely on nuclear power and natural gas to meet a significant portion of electricity demand. Nuclear power remains the backbone of the system, contributing around 40% of total energy generation. Solar has also expanded rapidly.

Bulgaria is increasingly positioning itself as a strategic hub for renewable energy investment in Southeastern Europe, driven by accelerated market reforms and large-scale clean-energy deployment.

Booming renewable energy

According to Eurostat, in the third quarter of 2025, 38.2% of Bulgaria's net electricity generation came from renewable energy sources, a more than 5.5% increase compared to the same quarter in 2024.

Bulgaria's solar industry is expanding rapidly, driven by strong investor interest in large-scale photovoltaic (PV) and battery storage projects. The market is led by ground-mounted, utility-scale installations, supported by active developers and improving access to project financing. In 2025, Bulgaria added 1.4 GW of new solar capacity—its third consecutive year above the 1 GW mark—bringing total installed solar capacity to nearly 6 GW. This momentum underscores the country's rising role in Eastern Europe's clean-energy transition, particularly in utility-scale and hybrid solar developments.

At the end of 2025, Bulgaria had a substantial pipeline of projects. Looking ahead to 2026–2034, investment plans and signed contracts indicate 23 GW of new capacity, including 21.5 GW of renewables. By 2034, renewable energy is expected to account for more than half of Bulgaria's gross electricity consumption.

To accommodate this new capacity, Bulgaria's transmission system operator, ESO, plans to continue its ongoing investment program, including nearly EUR 1 billion in planned investments over the next decade to modernise the grid and increase transmission capacity. A key initiative is the CARMEN project, which enhances cooperation along the EU's eastern border through both physical and digital improvements to energy infrastructure. By upgrading and digitalising targeted assets, the project strengthens cross-border connectivity and supports closer collaboration between Romania, Bulgaria, and neighbouring countries such as Hungary, Moldova, and Ukraine.

The rise of Battery Energy Storage Systems

Bulgaria is rapidly establishing itself as one of the EU's most dynamic markets for battery energy storage systems (BESS). According to SolarPower Europe, nearly 2,500 MWh of new storage capacity was installed in 2025, reflecting strong early momentum. Market growth is expected to accelerate further in 2026, driven primarily by substantial public funding instruments. The Ministry of Energy has launched two phases of the RESTORE program (National Infrastructure for the Storage of Electricity from Renewable Sources) under Bulgaria's National Recovery and Resilience Plan. Through this scheme, standalone BESS projects became eligible for direct financial support, with approximately 14,000 MWh of battery capacity planned for financing. In addition, the Ministry of Energy carried out two procedures for granting public aid to renewable energy projects co-located with storage, intended to support the deployment of around 3 GW of new renewable generation capacity together with approximately 1.2 GW of BESS.

A significant milestone for the sector is the launch of Bulgaria's first battery storage gigafactory, designated as a Strategic Project under the EU's Net-Zero Industry Act, marking an important step in developing domestic manufacturing capacity for the energy transition.

A key driver for the development of BESS is that operators are not only permitted to actively participate in wholesale electricity markets but also to provide ancillary services to the transmission system operator—including balancing and frequency regulation—thereby expanding revenue opportunities and enhancing system flexibility.

Against this backdrop, the continued development of BESS projects is expected to strengthen grid stability, reduce curtailment of renewable energy, and accelerate Bulgaria's transition toward a low-carbon energy system.

Nuclear on the way

Bulgaria operates a single nuclear power plant, Kozloduy—one of the largest in the region—supplying over one-third of the country's annual electricity generation. Building on this foundation, Bulgaria has initiated a major expansion with the development of Units 7 and 8—the country's first reactors based on Westinghouse's AP1000® Generation III+ technology—with a combined capacity of more than 2,000 MW. These units will also be the first AP1000 reactors deployed in Europe, marking a significant strategic shift in Bulgaria's long-term energy strategy.

To advance the project, in 2024 state-owned Kozloduy NPP – New Builds EAD signed engineering services contracts with Westinghouse and Hyundai Engineering & Construction covering site planning, licensing support, and initial project management activities.

Additionally, in 2025 Bulgaria appointed an Owner's Engineer—a consortium of BWX Technologies, Laurentis Energy Partners, and its subsidiary Canadian Nuclear Partners—to provide specialised technical advisory services and project-management oversight across all stages of the project.

The final schedule and total cost of the envisaged project depends on the Final Investment Decision (FID) and the conclusion of financing agreements with international financial institutions and strategic partners.

Overall, the expansion of Kozloduy marks one of Bulgaria's most significant energy infrastructure investments to date and is expected to play a central role in strengthening the country's long-term energy security and decarbonisation trajectory.

Data centre development

As an already well-established producer and net exporter of electricity, Bulgaria is well-positioned to attract energy-intensive, high-value industries such as smart factories, data centres, and AI hubs.

The area surrounding the Kozloduy Nuclear Power Plant has emerged as a particularly attractive location for largescale data centre investments due to several strategic advantages. These include direct proximity to a stable, clean baseload energy source, excellent existing fibre-optic connectivity, and access to Danube River water resources for cooling—all of which are critical for energy-intensive AI clusters. Beyond Kozloduy, the government is evaluating additional sites for data centre development, including reclaimed areas in the Maritsa Basin and locations adjacent to major 400 kV substations owned by the transmission system operator.

Taken together, Bulgaria's clean-energy capacity, nuclear expansion, fibre-optic penetration, and government support create a strong value proposition for largescale data centre clusters and AI-driven industries.

Advancing hydropower

In Bulgaria, the National Electric Company (NEK) operates 31 hydroelectric power plants (28 hydroelectric plants and three pumped-storage hydroelectric plants) and is advancing several new projects. One is the Turnu Măgurele–Nikopol Hydrotechnical Complex, a Romania-Bulgaria cross-border, run-of-the-river hydropower development recognised by the EU as a priority renewable initiative. It includes two hydropower plants, one on each side of the Danube, with a combined capacity of 840 MW (420 MW per country), and integrates navigation, flood control, and energy production.

Another major initiative includes the Batak and Dospat pumped-storage hydropower projects, developed by NEK with advisory support from the European Investment Bank (EIB). These involve two 800 MW pumped-storage plants in southwestern Bulgaria, providing a total of 1.6 GW of storage capacity and expected to enter operation around 2032.

Progress of the Guarantees of Origin market

Bulgaria has made significant progress toward establishing a modern and EU-aligned framework for Guarantees of Origin (GOs). The Sustainable Energy Development Agency (SEDA), the national issuing body for GOs, is an official member of the Association of Issuing Bodies (AIB). Following its membership approval, SEDA currently holds the status of "AIB member – Applicant of the Electricity Scheme Group", meaning that it is in the process of completing the requirements necessary to join the European Energy Certificate System (EECS). Once Scheme Membership is granted, Bulgaria will be able to connect to the AIB Hub, which will enable the import, issuance, and export of EECS-compliant GOs. This step is essential for cross-border GO transfers within the EU—an important enabler for multinational companies seeking credible renewable electricity through power purchase agreements (PPAs).

Separately, in 2025 the Independent Bulgarian Energy Exchange (IBEX) advanced the domestic GO market by launching an electronic trading platform for GOs in cooperation with SEDA. The platform allows market participants to initiate GO purchases and sales transactions backed by required collateral. This market introduces standardised rules and procedures, guaranteed delivery and payment, and transparent price formation through the publication of trading data. The launch supports Bulgaria's broader goals of developing a fully liberalised energy market and fostering the growth of renewable energy generation.

Fully operational Carbon Border Adjustment Mechanism (CBAM)

From 1 January 2026, Bulgaria, along with all EU Member States, enters the definitive CBAM regime, under which imports of electricity, aluminium, iron and steel, cement, fertilisers, and hydrogen will require the purchase of CBAM certificates. For Bulgarian companies, this means that carbon-intensive imports from third countries will no longer benefit from lower production costs associated with weaker climate regulations. While this mechanism may increase the cost of key raw materials, it is expected to strengthen commercial incentives for investment in clean energy, low-carbon production, and more sustainable supply chains. Businesses using greener inputs or partnering with low-emission suppliers will benefit from improved competitiveness as the new system takes hold.

Resilience in the energy sector – NIS2 Directive and CER Directive

Strengthening resilience in Bulgaria's energy sector will be primarily driven by the 2026 transposition of Directive (EU) 2022/2555 (the NIS2 Directive) into national law through the major amendments to the Cybersecurity Act adopted in February 2026. The revised Cybersecurity Act introduces a unified definition of cybersecurity, establishes a non-public central register of essential and important entities to be maintained by the Ministry of e-Government, and sets out mandatory cybersecurity trainings and strict incident-reporting obligations.

For the energy sector specifically, operators such as electricity producers, transmission and distribution system operators, and gas infrastructure operators fall within the scope of entities that may be designated as essential entities under the NIS2-aligned framework, depending on their size. The amendments introduce a strengthened supervisory and control mechanism, as well as significantly increased penalties for non-compliance, including the possibility of personal liability for members of management bodies.

In parallel, Bulgaria is in the process of transposing Directive (EU) 2022/2557 (CER Directive), which is aimed at strengthening the resilience of critical entities against a range of threats, including natural hazards and terrorist attacks. Once adopted, the framework will require Bulgaria to identify critical entities across sectors, including energy. Upon designation, these entities will be required to implement specific resilience measures.

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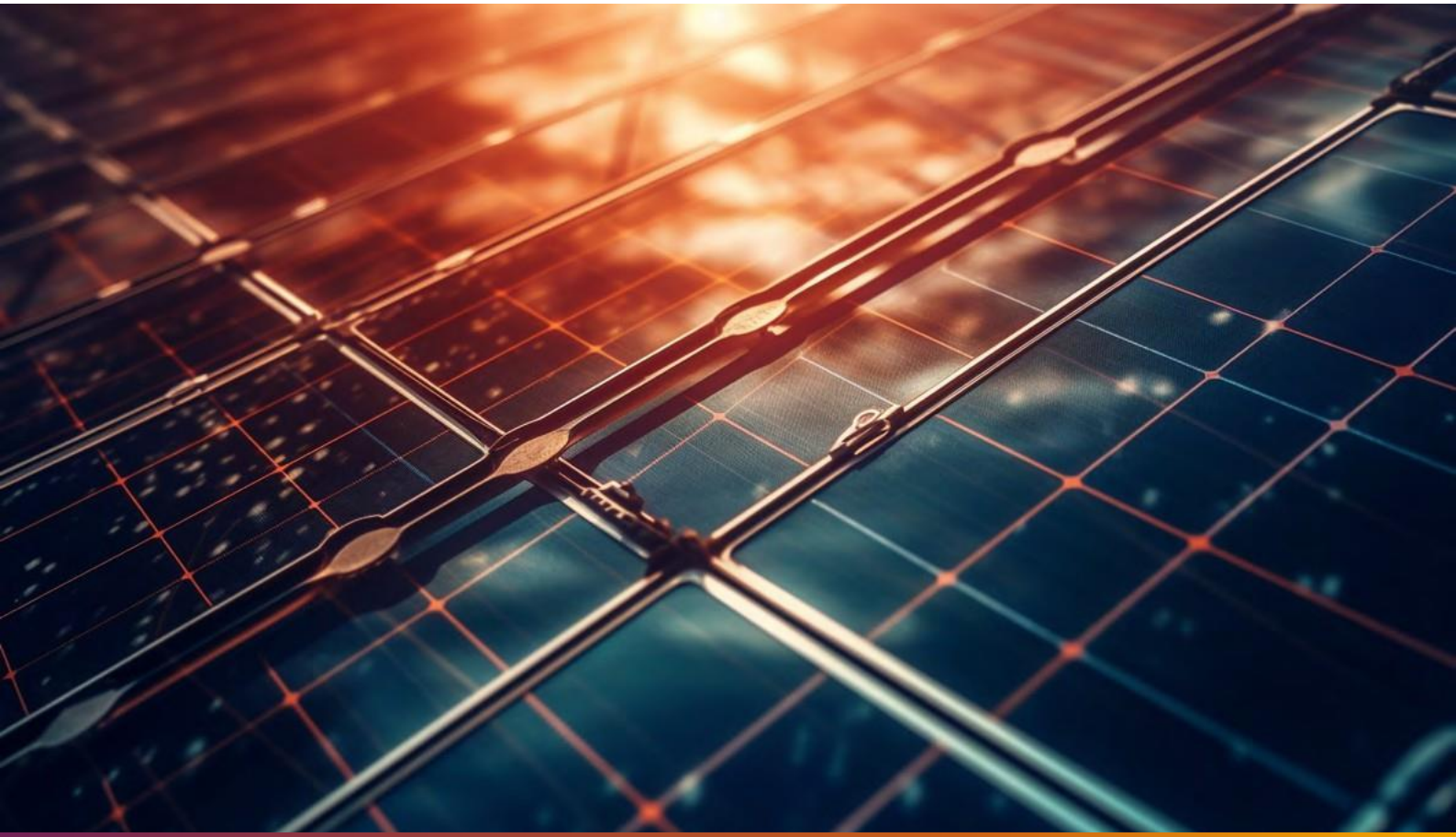


CROATIA

Croatia's energy market in 2026 is undergoing a significant transition, with a focus on strengthening its role within the European energy landscape. Historically reliant on hydropower, Croatia's geographic position at the crossroads of Central and Southeastern Europe offers significant potential to contribute to regional energy security and the EU's decarbonisation goals.

The updated Integrated National Energy and Climate Plan (March 2025) outlines a clear trajectory for Croatia's energy future, focusing on a balanced approach to renewable energy growth, infrastructure modernisation, and increased system flexibility. Croatia is working to align its energy market with EU regulatory frameworks, enhancing its integration within the broader European energy system.

With an above-average power score, Croatia has been ranked in BloombergNEF's 2025 Climatescope Index of the most attractive emerging markets for energy investments, taking ninth place among Emerging Markets and ranking third in Europe. Croatia's energy market in 2026 is characterised by structured renewable growth, infrastructure modernisation, and deepening European integration. The combination of competitive procurement, grid reinforcement, LNG diversification, and evolving flexibility mechanisms defines a system strengthening its strategic role within the European energy landscape.

Renewable growth anchored in market evolution

Croatia's renewable energy sector is entering a phase of significant development, supported by ambitious policies outlined in the updated National Energy and Climate Plan (NECP). With a clear focus on expanding renewable resources, solar photovoltaic (PV) capacity is set to more than triple by 2030, marking a major step in the country's energy transition.

In 2025, Croatia introduced legislative amendments, replacing net-metering with net-billing for self-consumption installations. This shift aligns energy generation with wholesale market price signals, improving transparency, and creating a more market-driven approach to distributed generation. Administrative processes for smaller renewable projects have also been streamlined to accelerate deployment.

At the utility scale, Croatia continues to support renewables through competitive market premium auctions managed by the Croatian Energy Market Operator (HROTE). The latest auction allocated over 400 MW of PV capacity, demonstrating strong investor interest and reinforcing the move toward a competitive, auction-based support system in line with EU state aid principles. The auction design emphasises project maturity and delivery capabilities, ensuring that only well-prepared projects are selected.

Revenue models are diversifying, with developers combining market premiums, wholesale exposure, and corporate Power Purchase Agreements (PPAs) to secure stable revenue streams. Corporate PPAs, especially in industries like telecommunications, are supported by the Croatian Guarantees of Origin registry, enabling cross-border certificate trading within the European AIB system.

Wind energy remains a key part of Croatia's long-term energy strategy, although project timelines are often tied to spatial planning and environmental approval processes. While solar energy has advanced more quickly, both technologies will play an important role in achieving a balanced and sustainable energy future for Croatia.

Grid development and connection framework

Grid capacity has become a central variable in renewable deployment. Under the Electricity Market Act, HOPS, Croatia's national electricity transmission system operator, prepares ten-year transmission development plans subject to oversight by HERA, the national energy regulator. Recent approval dynamics have highlighted the importance of coordination between generation growth and network reinforcement. However, challenges in the grid connection process persist. The high costs associated with the creation of technical conditions for connection (STUM) have added substantial expenses to renewable projects, increasing project costs by up to 40% in some cases.

At the distribution level, HEP ODS, Croatia's national electricity distribution system operator, is implementing reinforcement programs and digitalisation measures, including smart metering rollout, to integrate increasing volumes of distributed generation.

The system is evolving toward more coordinated capacity planning, where infrastructure development and renewable expansion advance in parallel. Network modernisation is no longer reactive but increasingly aligned with decarbonisation objectives. However, the ongoing high costs and regulatory hurdles present significant barriers to project bankability, threatening to delay the realisation of Croatia's renewable energy goals unless addressed.

Storage and System Flexibility

Rising solar penetration has reshaped the operational profile of the Croatian power system. Hydropower provides a strong flexibility backbone, but additional balancing solutions are gaining prominence.

Battery Energy Storage Systems are entering practical deployment discussions at both the distribution and transmission levels.

HEP ODS has indicated progress in establishing technical frameworks for battery integration, while HOPS continues incorporating flexibility into system planning and balancing arrangements. Although a dedicated storage capacity market has not been introduced, balancing and ancillary service structures are gradually defining participation pathways for flexible assets. Storage is increasingly considered in hybrid configurations alongside renewable projects.

Pumped storage hydro is also re-emerging in strategic discussions, reflecting Croatia's geographical and hydrological advantages. Flexibility is therefore becoming an operational layer of the system rather than a policy aspiration.

Gas infrastructure and regional role

Gas remains an important component of Croatia's energy architecture. The expansion of the Krk LNG terminal to approximately 6.1 bcm per year has strengthened Croatia's position as a regional diversification gateway.

Transmission upgrades led by Plinacro, including the Zlobin–Bosiljevo corridor and enhanced interconnections toward Slovenia and Hungary, increase cross-border capacity and reinforce regional integration. These projects benefit from EU support mechanisms and operate under a regulatory framework aligned with EU network codes.

While long-term decarbonisation will shape future demand patterns, current infrastructure development enhances supply resilience across the wider region.

Emerging demand: digital infrastructure and electrification

New data centre projects, including announced high-capacity facilities, are reshaping Croatia's demand profile. These installations require reliable and increasingly low-carbon electricity supply, strengthening the commercial case for long-term renewable sourcing.
Electrification trends across the industry further amplify this dynamic. As EU carbon pricing mechanisms such as CBAM gain financial significance, renewable electricity procurement becomes an economic consideration for export-oriented manufacturers.

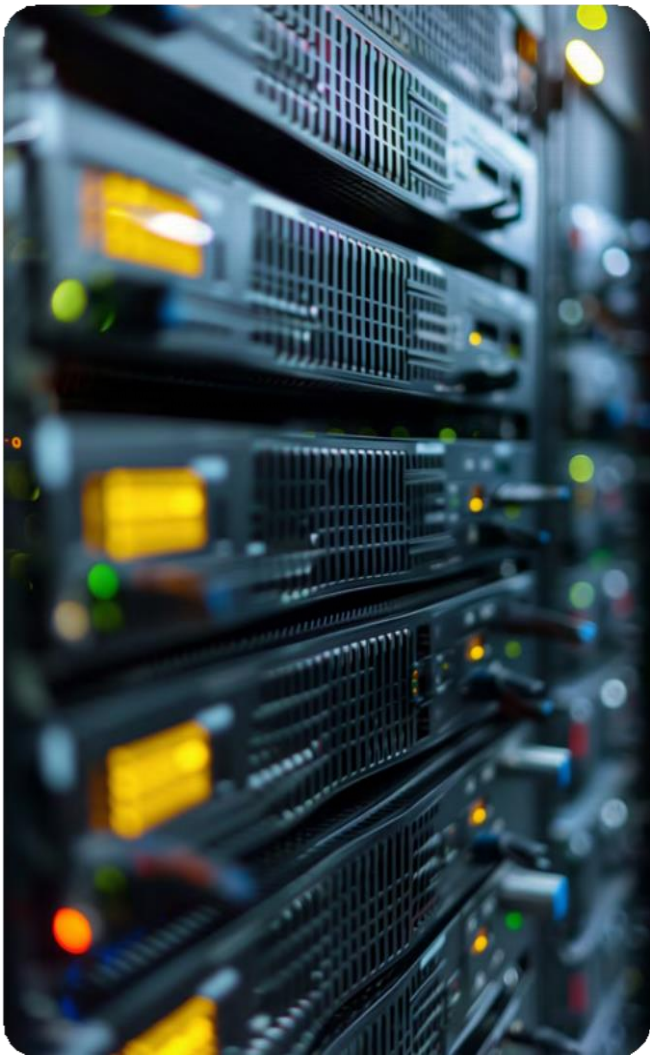
The interaction between renewable growth, grid reinforcement, and industrial electrification reflects deeper integration between energy infrastructure and economic development.

Guarantees of Origin and market transparency

Croatia's Guarantees of Origin (GO) framework, administered under the Renewable Energy Act by HROTE, the national energy market operator, is fully aligned with EU Renewable Energy Directive requirements. The registry operates within the Association of Issuing Bodies system, enabling interoperability across European markets.

GOs have become commercially significant alongside corporate sustainability reporting and carbon accountability requirements. Renewable producers monetise environmental attributes, while offtakers use certificates to substantiate renewable sourcing claims.

The certificate market adds depth to project revenue structures and reinforces Croatia's integration within the European renewable value chain.



Nuclear participation and regional stability

Croatia's co-ownership of the Krško Nuclear Power Plant in Slovenia provides a stable baseload contribution to the national electricity mix. Regional discussions regarding potential expansion remain relevant to long-term planning, although near-term capacity growth is concentrated in renewables and system flexibility.

There have also been rumors and preliminary surveys suggesting that Croatia may explore the possibility of constructing a new nuclear power plant in the future, potentially leveraging small modular reactor (SMR) technology. While no formal plans have been confirmed, this reflects ongoing considerations around nuclear energy's role in enhancing energy security and achieving decarbonisation goals.

Regulatory resilience: NIS2, CER and CBAM

Croatia's energy sector operates within an evolving EU regulatory environment focused on resilience and carbon accountability. The NIS2 Directive introduces enhanced cybersecurity governance obligations for essential energy entities, embedding digital risk management and board-level responsibility within operational frameworks.

The CER Directive complements this by requiring structured resilience planning for critical infrastructure, including risk assessments addressing climate-related and security threats.

The Carbon Border Adjustment Mechanism, entering its definitive phase in 2026, adds a carbon cost dimension to certain imports into the EU. Although it does not directly regulate energy producers, it influences Croatian industry by incentivising low-carbon electricity sourcing. Renewable PPAs and GO-backed procurement are therefore gaining additional economic relevance.

Together, these instruments strengthen infrastructure resilience, enhance transparency, and support decarbonisation objectives.

Hydrogen development pathway

Croatia's Hydrogen Strategy to 2050 provides a long-term framework for integrating renewable hydrogen into industrial and transport sectors. Current activity remains at the pilot and preparatory stages, often supported through EU programs.

Croatia's hydrogen's potential is linked to renewable expansion and existing gas infrastructure, which may offer future integration pathways subject to EU regulatory harmonisation.

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CZECH REPUBLIC

The Czech Republic is strategically positioned as a key player in the Central European energy market, as characterised by its diverse energy resources and robust electricity networks and regulatory framework. With a balanced energy mix that includes nuclear, renewable, and fossil fuels, the Czech Republic offers significant opportunities for international investors and businesses in the energy sector. According to the latest reports, the country ranks favourably in terms of investment attractiveness within the region.

Renewable energy

The Czech Republic is aiming to make substantial progress in its transition toward renewable energy sources, particularly in wind and solar power. In its updated National Energy and Climate Plan (NECP), the government has set ambitious targets to increase the share of renewables in gross final energy consumption to 30% by 2030. Recent initiatives include a series of auctions for solar and wind projects. Wind energy is expected to see a slow but steady revival, supported by the introduction of acceleration zones planned for 2026.

The current geopolitical climate has heightened the urgency for energy independence and sustainability, making this an opportune moment for investment in the Czech Republic's renewable sector. Recent regulatory reforms—particularly the Lex OZE III package, which took effect in mid-2025—aim to attract foreign capital and enhance project viability. Key measures include:

- streamlined permitting and the designation of specific "accel-eration zones" to bypass administrative hurdles for strategic projects (the government is due to decide on the location of such zones in the coming weeks);
- a new legal framework for energy storage and aggregation, allowing stand-alone battery systems and flexibility services to participate fully in the market;
- the expansion of community energy and agri-PV, enabling the dual use of agricultural land and facilitating electricity sharing among citizens, municipalities, and local energy com-munities.

As one of the more attractive markets in Central Europe, the Czech Republic is witnessing a surge in investments aimed at expanding its renewable generation capacity. However, challenges such as grid capacity constraints and the need for massive investment in distribution infrastructure remain critical to fully realise this potential. Notable players actively investing in this space include ČEZ Group, E.ON, Innogy (MVM), Pražská energetika, and an increasing number of specialised infrastructure funds focusing on large-scale battery storage.

Hydrogen

The hydrogen sector in the Czech Republic is emerging as a relatively small but increasingly important component of the country's overall energy strategy. The government recognises hydrogen's potential as a low-emission energy carrier and supports its development, in particular through the Updated Hydrogen Strategy of the Czech Republic (2024). Current initiatives focus on research and development, pilot projects, and the gradual establishment of so-called "hydrogen valleys". The primary emphasis is on renewable ("green") hydrogen applications in transport and energy-intensive industries (such as steel and chemicals).

At the EU level, the Gas and Hydrogen Decarbonisation Package provides a framework for the future regulation of hydrogen infrastructure and markets. This framework is now being transposed into Czech law, and a comprehensive national regulatory regime for hydrogen networks—including issues such as third-party access—is still under development. One of the strategic ambitions is to leverage the Czech Republic's geographical position for potential hydrogen transit within Central Europe, while simultaneously supporting domestic decarbonisation goals.

In this context:

- TSO level: Plans are being developed to repurpose parts of the existing high-capacity gas transmission infrastructure for hydrogen transport, in particular within broader European initiatives such as the European Hydrogen Backbone and the Central European Hydrogen Corridor.
- DSO level: Distribution system operators are gradually assessing and enhancing the "hydrogen readiness" of their net-works. Pilot projects are underway to test hydrogen blending in natural gas infrastructure under controlled conditions and in limited concentrations.

Key players in this sector include NET4GAS (transmission system operator) and GasNet (the largest distribution system operator), as well as industrial groups such as ORLEN Unipetrol and ČEZ Group.

Battery Energy Storage Systems (BESS)

Demand for Battery Energy Storage Systems (BESS) in the Czech Republic is increasing, driven by the growing integration of renewable energy sources into the grid and the need for greater system flexibility and balancing capacity. The market is still developing but has gained momentum in recent years. This progress follows the adoption and gradual implementation of the Lex OZE III amendment (2024), which introduced electricity storage as a distinct regulated activity and contributed to clarifying the legal and regulatory framework for its operation. The amendment has also facilitated the connection and operation of stand-alone battery systems, although certain regulatory and technical aspects continue to evolve.

As new renewable projects come online and balancing needs increase, investors are actively pursuing both standalone BESS projects and those integrated with renewable generation facilities. At the same time, the Czech regulatory framework is gradually enabling the development of flexibility aggregation.

In parallel, the Electricity Data Centre (EDC) is being rolled out in phases and is expected to play an important role in data management and market integration.

Battery storage operators are increasingly able to participate in ancillary services markets, subject to compliance with applicable technical and regulatory requirements, including certification by the transmission system operator. Key players in this sector include ČEZ Group, E.ON, and SUAS Group.

Nuclear

Nuclear power remains a cornerstone of the Czech Republic's energy strategy, providing approximately 40% of the nation's electricity. The government is fully committed to expanding nuclear capacity. Following a landmark decision in 2024 and the signing of the EPC contract in June 2025, the South Korean firm KHNP has begun preparatory works for two new units at the Dukovany NPP site. In addition, the government is expected to decide by the end of 2026 on whether to activate an option for two additional units at Temelín NPP. This initiative aims to bolster energy security and position the country as a leader in low-carbon electricity generation within Europe.

The Czech Republic's focus on nuclear technology includes exploring innovative solutions such as Small Modular Reactors (SMRs). In late 2024, the state-controlled utility ČEZ took a 20% equity stake in Rolls-Royce SMR, designating the Temelín site for the country's first SMR deployment in the mid-2030s. The Czech Republic also leverages its strong industrial manufacturing base, with companies like Doosan Škoda Power and Škoda JS playing increasingly important roles in the global and domestic supply chain for both large-scale and modular reactors.

Key players involved in this sector include ČEZ Group, the Korean firm KHNP, and the British firm Rolls-Royce SMR.

Subsidies

Various programs supporting the implementation of climate-protection policies and energy targets are helping to make returns on investment for the construction of new renewable energy projects more feasible. Several government subsidy programs are available to assist with capital expenditures for developing photovoltaic, wind, and hydrogen projects. The most significant of these is the Modernisation Fund, a support scheme that helps EU Member States advance their transition to climate neutrality. It provides financing for the modernisation of energy systems and the improvement of energy efficiency, using resources generated primarily from the EU Emissions Trading System (EU ETS).

As of early 2026, approximately EUR 8 billion–EUR 10 billion has been allocated or earmarked across various calls. Several programs operate under this scheme in the Czech Republic, including RES+ (new renewable sources), HEAT (modernisation of heating systems), and ENERGov (energy efficiency in public buildings). A significant portion of the funding is allocated to the RES+ program. Support is typically provided as a combination of investment grants and, in some cases, low-interest loans, and cove a portion of eligible costs depending on the specific call and size of the enterprise. For projects built prior to 2013, support continues to be provided through the legacy system of feed-in tariffs and green bonuses, governed by the Price Decisions of the Energy Regulatory Office.

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HUNGARY

The Hungarian energy market is undergoing a transition similar to those seen in other European countries. The expansion of renewable capacities has created congestion on the public grid, making it increasingly difficult to obtain new network connection capacity. While the transactional appetite for renewables in Hungary has declined, many infrastructure projects remain ongoing or are in the pipeline, such as two new CCGT power plants (Tisza and Mátra) or the developments around Liszt Ferenc International Airport. There is significant interest in BESS (battery storage) projects, with the co-location structure the preferred development model. An increasing number of wholesale energy traders have appeared on the Hungarian market, likely linked to the Hungarian Power Exchange ("HUPX") becoming a major European hub and the increased attractiveness of natural gas trading among investors amid current geopolitical tensions.

Capacity auction procedure

Electricity producers seeking to connect to the high- or medium-voltage network are entitled to obtain connection rights via a tender procedure, which must be held at least every 24 months. The Hungarian Energy and Public Utility Regulatory Authority ("HEPURA") announces the tender procedure following a request from the competent minister, which specifies the total available capacity to be tendered (broken down by network node and technology), the earliest connection date, and the latest date for announcing the results of the tender. The producer is not only entitled but also obliged to use the network access granted under the results of the tender procedure.

The detailed rules of the tender procedure are set out in a decree of the Energy Ministry. The tender and its conditions are subject to the decision of the minister responsible for energy. During the tender procedure, bidders must provide a tender security and, if declared the successful bidder, a performance security. The minimum amount of these securities are determined by HEPURA in the call for tenders, based on uniform, non-discriminatory principles for all technologies. The minimum amount of the security may vary, depending on the type of technology.

The winner of the tender procedure is both entitled and obliged to commission the power plant resulting from the new investment and to launch commercial operations within a specified period of time. The conditions for exemption from this obligation are set out in the tender notice.

The successful bidder is obliged to provide the performance guarantee in accordance with the tender notice within 15 days of receipt of HEPURA's decision on the award; if not, the successful bidder forfeits the connection right, and HEPURA becomes entitled to draw down the tender security.

Based on our latest information, a new tender is expected to be announced in the first quarter of 2026, and the fee to purchase the tender documentation has already been published.

Battery Storage System interest

Interest in Battery Energy Storage Systems ("BESS") is growing in Hungary, similar to the trend in other European countries. The shift to this new technology is supported by recent legislative amendments, such as the decrees on feed-in-tariff ("FiT") and contract for difference ("CfD") and updates to the Hungarian Electricity Act. In addition, the network code of the transmission system operator (MAVIR Zrt.) and the distribution codes of the distribution system operators have also been updated to reflect these technological changes.

Though there is an increasing interest in BESS, such projects are either in the development phase or only planned. This lack of operational examples results in uncertainties regarding ongoing projects. Independent BESS projects are relatively rare, as the co-location structure is preferred by both lawmakers and developers.

The Jedlik Ányos Energy Program, announced in autumn 2025, promises to be a major milestone in Hungary's energy transition. This HUF 440 billion (approximately EUR 1.5 billion) support package, launched at the government's initiative, aims to strengthen Hungary's energy independence and the wider integration of renewable energy sources in line with energy-efficiency objectives. Ten calls for proposals are expected to be launched for companies under the program, including for the modernisation of district heating systems, biomethane and biogas production, energy efficiency measures, energy storage installation, energy research and development, and geothermal energy. There is a separate new state subsidy under the Jedlik Ányos Energy Program for BESS projects that provides a subsidy for enterprises between HUF 10 million (approx. EUR 26,000) and HUF 1 billion (approx. EUR 2.6 million) for each applicant. The total amount of support available under the BESS subsidy is HUF 50 billion (approx. EUR 130 million), of which HUF 25 billion (approx. EUR 65 million) is earmarked for micro, small, and medium-sized enterprises. Projects implemented through successful applications are expected to ensure that Hungary reaches its target of 1 gigawatt of storage capacity by 2030.

Co-location under the Hungarian Electricity Act becomes more mature

Under the Hungarian Electricity Act, different entities may use the same connection point and production cable, provided they conclude a co-location agreement as specified under the law. This structure enables different entities (not limited to renewable energy producers) to cooperate in circumstances where it is difficult to obtain a network connection right, while also benefitting the party that holds the right to the connection point, as it provides balancing for weather-dependent power plants.

The co-location structure works similarly to joint ownership, i.e., the parties involved in a co-location arrangement (e.g., a PV power plant owner and a BESS owner) use the production cable and the connection point simultaneously. To this end, the key

document of the cooperation of the parties, beyond the respective network agreements, is the co-location agreement.

The minimum content of the co-location agreement is set out in the legislation; however, there is limited practical experience with the co-location structure and its operation. Therefore, it is a significant achievement in the Hungarian market that, at HEPURA's informal request, the Hungarian Renewable Energy Association drafted a template co-location agreement. The aim is to facilitate the wider adoption of the co-location structure, ensure the security of supply and grid balancing, and support an equitable framework for market players cooperating in such a structure. Kinstellar is proud to have contributed to finalise the template co-location agreement, together with other law firms, in association with the Hungarian Renewable Energy Association.

New CCGT power plants

MVM Group is developing two major CCGT power plants in Hungary: a 500 MW CCGT plant in northeast Hungary (Mátra) and a 1,000 MW CCGT plant in Tiszaújváros (Tisza). Kinstellar is the lead legal advisor on both projects.

The Mátra CCGT plant will replace an aging, inefficient lignite-fired power plant, contributing to the country's efforts to reduce emissions and improve energy efficiency. The new facility will support Hungary's renewable energy deployment by providing a more reliable, low-emission energy source. A consortium consisting of Elsewedy Electric, West Hungária Bau, and Status KPRIA won the public procurement tender in 2025. According to publicly available information, the new plant will provide around 2–2.5 terawatt-hours (TWh) of electricity to the Hungarian electricity system annually. The plant will have a minimum service life of 25 years.

The Tisza CCGT plant will also strengthen Hungary's electricity grid, supporting the integration of renewable energy while maintaining supply security. A two-member consortium—the Italian energy giant Ansaldo Energia and Turkish Calik Holding—won the tender for the construction of the new power plant and the long-term maintenance of the gas turbines in Tiszaújváros. Together, the two projects are essential to Hungary's energy transition and sustainable energy goals.

The significance of these developments extends beyond their size and technical complexity. They are the largest power plant development projects in Hungary in more than a decade and represent crucial steps in the country's efforts to modernise its energy infrastructure and reduce its carbon footprint. The projects demonstrate a commitment to advancing Hungary's energy security while transitioning to a greener, more sustainable energy system.

Budapest as larger trading hub

After almost a decade of discussion and negotiations between the involved parties and the main stakeholders, Project BlueSky has become reality. The Hungarian Power Exchange (HUPX), together with the Hungarian Transmission System Operator (MAVIR), has joined ADEX Group—a leading regional power exchange serving Central and South-Eastern Europe (CSEE).

ADEX Group is the first regional Energy Exchange for Central and South-Eastern Europe. Before the transaction, its founding members—ELES (Slovenia), EPS (Serbia), and EPEX SPOT (France)—operated two wholly owned subsidiaries: BSP and SEEPEX. Following the closing of the transaction in December 2024, ADEX Group also became the sole shareholder of HUPX. As a result, the shareholders of ADEX Group are now MAVIR, ELES, EPS, and EPEX SPOT, and it is designed and open for other partners to join. This transaction marks a significant milestone in strengthening and expanding the reach of Adex Group within the region. It also fosters the energy transition and consolidation of fragmented markets and serves as a facilitator to rollout pan-European Market Coupling in the future.

It appears that many new market players, primarily energy traders, have become aware of the above transaction and are showing strong interest in joining HUPX. Following the transaction, HUPX's membership has increased significantly, a trend that can also be linked to HUPX's launch of its Guarantees of Origin (GO) market in 2022.

Hungarian-American cooperation – small modular reactors

On 16 February 2026, U.S. Secretary of State Marco Rubio and Hungarian Prime Minister Viktor Orbán signed the U.S.-Hungary Civil Nuclear Intergovernmental Agreement, establishing a framework for long-term bilateral cooperation in civilian nuclear energy. The agreement is intended to facilitate the deployment of advanced U.S. nuclear technologies in Hungary, with a particular emphasis on small modular reactors (SMRs). According to the U.S. State Department, the partnership represents a concrete step toward constructing nuclear power plants in Central Europe using U.S. technology and advances mutual security interests in the region. The agreement further underscores the United States' commitment to positioning Hungary as a regional hub for SMR development.

During bilateral meetings, Secretary Rubio encouraged Hungary to select U.S.-designed SMR technology and confirmed that Florida-based Holtec International stands ready to supply its dry cask spent fuel storage systems for use in Hungary, thus also extending the partnership on spent-fuel storage. The partnership aligns with Hungary's broader strategy to enhance long-term energy security and maintain competitively priced energy for households and industry. While Hungary continues to rely significantly on Russian oil and gas imports, the February 2026 agreement marks a strategic shift toward deeper U.S.-Hungarian nuclear cooperation and lays the groundwork for decades of collaboration in the development, deployment, and support of advanced civilian nuclear infrastructure.

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KAZAKHSTAN

Over the past decade, Kazakhstan's economy has undergone significant transformations across multiple sectors—including energy and natural resources—and this momentum is expected to continue in the coming years. These developments include substantial regulatory reforms, including: the adoption of the Subsoil and Subsoil Use Code introducing the "first come, first served" principle for solid minerals; the new Ecological Code strengthening environmental control and compliance obligations; the forthcoming Construction Code aimed at improving regulatory efficiency in the construction sector; and the Digital Code, reflecting the shift toward a digital environment. The power balancing market now operates in real time to ensure more accurate financial regulation of imbalances. Green energy and renewable projects remain a priority; however, the national power deficit continues to pose risks, requiring further investment to modernise existing facilities and construct new generation assets.

Electricity & nuclear

The energy sector remains essential for Kazakhstan's economic development. At the same time, the government acknowledges a growing capacity deficit caused by insufficient generation and a high incident rate across the grid. In 2026, the market may face a critical capacity shortage and significant infrastructure deterioration, with average equipment wear at approximately 61%. To address these challenges, the "Tariff for Investment" mechanism is actively used to support the modernisation of existing power plants. Sector priorities include digitalisation, the implementation of smart grid technologies, and optimisation of distribution processes. Investments in flexible gas-fired generation and large-scale renewable projects remain crucial for maintaining the country's energy balance. These developments may require further adjustments to the regulatory framework. Of note, Kazakhstan is advancing preparations for constructing its first nuclear power plant following the 2024 national referendum, with government approvals in 2025–2026 confirming the project roadmap. The development of nuclear generation is considered essential for meeting rising electricity demand and reducing reliance on coal.

Oil and gas generally

Kazakhstan's oil and gas sector continues to focus on expanding its resource base and completing major development and expansion projects. Growth in gas production is expected following the commissioning of the gas processing plant related to Kashagan field, while oil ouput will be supported by the Tengiz expansion project. However, export constraints affected by geopolitical factors may require Kazakhstan to revise its production plans for 2026. Exploration remains a significant area of investment, as confirmed by Shell's recent entry into new geological exploration activities in western Kazakhstan. The petrochemical industry is also expected to demonstrate notable growth, supported by a forthcoming specialised law designed to attract investment through improved regulatory mechanisms and targeted state support. Particular emphasis is placed on deep-processing facilities capable of producing polymers and other chemical products for export.

More on gas

The gas industry is undergoing a structural transition aimed at balancing domestic needs with export obligations. Addressing potential gas shortages remains a priority, and expanding the commercial gas resource base is considered essential. Investments are directed toward large infrastructure projects, including new gas processing plants and pipeline construction. Modernisation efforts involve applying digital technologies and AI-based monitoring systems for regional gas distribution networks. In 2026, the sector may move toward more market-based pricing and increased processing capacity, supporting the national objective of gradually transitioning from coal to cleaner energy sources.

Mining

The mining sector is expected to remain a key driver of economic growth through the development of advanced raw material pro-cessing. Kazakhstan aims to strengthen its leading position in the uranium market and accelerate the development of critical minerals such as lithium and rare earth elements. The objective is deeper inte-gration into global green-energy supply chains. Regulatory reforms, including amendments to the Subsoil and Subsoil Use Code, focus on further digitalisation through a unified electronic platform and provide preferential access for investors committed to establishing local manufacturing facilities. While the new Tax Code introduces a higher VAT rate, it also incentivises exploration by allowing tax deductions for unsuccessful exploration expenditures. The sector maintains a positive outlook due to record gold prices and an an-ticipated global copper shortage, both of which support favourable market conditions.

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ROMANIA

The Romanian energy market is undergoing significant transformation, driven by several key trends, including increased price volatility and structurally higher electricity costs for end consumers, against the backdrop of ongoing geopolitical developments. The increasing occurrence of price spikes underscores the urgent need to accelerate renewable energy deployment, while also highlighting the importance of enhanced system flexibility and infrastructure upgrades. At the same time, geopolitical developments—from political elections to European Commission reforms—are adding further complexity to Romania's energy market outlook.

Despite the challenges, Romania is emerging as a key contributor to Europe's energy security, sustainability, and market integration. Supported by ambitious energy projects and a strong focus on diversification, Romania is playing an increasingly prominent role in the European energy transition.

Romania improved its position in BloombergNEF's 2025 Climatescope Index of the most attractive emerging markets for energy investments, rising from 5th to 2nd place among Emerging Markets and ranking 1st in Europe.

Romania's transition to renewable energy

Romania is advancing its development of its renewable energy sector. In the past two years, several regulatory reforms have been adopted to incentivize private investment and streamline permitting procedures, thereby enhancing the attractiveness of Romania's green energy sector.

In 2026, Romania is transitioning to a competitive, auction-based allocation of grid connection capacity for new generation and energy storage facilities of 5 MW and above. This development is driven by the competitive allocation mechanism, which is designed to curb speculative projects and prevent the inefficient blocking of grid connection capacity.

This mechanism represents a fundamental shift in Romania's approach to grid capacity allocation, prioritizing financial commitment and market-based pricing over the "first come first served" principle. This regulatory framework also regulates a series of measures to ensure that participation is limited to non-speculative, well-substantiated projects, most notably by introducing financial guarantees as a prerequisite for participating in the tender procedure. The effectiveness of this approach will ultimately depend on its practical implementation and on whether it achieves an appropriate balance between deterring speculative behaviour and enabling legitimate renewable energy development.

At the same time, uncertainty remains as to whether the auction-based capacity allocation mechanism will be implemented according to the revised timeline, according to which the auctions are scheduled to start as of 30 October 2026.

Furthermore, Romania's participation in the Green Energy Corridor (a partnership with Azerbaijan, Georgia, and Hungary) is expected to facilitate the transport of renewable energy from the Black Sea to Europe. This project will help to strengthen national and regional energy security, diversify energy supply sources, increase renewable energy production potential, and increase the share of renewable energy in the energy mix.

Battery storage gains momentum

With renewable energy projects entering a more advanced phase, the market's focus is increasingly shifting toward battery energy storage systems (BESS).

The attractiveness of BESS investments in Romania is primarily driven by a structural imbalance in its electricity generation mix. While over 60% of the electricity is generated from clean energy sources, a significant and growing share originates from intermittent sources such as wind and solar, whose output is inherently variable. The system's swing capacity remains predominantly reliant on fossil fuel-fired plants - primarily gas and coal - due to the lack of sufficient flexible balancing assets, particularly large-scale battery storage. This imbalance results in high price volatility, with low prices during periods of high renewable output and high prices during peak periods, when Romania often fails to cover consumption needs with domestic production, necessitating imports of more expensive energy. Thus, BESS has moved from being a supporting technology to becoming essential.

In addition, Romania's ancillary service markets further enhance the BESS investment case through stacked revenue streams. Balancing services, including aFRR, FCR, and mFRR, represent the primary revenue source, with energy arbitrage on the day-ahead and intraday markets contributing an additional revenue. As grid flexibility needs intensify with rising renewable penetration, additional revenue opportunities from congestion management, voltage control, and reactive power services are expected to develop further.

A key additional driver for BESS development has been the regulatory change that led to the removal of double taxation on stored electricity. Under the new rules, electricity stored and subsequently reinjected into the grid is exempt from several tariffs, eliminating significant financial barrier for investors.

Another important shift is the growing interest in optimization agreements and tolling agreements, which are becoming essential for managing revenue volatility and operational risk. For battery storage operators, tolling agreements are a quicker route to market with lower upfront capital requirements, whilst guaranteed payments help secure project financing and provide stable returns for asset owners. On the other hand, transferring control to experienced trading specialists through optimisation agreements can offer more sophisticated market participation and improved asset performance.

Overall, these developments show that battery storage is surely becoming a central part of Romania's future energy system. As the market continues to mature, BESS is expected to play an even greater role in stabilizing the grid infrastructure and supporting the energy transition.

The quest for data centres

Romania is well positioned to play a meaningful role in supporting the development of data centres and the associated energy infrastructure, supported by a combination of structural advantages. These include expanding renewable energy capacity, the availability of baseload nuclear generation at Cernavoda as a potential solution for meeting the continuous and energy-intensive requirements of data centres, as well as a well-developed digital infrastructure and a national high-speed communications network. Together, these factors enhance Romania's attractiveness as a location for data centre investment and investors are already looking for potential locations for such projects in Romania.

Advancing Romania's Guarantees of Origin market

In 2025, Romania took important steps toward putting in place a modern and EU-aligned Guarantees of Origin (GO) framework. The Association for Issuing Bodies (AIB) Council granted ANRE the status of AIB Observer, which means Romania is now officially an observer within the European Energy Certificate System (EECS) for trading guarantees of origin for renewable energy. ANRE is now preparing the steps needed for full AIB membership. This includes connecting to the hub, which requires aligning technical configurations and regulations with EECS rules and the AIB Hub agreement.

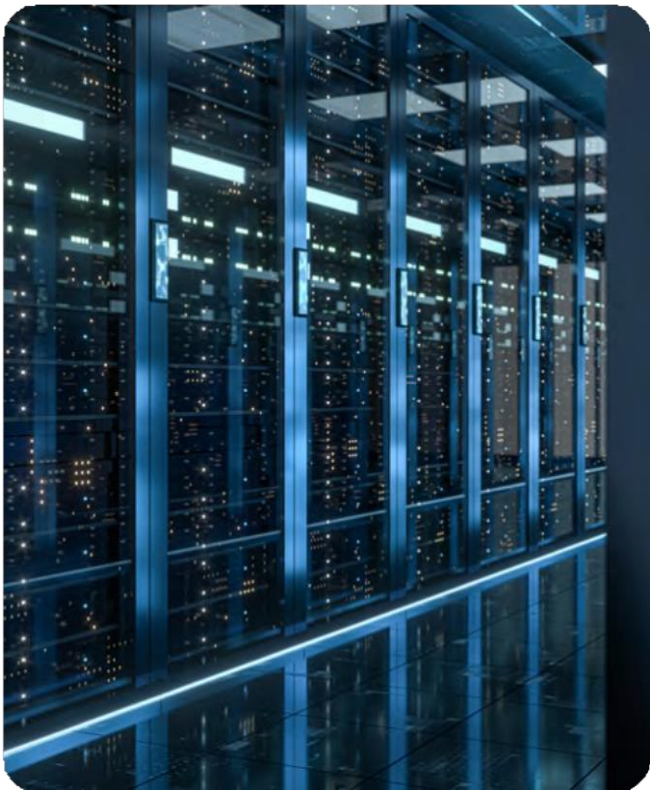
Once Romania joins the EU-wide registry, locally issued GOs will become tradable across borders and vice versa, enabling local developers to access wider demand. This alignment with EU rules will give developers and industrial consumers the possibility to design renewable energy strategies that operate across several countries. As companies will be able to optimise their renewable sourcing by procuring Guarantees of Origin and renewable attributes in more competitive markets, manufacturers with operations in Romania and Western Europe could achieve a notable reduction in their overall decarbonization costs.

Nuclear keeps going strong

Romania has only one nuclear power plant, Cernavoda NPP, with two units in operation, which provide approximately 18% of Romania's total energy production. The Government aims to increase and diversify its production capacity, including new units and advanced technologies. The main investment programs included under this strategic direction are the refurbishment of unit 1 and development of units 3 and 4 of Cernavoda NPP.

Along with the refurbishment of unit 1 of Cernavoda NPP and the construction of units 3 and 4, several other projects are ongoing, such as the extension of the intermediate spent fuel dry storage (ISFDS) by construction of the Modular Air-Cooled STORage 400 (MACSTOR 400) modules, and the construction of a tritium removal facility for unit 1 and unit 2. The Cernavoda tritium removal facility (CTRF) will extract tritium from heavy water and significantly reduce radioactive emissions into the environment while minimizing the internal dose for professionally exposed personnel.

Romania is taking important steps in the implementation of small modular reactors (SMR), an innovative nuclear energy production technology. These reactors will be located in Doicești, Dâmbovița county, on the site of a former thermal power plant, aiming to develop Europe's first nuclear power plant with SMR NuScale power technology (developed by NuScale Power). The project includes 6 SMR modules, which will produce 462 megawatts (MW) of energy. If the Doicesti project succeeds, Romania could become the first country in Europe with an operational SMR and a regional centre for SMR design and implementation.



Resilience in the energy sector - NIS2 Directive and CER Directive

The package of two directives aimed at strengthening resilience in the energy sector, namely the NIS2 Directive (EU) 2022/2555 of the European Parliament and of the Council of 14 December 2022 on measures for a high common level of cybersecurity across the Union, amending Regulation (EU) No 910/2014 and Directive (EU) 2018/1972, and repealing Directive (EU) 2016/1148 ("NIS2 Directive") and Directive (EU) 2022/2557 of the European Parliament and of the Council of 14 December 2022 on the resilience of critical entities and repealing Council Directive 2008/114/EC ("CER Directive"), has been transposed into national law and has entered into application.

NIS2 Directive focuses on cyber resilience. Depending on their size and role, market participants in the energy sector, ranging from electricity producers, suppliers, distributors, and transmission system operators to gas and oil infrastructure operators and hydrogen producers, may qualify as essential entities and be subject to the full set of obligations under the directive. Applicability is assessed on a case-by-case basis, considering the entity's sector, size, and the potential impact of a cyber incident. Certain obligations under NIS2 also extend to key suppliers, as energy companies are required to manage cybersecurity risks across their supply chains, including through supplier risk assessments, contractual safeguards, and, where necessary, restrictions on high-risk vendors.

The CER Directive complements NIS2 Directive by adopting a broader resilience framework that extends beyond cybersecurity to cover physical threats such as natural hazards, sabotage, theft, vandalism and other disruptive events. Under CER Directive, Member States are responsible for identifying critical entities within their territory. Once designated, such entities are required to implement appropriate measures to strengthen their resilience within a period of 10 months.

Carbon Border Adjustment Mechanism (CBAM)

From 1 January 2026, imports of electricity and other carbon-intensive goods such as aluminium, iron and steel, and cement will require the purchase of Carbon Border Adjustment Mechanism (CBAM) certificates. This measure will directly affect the energy sector by impacting cross-border electricity trade. For Romanian generators, CBAM does not introduce an additional cost on domestic electricity production; rather, it reduces the historical price advantage of importing cheaper, carbon-intensive electricity from non-EU neighbouring countries, as such imports will increasingly carry a CO_2 cost at the border. As a result, CBAM is expected to improve the competitive position of Romania's relatively low-carbon generation mix and strengthen investment incentives for clean energy projects. At the same time, CBAM will indirectly affect the Romanian energy sector by increasing costs for carbon-intensive materials such as steel and aluminium, which are widely used in energy infrastructure development.

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SERBIA

Serbia continues to strengthen its position as a key energy market in the Western Balkan region, supported by its strategic location, growing industrial base, and ongoing government-backed reforms. Investment opportunities in Serbia span across energy, manufacturing, agriculture, and technology, while continuous improvements in infrastructure, digitalisation, and regulatory frameworks further enhance the country's attractiveness for investors and businesses. Easy access to Southeast European markets, supported by free trade agreements and a business-friendly environment, positions Serbia as one of the most promising destinations for energy investments in the region. The key trends in energy investment opportunities in Serbia are outlined below.

Renewable energy

Renewable energy remains the central focus of Serbia's energy transition. While electricity generation is still largely reliant on coal, particularly lignite, which continues to account for a significant share of total generation, the share of renewables is steadily increasing. Hydropower remains the second-largest source of electricity, contributing approximately 25–30% of total production, with major facilities located along the Danube and Drina rivers, including the Đerdap (Iron Gate) hydropower complex.

Under the Integrated National Energy and Climate Plan and the Energy Development Strategy of the Republic of Serbia until 2040 (with projections until 2050), adopted in 2024, Serbia plans a significant increase in electricity production from renewable sources. By 2030, total installed wind and solar capacity is expected to reach approximately 3.5 GW, with annual generation of around 6.87 TWh (1.77 GW wind / 4.60 TWh and 1.73 GW solar / 2.27 TWh). By 2040, total installed capacity is projected to increase to 10.97 GW, with annual generation of 19.72 TWh, including 3.6 GW wind (9.46 TWh) and 7.37 GW solar (10.26 TWh).

Current plans foresee the development of up to 1 GW of new solar capacity and several hundred megawatts of new wind capacity in the coming years, with a substantial portion of this pipeline expected to progress through development and construction phases. The government continues to promote renewable energy investments through incentive schemes, regulatory improvements, and competitive auction mechanisms aimed at diversifying the energy mix and reducing reliance on coal.

Solar energy continues to dominate Serbia's renewable energy landscape due to shorter development timelines and declining technology costs, while wind energy is expected to maintain steady growth as part of a diversified renewable portfolio. New hydropower developments face regulatory and environmental constraints, with investment activity largely focused on existing assets, strategic projects and revitalisation of facilities, including the remaining units of hydropower plant Đerdap 2.

The evolving regulatory environment continues to play a supportive role in renewable energy development, with market-based mechanisms such as competitive auctions and Contracts for Difference contributing to greater revenue certainty and improved financing prospects for renewable projects.

Nuclear

Even though Serbia does not currently operate nuclear power plants, nuclear energy is increasingly being considered as part of the country's long-term energy strategy aimed at diversifying energy sources, strengthening energy security, and reducing dependence on fossil fuels. Rising electricity demand, decarbonisation objectives, and the need for reliable baseload generation have positioned nuclear power as a potential complementary low-carbon solution alongside the continued expansion of renewable energy.

Following the lifting of the moratorium on the construction of nuclear power plants in November 2024, Serbia opened the possibility for further strategic planning in this sector. Under Scenario C of the Energy Development Strategy, up to 1,000 MW of installed nuclear capacity could be introduced by 2040.

Serbia has initiated strategic and institutional preparations for the possible introduction of nuclear energy, including the gradual development of an appropriate legal and regulatory framework addressing nuclear safety, waste management, environmental protection, and institutional oversight. At the same time, Serbia is actively engaging with international partners to explore feasibility options and leverage external expertise, reflecting a cautious and phased approach to potential nuclear deployment.

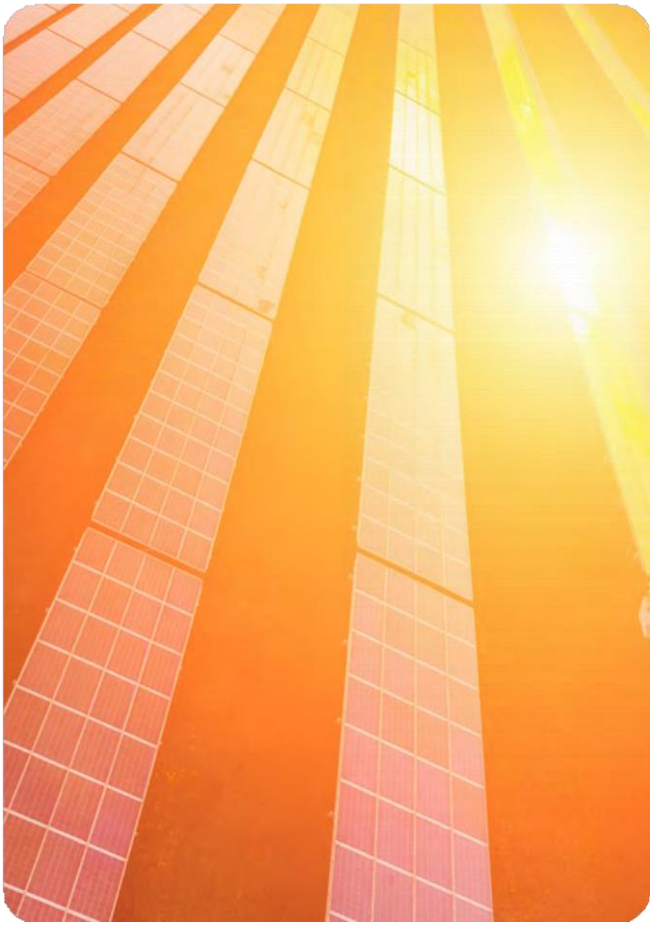
Particular attention is being given to Small Modular Reactors (SMRs), which are increasingly viewed as a more flexible and scalable alternative to conventional nuclear plants, better suited to smaller and medium-sized power systems. Ongoing feasibility assessments, international cooperation initiatives, and the involvement of domestic research institutions indicate that Serbia is laying the necessary groundwork for potential future nuclear investments, in line with broader European trends toward low-carbon, secure, and resilient baseload energy generation.

Battery Energy Storage Systems (BESS)

Alongside the expansion of renewable energy capacity, energy storage is gaining increasing importance in Serbia. Interest in Battery Energy Storage Systems (BESS) is growing as grid balancing needs increase and the share of variable renewable generation continues to rise. While the BESS market is still at an early stage of development, several projects are planned both as standalone installations and as integrated components of solar and wind power plants.

In 2026, construction is expected to commence on the Noćaj 1 solar power plant with an integrated battery storage capacity of 36 MWh. In addition, 10 standalone battery storage projects are currently under development, with a total planned capacity of approximately 2,781.98 MWh, indicating growing investor interest in flexibility and ancillary service markets.

In parallel, Serbia continues to advance large-scale energy storage initiatives, including the planned Bistrica pumped-storage hydropower project on the Lim River, with a projected installed capacity of 628 MW. In addition, the Energy Development Strategy foresees the potential development of the reversible hydropower plant Đerdap 3 on the Danube River, with an estimated installed capacity of 1,800 MW. These projects are intended to enhance long-term storage capacity, support system flexibility, and improve grid stability by storing energy during periods of low demand and releasing it during peak consumption.



Regulatory and market context

Serbia continues to align its energy market with European regulatory standards, strengthening investor confidence and supporting deeper regional market integration. Under the Integrated National Energy and Climate Plan, Serbia targets approximately 45% of electricity generation from renewable sources by 2030, supported by market-opening reforms, competitive support mechanisms, and increased responsibility for balancing.

During 2026, further regulatory developments are expected, including the adoption of by-laws implementing the amendments to the Energy Law and the Law on the Use of Renewable Energy Sources. Amendments to the Regulation on Conditions of Delivery and Supply of Electricity are also anticipated, potentially affecting supply relations and market functioning.

According to the latest published list of connection requests submitted to Elektromreža Srbije (EMS), applications include 37 wind power projects with a total approved capacity of 5.76 GW, 31 solar projects with a total approved capacity of 3.97 GW, and three hybrid (wind/solar) projects with a total approved capacity of 552 MW.

The focus is increasingly on effective market implementation, transparent grid access, and market-based price formation, which are key to attracting long-term investment in renewable and flexible energy technologies. Preparations for day-ahead electricity market coupling with neighbouring EU markets are expected to further improve liquidity, transparency, and cross-border trading conditions, reinforcing Serbia's position within the wider European electricity market.

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SLOVAKIA

The Slovak energy sector is currently struggling primarily with unpredictable energy price volatility, pressure from the EU to decarbonise, and increasing risks to the competitiveness of Slovak industry. This situation is largely driven by the instability of European energy policy, as well as the ongoing war in Ukraine and the escalating conflict in the Middle East.

On 31 March 2025, the Slovak government approved an updated version of the Integrated National Energy and Climate Plan (NECP), which sets more ambitious targets than its 2019 predecessor.

Slovakia now aims to reduce emissions in sectors outside the EU Emissions Trading System (non EU ETS) by 22.7% by 2030 compared to 2005 levels, up from the previous 20% target. As part of its decarbonisation efforts, the country intends to achieve a 64.3% reduction in emissions by 2030 compared to 1990 levels. In the renewable energy sector, the plan sets a target to increase the share of renewables in final energy consumption to 25%, up from 19.2% previously.

Recent analyses indicate that electricity demand in Slovakia is expected to rise from approximately 30 TWh in 2024 to 50 TWh in 2050. Electricity is gradually replacing coal, oil, and gas across key sectors of the economy. The most significant energy savings are expected in buildings and transportation due to improved insulation, higher efficiency, and reduced dependence on fossil fuels. In industry, a more gradual decline in energy consumption is anticipated, supported by process optimisation and partial shifts to electricity, biomass, and hydrogen.

Renewable energy sources (RES)

Slovakia is among the EU Member States with the lowest share of renewable energy sources ("RES") in electricity generation. According to Eurostat data for Q1 2025, the average RES share in EU electricity production was approximately 42.5%, while in Slovakia it amounted to only 24.2%.

Hydropower remains the dominant RES in Slovakia, with other types of RES playing a more supplementary role.

Measured by increases in installed capacity, the largest growth has occurred in bioenergy (biomass and biogas) and solar photovoltaic (PV) plants. In recent years, PV has emerged as the fastest growing RES category in Slovakia.

Despite the National Action Plan for Renewable Energy projected 350 MW of installed wind capacity by 2020, no wind turbines have been built since 2004. In order to facilitate the development of wind turbines, legislative changes to ease regulatory requirements were introduced in 2025. In contrast, while the National Action Plan for Renewable Energy projected only 300 MW of PV capacity by 2020, this target was increased by half.

Based on the targets set by the NECP, PV, wind power, and biogas/biomethane can be clearly identified as the most promising segments for renewable energy development in Slovakia's electricity sector.

Nuclear energy

Nuclear energy dominates Slovakia's electricity mix, accounting for nearly 62% of total electricity production.

Slovenské elektrárne, a.s., the operator of Slovakia's two nuclear power plants—Mochovce and Bohunice—supplied 18.7 TWh of electricity to the grid in 2024, 90% of which came from nuclear sources. Units 1 and 2 of the Mochovce plant together supply more than 7 TWh of electricity annually. Construction of Unit 3 began in 2009, and it was connected to the grid on 31 January 2023. Completion of Unit 4 is scheduled for 2026. The construction of Units 3 and 4 represent the largest private investment in Slovakia. Once operational, they will together cover roughly 26% of Slovakia's electricity consumption. Each unit has a capacity of 471 MW, with plans to increase capacity of each unit to more than 500 MW.

The Bohunice Nuclear Power Plant operates reactors connected to the grid in 1984 and 1985. Since 2000, the V2 units have undergone modernisation, completed in 2010, which increased capacity to 505 MW per unit.

The increased capacity at Mochovce strengthens Slovakia's energy security by reducing dependence on electricity imports and helping the country progress toward carbon neutrality by 2050. However, reliance on imported nuclear fuel and the high costs of constructing and operating nuclear plants remain important considerations.

On 16 January 2026, Slovakia and the United States signed an intergovernmental agreement on cooperation in civil nuclear energy aimed at creating a strategic framework for the con-

struction of a new nuclear unit in Jaslovské Bohunice with an estimated capacity of 1,200 MW. The agreement sets the conditions for cooperation with Westinghouse but does not mandate the use of its services. It focuses on nuclear safety, supply chain diversification, and access to financial instruments (cooperation between EXIMBANK SR and the U.S. Export Import Bank). Slovak legislation has been amended to include provisions for a compensation regime for electricity production from nuclear fuel, which is intended to support investor returns.

Battery Energy Storage Systems

Battery energy storage systems (BESS) currently act as stabilising elements in the grid by providing flexibility services. They store surplus, low-cost energy to prevent grid overload and supply electricity back to the grid during periods of shortage at more favourable prices than fast response gas turbine plants. BESS also increase the efficiency of renewable energy utilisation. Instead of curtailing production, they allow time shifting of electricity, improving the economics of wind and solar projects and reducing the need for grid interventions.

According to Slovakia's Regulatory Office for Network Industries, battery storage capacity in Slovakia increased from just under 2.3 MWh at the end of 2022 to approximately 60 MWh by mid 2025.

However, the legislative environment is not fully supportive of BESS development. As of September 2025, new fees apply—even to entities supplying electricity to the grid during shortages. The national regulator also maintains a cautious stance toward BESS, stating that storage systems may impact frequency balance.

Gas

With the approval of REPowerEU, the EU has entered a new phase of energy policy. For Slovakia, this means fundamental changes in gas imports beginning in the fall of 2027, including:

- ensuring stable gas supplies through strategic projects in Germany and Austria and expanded terminal capacity in Po-land and Greece;
- providing fairer cost distribution for operating energy networks, potentially including changes to EU tariff legislation;
- utilising Slovakia's extensive gas infrastructure to transport gas and future energy carriers from west to east, including hydrogen and biomethane,

Gas transit through Ukraine declined sharply after the Russian invasion in 2022 and stopped completely by the end of 2024. As a result, significantly lower volumes flowed through the pipelines of eustream, a.s., the Slovak transmission system operator, while its fixed costs remained unchanged.

The national regulator addressed this by adopting the "postage stamp" methodology and significantly increasing gas transmission tariffs effective 1 January 2025. These changes were applied retroactively to existing contracts and capacity bookings. At the end of 2025, eustream, a.s. submitted another proposal to increase tariffs from 365/MWh/day/year to 620.5/MWh/day/year (an approximate 70% increase) effective 1 January 2026. This would have substantially increased gas supply costs for Slovak industry and posed systemic risks to competitiveness. Due to strong opposition from industry, the regulator rejected the proposal, keeping 2025 tariff levels in place.

Hydrogen

In Slovakia, grey hydrogen produced from natural gas is already used today. The expansion and full integration of green hydrogen—produced via electrolysis using renewable electricity —are expected in gradual phases between 2030 and 2050.

Currently, green hydrogen production is significantly more expensive than fossil fuel based alternatives. Even when hydrogen is produced, storage and transport remain technologically and economically challenging. Slovakia also lacks the necessary infrastructure. As a result, hydrogen has been losing the confidence of Slovak investors, and many have announced the cancellation of planned green hydrogen projects.

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TURKEY

Türkiye has experienced one of the fastest-growing energy demands among Organisation for Economic Co-operation and Development ("OECD") countries over the past two decades and ranks second after China in terms of the increase in electricity and natural gas demand worldwide. To reduce its dependency on energy imports, the country is diversifying its energy mix by expanding renewable energy capacity, introducing nuclear power, and increasing the use of domestic energy resources.

Türkiye has set ambitious targets under the National Energy Plan for 2035, unveiled in 2023. Under the plan, the share of renewable energy sources in electricity generation capacity should grow to 64.7% by 2035. In this context, Türkiye offers significant energy-sector investment opportunities, particularly in renewable energy, as the country advances towards its 2035 targets. This momentum is also clearly reflected in market data: publicly announced mergers and acquisitions in the energy sector tripled in 2025 compared to 2024, reaching USD 3 billion. This increase further demonstrates growing confidence in the Turkish energy sector among foreign investors, who accounted for 42% of the total transaction value.

Located in a region adjacent to approximately 60% of the world's proven oil and natural gas reserves, Türkiye aims to strengthen its position as a regional energy hub and contribute to regional and global energy security. Major energy infrastructure projects such as the Baku-Tbilisi-Ceyhan Crude Oil Pipeline (BTC), the South Caucasus Natural Gas Pipeline (SCP), the Bakü-Tbilisi-Erzurum Natural Gas Pipeline (BTE), the Turkey-Greece Natural Gas Interconnector (ITG), the Trans-Anatolian Natural Gas Pipeline (TANAP), and TurkStream play an important role in achieving this objective.

Renewable energy

Türkiye aims to fully utilise its renewable energy potential to meet its 2053 net-zero emissions target. In line with the National Energy Plan for 2035, Türkiye intends to increase its installed solar capacity from 12.4 GW to 52.9 GW by 2035, while increasing its installed wind capacity to 29.6 GW (24.6 GW onshore and 5 GW offshore). The plan also targets 35.1 GW hydroelectric capacity and 5.1 GW geothermal and biomass capacity. In parallel, the Ministry of Energy and Natural Resources ("MENR") has announced a renewable energy roadmap targeting approximately 120 GW of combined installed wind and solar capacity by 2035.

According to the most recent data (early 2026) published by MENR, Türkiye's total installed electricity generation capacity has exceeded 123,284 MW, with renewable energy sources accounting for a significant share of the total. As at end-January 2026, the distribution of installed capacity by source was as follows: 26.2% hydraulic, 19.4% natural gas, 17.8% coal, 12.1% wind, 20.9% solar, 1.4% geothermal, and 2.1% other sources.

Türkiye has supported renewable energy investments through a feed-in tariff mechanism since the 2000s. Projects commissioned before 1 July 2021 benefited from a US-dollar-based support mechanism, while a Turkish-lira-based support scheme has applied to projects commissioned thereafter, with certain price adjustment mechanisms linked to foreign exchange rates.

As an alternative to licensed and unlicensed renewable energy generation models, Türkiye has developed the Renewable Energy Resource Areas ("YEKA") model. Under this model, areas suitable for renewable energy generation are designated by the state and allocated to private investors through competitive tenders. YEKA projects typically include purchase guarantees and local content requirements intended to support the development of domestic manufacturing capacity.

The regulatory framework applicable to renewable energy investments in Türkiye was further shaped by a series of amendments adopted in late 2025. These included changes to the YEKA Regulation, the Regulation on Unlicensed Electricity Generation, the Regulation on Domestic Components, and certain related secondary electricity market regulations affecting, among other things, technical evaluation and application procedures, unlicensed generation processes, storage and aggregation-related matters, and the scope of domestic component incentives.

Despite challenges related to grid capacity and the need for further investments in transmission infrastructure, Türkiye continues to attract significant interest from renewable energy investors through various support mechanisms and tender-based investment models.

Battery Energy Storage Systems (BESS)

Energy storage has become an increasingly important component of Türkiye's energy transition strategy. Turkish legislation allows supply license holders, distribution companies, and consumption facilities to install energy storage systems. Generation license holders may also install storage facilities integrated with their generation plants, provided that the storage capacity does not exceed the installed capacity of the generation facility.

This regulatory framework has created significant opportunities for storage-integrated renewable energy projects. Under the National Energy Plan, Türkiye aims to reach approximately 7.5 GW of battery storage capacity by 2035.

As of 2026, investor interest in energy storage projects in Türkiye remains strong. According to sector statements, approximately 33 GW of storage-integrated renewable energy projects have reached the pre-license stage, with several projects progressing through environmental impact assessment and zoning processes and initial projects expected to gradually enter operation in the coming years.

Oil and gas

Natural gas production in Türkiye increased by 39% in 2025 compared to the previous year, reaching 3.2 billion cubic meters, with daily production peaking at 10.2 million cubic metres. Following the additional 75 billion cubic meters natural gas discovery in the Black Sea in May 2025—and with Türkiye's first floating gas production platform expected to become operational in 2026—domestic gas production is anticipated to further increase. In parallel with its upstream investments, Türkiye has continued to strengthen its role as a regional energy hub. In this context, the commissioning of the Iğdır–Nakhchivan natural gas pipeline in 2025 added further cross-border transmission capacity, with the pipeline providing annual capacity of 500 million cubic metres.

The oil sector recorded similar growth. Türkiye's oil production increased by 26% in 2025 compared to 2024, with daily production peaking at 135,671 barrels. In addition, new oil reserves were reported in 2025, and exploration activities have continued into 2026.

Hydrogen

Türkiye is also exploring the development of a hydrogen economy as part of its long-term decarbonisation strategy. In 2023, the government unveiled the Hydrogen Technologies Strategy and Roadmap, which outlines ambitious targets for hydrogen production and technology development.

According to the roadmap, Türkiye aims to achieve 2 GW of electrolyser capacity by 2030, 5 GW by 2035, and 70 GW by 2053. The strategy also targets reducing the cost of green hydrogen to USD 2.4 per kilogram by 2035, with further reductions envisioned by 2053.

The roadmap emphasises the importance of developing domestic hydrogen technologies, supporting research and development activities, and establishing regulatory and incentive frameworks to encourage hydrogen investments.

Introduction of the ETS and CBAM Framework

After a prolonged period of anticipation, Turkish Climate Law No. 7552 (the "Law") entered into force in July 2025. The Law principally introduced two key mechanisms: (i) an Emissions Trading System ("ETS") and carbon pricing, and (ii) the framework for a Carbon Border Adjustment Mechanism ("CBAM").

(i) Emissions Trading System and Carbon Pricing

The Law provides for the establishment of an ETS in Türkiye, defined as a market-based mechanism operating at the national and/or international level, based on a cap on greenhouse gas emissions and designed to encourage emission reductions through the trading of emission allowances. Within this framework, the ETS market will be operated by the relevant market operator (i.e. EPİAŞ), and a registry infrastructure will be established for the issuance, holding, transfer, cancellation, and retirement of allowances, as well as for the electronic monitoring of related rights.

Undertakings carrying out activities that directly result in greenhouse gas emissions will be required to obtain a greenhouse gas emission permit from the Ministry of Environment, Urbanisation, and Climate Change (the "Ministry") within three years from the Law's entry into force to be able to continue such activities. Undertakings falling within the scope of the ETS will be required to surrender allowances corresponding to their verified annual greenhouse gas emissions. Allowances will be issued in dematerialised form, will be transferable and fungible, and will represent the right to emit one metric ton of carbon dioxide equivalent during a specified period. The national allocation plan will be prepared by the Ministry, and allowances may be distributed through the primary market, while free allocation may also be granted in certain cases.

(ii) Carbon Border Adjustment Mechanism

The Law also provides that a national CBAM may be established by the Ministry of Trade to monitor the embedded greenhouse gas emissions in goods imported into Türkiye's customs territory. The scope, content, and the procedures and principles applicable to the reporting obligations under the CBAM will be determined by the Ministry of Trade.

According to the Medium-Term Program (2026–2028), the implementation of the ETS and the development of the CBAM framework are targeted by the third quarter of 2026.
Furthermore, the draft Emissions Trading System Regulation (published on 22 July 2025) and the draft Carbon Credit and Offsetting Regulation (published on 1 August 2025) have been released for public consultation. Both drafts remain at the consultation stage and have not yet entered into force. Following the completion of the consultation process, the final versions are expected to be published in the Official Gazette.

Conclusion

Türkiye is setting ambitious targets to boost its efforts to achieve its energy transition and independence, as well as to tackle climate change. The country offers many opportunities to both foreign and local investors interested in renewable energy projects and continues to support investors with feed-in-tariff mechanisms and purchase guarantees, making it a desirable jurisdiction for investment. With COP31 set to be hosted in Türkiye, the country aims to sustain the wave of foreign investment in its renewable energy sector achieved in 2025.

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UKRAINE

In light of the full-scale war and continuous Russian attacks on the Ukrainian energy infrastructure, the government of Ukraine and state-owned energy companies have actively implemented a strategy to decentralise and protect the energy system in 2025–2026. ENTSO-E has also increased the maximum capacity of cross-border interconnectors for electricity imports from EU countries to Ukraine.

In particular, in 2026 the Ukrainian government mandated the construction of 392 MW of distributed gas-fired electricity generation by NJSC Naftogaz of Ukraine and a further 92 MW by Ukrenergo, the Ukrainian transmission system operator. On 14 January 2026, the National Energy and Utilities Regulatory Commission ("NEURC") adopted an updated model for launching distributed generation facilities, which reduces the number of procedures, allows new power plants to enter the market faster, and simplifies grid connection. This simplification is primarily driven by the introduction of a "single-window" mechanism, enabling companies to submit a unified application to simultaneously enter into three essential market agreements—transmission, dispatch, and balancing market participation—within a strict three-business-day window.

Oil and gas

Ukraine has intensified its efforts to attract private investments and diversify gas supplies. In 2025, the Ministry of Energy in Ukraine relaunched the Production Sharing Agreements for the Mezhyrichchenska and Svichanska blocks in western Ukraine, offering flexible profit-sharing terms to investors (up to 65% in favour of the investor). In early 2026, Naftogaz expanded its import routes by receiving the first batches of LNG from the United States via a terminal in Lithuania.

Gas storage

During 2026–2026, Ukraine's underground gas storage (UGS) demonstrated extraordinary resilience. In 2025, 229 targeted Russian attacks on Naftogaz Group facilities were recorded; however, the storage infrastructure (with a total capacity of 30.95 bcm) maintained its operational stability.

Prior to the 2025/2026 heating season, Ukraine managed to accumulate at least 13.2 bcm of gas, supported by a loan from state-owned banks secured in July 2025. The development plan approved by NEURC allocated approximately UAH 1.1 billion in 2025 specifically for the rapid restoration and modernisation of UGS security systems.

U.S.–Ukraine Reconstruction Investment Fund:

In January 2026, the United States – Ukraine Reconstruction Investment Fund (the "Fund") launched an online portal for the submission of investment projects by companies operating in Ukraine's critical infrastructure sectors. Through the portal, companies may seek financing for the implementation of their projects. The Fund is aimed at attracting investments into Ukraine's critical infrastructure sectors, such as critical minerals, energy, infrastructure, information and communications technology (ICT), and emerging technologies.

Renewable energy

Ukraine's regulatory framework for renewable energy sources received a major update aimed at strengthening investor confidence and supporting long-term sector development. In February 2026, parliament adopted the Law of Ukraine "On Improving the Competitive Conditions for Electricity Production from Alternative Sources", which extends the "green" auction mechanism until 2034 and introduces additional financial support instruments for investors. In particular, the law introduces a Feed-in Premium mechanism. Under this model, renewable energy producers can sell electricity directly on the electricity market while receiving compensation for the difference between the auction price and the market price for a period of 12 years. This approach increases market integration while maintaining revenue stability for investors. The law also introduces the Net Billing model, which supports distributed generation and active consumers. Under this system, electricity exported to and consumed from the grid is settled on a monetary basis, allowing producers to receive financial compensation for surplus electricity supplied to the grid.

In addition, Ukraine has implemented a system of Guarantees of Origin, enabling renewable energy producers to certify the environmental value of their electricity. These certificates can be traded separately from the physical electricity on both domestic and European markets, further supporting Ukraine's transition toward a low-carbon energy system.

Biomethane Register:

In February 2025, the first historic delivery of Ukrainian biomethane to the EU occurred. In February 2026, the Biomethane Register was officially launched by the State Agency for Energy Efficiency and Energy Savings of Ukraine. It enables obtaining certified guarantees of origin and the export of biomethane, creating a completely new high-margin market driven by the EU's decarbonisation goals.

Battery Energy Storage Systems (BESS):

Energy storage is becoming an important part of Ukraine's energy transition. BESS help stabilise the electricity grid, balance renewable energy generation, and improve the overall resilience of the power system. Recent market reforms and infrastructure investments are accelerating the development of BESS projects across the country. Key developments include:

- Legislative changes adopted in 2026 improve the regulatory framework for energy storage projects, clarifying licensing requirements and allowing BESS to participate in renewable energy auctions, including projects combined with solar generation.
- Several large-scale projects are currently under development, including more than 200 MW of BESS capacity integrated with wind power plants and other renewable energy assets.
- Ukrainian banks, including Oschadbank, PUMB, and Ukrgas-bank, have already committed over UAH 3 billion (approx.. EUR 60 million) to finance approximately 180 MW of energy storage capacity, supporting grid stability and energy security.
- The private sector is also actively entering the market through technology partnerships and investment projects targeting multi-GWh storage capacity.

BESS facilities in Ukraine can participate in the electricity market by supplying power and providing grid services such as frequency regulation and peak load balancing. This creates additional revenue opportunities for investors.

Hydrogen

Hydrogen is expected to play an important role in Ukraine's future energy system and in its cooperation with European energy markets. With its strong renewable energy potential, Ukraine aims to become a regional producer and exporter of green hydrogen. Strategic highlights include:

- In 2025, a draft law on the hydrogen market was introduced to establish the legal framework for hydrogen production, transportation, and use in Ukraine.
- Ukraine plans to develop up to 10 GW of electrolysis capacity by 2030, in line with European hydrogen strategies. Part of this production will support domestic industries, including green ammonia for agriculture.
- Early-stage hydrogen projects are already being explored, including green hydrogen production facilities in port regions such as Reni, combining renewable energy generation with electrolysis.
- Ukraine is also exploring opportunities to export hydrogen to the European Union, potentially using existing gas pipeline infrastructure and future hydrogen corridors.

Green hydrogen presents significant opportunities for industrial decarbonisation, export revenues, and job creation. Continued regulatory development, alignment with European standards (including carbon border adjustment mechanisms), and international partnerships will be key to growth.

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Nuclear

In 2025, Energoatom officially obtained the status of an approved Westinghouse supplier. It allows for the localised serial production of components for VVER-1000 fuel assemblies in 2026. Furthermore, Energoatom and Westinghouse have declared plans to construct nine new power units based on AP1000 technology across Ukraine. Additionally, the feasibility study for the construction of power units No. 3 and No. 4 at the Khmelnytskyi NPP was updated as well in 2025.

In addition, the draft law "On Amendments to Certain Legislative Acts of Ukraine regarding the Principles of Introducing Small Modular Reactors" dated 29 October 2025 was submitted to parliament. The draft law proposes, firstly, establishing the term "Small Modular Reactor" and abolishes the state monopoly, allowing private business to construct such facilities and own nuclear fuel.

Conclusion

Despite the prolonged war and severe damage to Ukraine's energy infrastructure, the country demonstrates extraordinary resilience and regulatory progress in 2025–2026. By resolving complex legal issues, reliably protecting gas storage operations, localising nuclear capacities, and updating RES legislation, Ukraine continues to increase the potential of its energy sector and create structured opportunities for international capital.

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UZBEKISTAN

Uzbekistan's population is expected to grow from an estimated 33 million to 41 million by 2030, while GDP is projected to reach USD 200 billion. As energy demand is set rise significantly, the country is transitioning to alternative energy sources.

Accordingly, the Uzbek government is implementing large-scale modernisation programs aimed at strengthening energy security, improving energy efficiency, and creating an attractive investment climate in the energy sphere under the "Strategy of Uzbekistan 2030" (the "National Strategy").

Uzbekistan's national strategy

Uzbekistan plans to commission 6.7 GW of new power capacity by the end of 2026, comprising 2.8 GW of solar energy, 2.5 GW of thermal energy, 884 MW of energy storage, 470 MW of wind energy, and 68 MW of hydro energy.

According to preliminary government estimates, Uzbekistan's total installed generation capacity stood at 25.8 GW in 2025, of which renewables accounted for 8 GW. In 2026, electricity production is projected to reach 90 TWh, representing a 40% increase compared to 2020 levels. This expansion is expected to reduce natural gas consumption by approximately 7 billion cubic meters per year.

In recent years, Uzbekistan has attracted approximately USD 35 billion of investments in its energy sector. New projects involve international companies from Saudi Arabia, Turkiye, the UAE, China, France, and Qatar.

Battery Energy Storage Systems & clean energy infrastructure

Uzbekistan is actively promoting Battery Energy Storage Systems ("BESS") deployment as part of its strategy to integrate and modernise its grid. Notably, JSC "Uzenergosotish", Uzbekistan's central energy purchaser, has signed an agreement to develop a 300 MW / 600 MWh BESS, which is set to become the largest standalone battery energy storage system in the country.

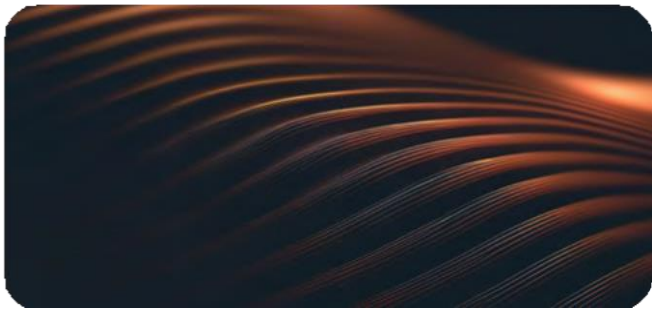
Financial institutions such as the European Bank for Reconstruction and Development (EBRD) are also supporting BESS-related investments. For example, the EBRD has backed projects in Uzbekistan that include significant battery storage components, including financing for a 300 MW solar plant combined with a 75 MWh battery storage facility.

Investment and development opportunities in the oil & gas sector

Natural gas and oil remain central to Uzbekistan's energy mix, with natural gas accounting for almost 85% of total energy production. In 2025, Uzbekistan produced 38.9 billion cubic meters of natural gas.

The Uzbek government is intensifying exploration programs and reserve expansion and aims to raise daily gas production from 66 cubic million metres to 70 cubic million metres in 2026. For this reason, the national oil and gas company UNG Overseas is attracting up to USD 3 billion in investment, with the potential to increase this to USD 5 billion. These funds are expected to be allocated to projects in household and industrial energy supply, infrastructure, and water management.

Furthermore, the Uzbek government and the State Oil Company of the Republic of Azerbaijan (SOCAR) have signed a major new production-sharing agreement to explore and develop hydrocarbon resources on the Ustyurt Plateau. This project is expected to attract around USD 2 billion in investment.



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CAMBODIA

Cambodia is entering a decade of accelerated power sector transformation, driven by major grid expansion, rapid solar deployment, emerging battery energy storage systems (BESS), and early stage exploration of hydrogen and nuclear options. The government has reaffirmed its commitment to achieving carbon neutrality by 2050, guided by the Pentagonal Strategy Phase I, the Power Development Master Plan 2022–2040, the National Energy Efficiency Policy 2022–2030, and the Long-Term Strategy for Carbon Neutrality.

Renewable energy

Cambodia's renewable energy sector has expanded significantly over the past decade, supported by strong government policy and the nation's push to reduce its dependence on fossil fuels. Hydropower remains the backbone of the renewable mix, with an installed capacity of 1,331 MW as of 2023. However, environmental and geopolitical considerations have slowed new mainstream hydropower development on the Mekong River, encouraging diversification into other renewable technologies[1]. Interest in new hydropower projects continues. Notably, Électricité de France (EDF), a French state owned utility, is conducting a feasibility study for a proposed 800 MW hydropower project valued at approximately USD 1.2 billion.[2]

Solar power has become the fastest growing renewable energy source in Cambodia. By expanding its solar power capacity, moving away from coal, and increasing renewables toward 70% by 2030, Cambodia is projected to have one of the highest levels of clean energy among ASEAN countries while continuing to pursue its 2050 carbon neutral goal. The country's renewable energy sources include hydropower, solar, and biomass, supplemented by imported electricity during the dry season. Utility scale solar farms and the national solar park model accelerated installed capacity to over 827 MW by 2024, a noteworthy increase from near-zero levels less than a decade ago.[3]

Development partners—particularly the Asian Development Bank—are supporting an ambitious program to add 2 GW of solar power capacity co-located with battery energy storage systems from 2022 until 2030. Under the Power Development Master Plan, BESS capacity is expected to expand to manage more than 3 GW of solar power by 2040, substantially reshaping the national power mix.[4]

As of 2023, Cambodia's total installed capacity stood at 4,465 MW, comprising:[5]

- hydropower (1,331 MW);
- coal-fired plants (1,025 MW);
- oil-powered plants (642 MW);
- solar energy (437 MW);
- imported electricity (1,030 MW) from Thailand, Vietnam, and Laos.

Battery Energy Storage Systems (BESS)

BESS are emerging as a critical enabler of Cambodia's renewable energy transition. The technology supports grid stability as solar capacity continues to rise rapidly—from 105 MW in 2020 to 827 MW in 2024. The country's flagship storage initiative is a 200 MW/400 MWh utility scale BESS near Phnom Penh, designed to enhance grid balancing, reduce solar curtailment, and meet peak demand more efficiently.[6] Installation involves containerised battery banks, advanced inverters, and energy management systems integrated at key substations. Cambodia has also deployed its first grid-forming 12 MWh BESS, capable of maintaining system voltage and frequency even during disturbances—a capability increasingly vital as renewable energy penetration grows.[7]

Hydrogen

Cambodia's hydrogen sector is still in its early stages, but momentum is building as the government explores green hydrogen to support long term decarbonisation.[8] A national Green Hydrogen Roadmap is under development through a 2025–2026 technical assistance program aimed at assessing supply potential, priority end use sectors, and investment needs. Additionally, Cambodia has partnered with HDF Energy to study hydrogen based power solutions, including Renewstable® systems that combine solar, storage, and green hydrogen to provide stable 24/7 electricity.[9]

[1] Cambodia's Energy Future: What's Changing in 2025 and Beyond? – Angkor Times
[2] A French Company Is Considering a $1.2 Billion Hydropower Project in Cambodia – Cambodianess
[3] Kingdom to add more 720MW from solar sources this year – Khmer Times
[4] Asian Development Bank to support 2GW of solar and energy storage in Cambodia – PV Tech (last seen at 19 February 2026)
[5] Cambodia's Energy Future: What's Changing in 2025 and Beyond? – Angkor Times
[6] 59110-001: Utility-Scale Battery Energy Storage Project – Asian Development Bank
[7] Huawei commissions Cambodia's first grid-forming BESS project – Energy Storage News
[8] DA_CTCN TA Implementation Plan_NIGT_v1.1.pdf
[9] Press release | HDF | Game-changing hydrogen power

Nuclear

Cambodia is in the early phases of evaluating nuclear power as a potential long term energy option. Current efforts are focused on institutional capacity building, including ongoing dialogue with the International Atomic Energy Agency, regulatory groundwork, workforce training, and public outreach. Multiple assessments indicate that Cambodia remains far from deployment readiness; nuclear power would not be feasible until 2050 at the earliest and would require significant advances in the country's legal and regulatory framework, human capital development, financing, and public acceptance.

Oil & gas

Cambodia's oil and gas sector is still nascent but showing renewed activity in both onshore and offshore exploration. The government recently granted EnerCam Resources (Angkor Resources) final approval to advance the onshore Block VIII project—a notable milestone toward establishing domestic production.

Offshore development is also being revisited. Four companies have submitted proposals to redevelop Block A, signalling sustained investor interest despite previous operational and financial setbacks in the field.[10]

Conclusion

Cambodia's energy sector is advancing rapidly and becoming stronger over time, driving the evolution of energy resources, energy technologies, and the overall energy mix. The country is strengthening its energy sector through improved regulation, sustainability efforts, and more effective resource management to ensure reliable, affordable power and national energy security. Cambodia also offers opportunities for both local and international investors to support the sector and collaborate with other partners.

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VIETNAM

Vietnam is one of Southeast Asia's most dynamic emerging markets and has undergone exceptional economic development during the four decades since the Vietnamese government launched its 'Doi Moi' (in English, 'Open Door') reforms in 1986. This key policy development was followed in 1994 by the United States' decision to lift its trade embargo on Vietnam, and shortly thereafter by Vietnam's entry into ASEAN in 1995. In 2007, Vietnam acceded to the WTO. Each of these key events triggered surges in investment activity and accelerated Vietnam's economic development.

From 1986 to the present, Vietnam's GDP has grown at an average annual rate of approximately 6.5%. The country's demand for electricity has risen in parallel with this remarkable rate of economic development.

By way of illustration, Vietnam's total national electricity consumption was approximately 322.8 billion kWh in 2025. In contrast, in 2000, total national consumption was approximately 27 billion kWh.

Current projections indicate that Vietnam's electricity demand will continue to rise sharply during the coming decades. Official government forecasts estimate that national electricity demand could increase to between 1,238 TWh and 1,375 TWh by 2050.

With limited exceptions, Vietnam's electricity market is largely controlled by Vietnam Electricity ("EVN"), a monopoly state-owned enterprise, although policy and fledgling legislative frameworks have been established for the gradual development of competitive wholesale and retail electricity markets within the country. While the concept of developing competitive electricity markets within Vietnam has been on the drawing board for some years, effective and meaningful implementation has to date been slow.

In parallel, the Vietnam National Industry – Energy Group ("PetroVietnam" or "PVN") has emerged as a major independent power producer, holding the second-largest installed capacity nationwide and leading the development of Vietnam's first LNG-fired power plants (such as Nhon Trach 3 and 4, which entered commercial operation in early 2026), thereby diversifying generation sources beyond EVN's traditional dominance.

Electricity generation sources

Based on the statistics most recently published by EVN (as at the time of this publication being issued), Vietnam's approximate electricity generation mix currently consists of:

(a) coal-fired thermal power (approximately 46.2%);

(b) hydroelectric power (approximately 32.6%);

(c) LNG-fired turbines (approximately 6.2%);

(d) solar (including utility scale and rooftop) (approximately 7.64%);

(e) wind (onshore and near-shore) (approximately 4.08%);

(f) cross-border imports from China and Laos (approximately 2.7%); and

(g) others (consisting of biomass, wate-to-energy, and small-scale hydroelectricity) (approximately 0.58%).

Vietnam has made impressive progress in its transition towards renewable energy sources during the last 10 years, and the pace of renewable energy development is expected to increase rapidly alongside the significant progress that has been made recently in the development of a robust and effective regulatory platform.

Power Development Plan VIII

From a high-level policy perspective, Vietnam's electricity industry is primarily driven by the Vietnamese government's Power Development Plan VIII, which was first officially issued in 2023 and has since been amended and supplemented on a number of occasions ("PDP VIII"). PDP VIII sets out the government's strategic master plan in relation to Vietnam's electricity industry to 2030 and also includes longer-term vision extending to 2050.

Vietnam has made an international commitment to achieve net-zero emissions by 2050, and PDP VIII is designed to underpin the achievement of this objective while also achieving energy security for the country in parallel with its continuing and rapid economic development. PDP VIII contemplates Vietnam moving towards a vastly larger and more diverse electricity generation and distribution structure, with increased reliance on renewables and LNG, gradual reduction in reliance on coal, and a massive upgrading and expansion of Vietnam's grid infrastructure.

Starting from a baseline of approximately 69 GW of installed generation capacity in 2020, PDP VIII envisages the achievement of installed generation capacity of between 183 GW and 236 GW by 2030 and between 774 GW and 839 GW by 2050.

PDP VIII envisages coal being completely phased out by 2050 and a generation mix dominated by renewables by 2050, including:

(a) solar (approximately 168 GW to 189 GW);

(b) offshore wind (approximately 113 GW to 139 GW);

(c) onshore wind (approximately 85 GW to 91 GW);

(d) hydroelectric (approximately 36 GW to 40 GW);

(e) nuclear (approximately 10 GW to 14 GW); and

(f) the remaining balance being comprised of LNG, biomass, battery storage, and other generation methods.

PDP VIII establishes a robust and progressive policy framework within which the Vietnamese government intends to pursue the achievement of PDP VIII's ambitious objectives.

Feed-in tariff projects

In 2017, the Vietnamese government announced a highly attractive feed-in tariff scheme for utility-scale solar projects, which applied to projects that achieved commercial operation by 30 June 2019. An attractive FiT scheme was announced for utility-scale wind projects in 2018, and a second (slightly less) attractive FiT scheme was announced for utility-scale solar in 2020.

While these attractive FiT schemes succeeded in catalysing a large volume of investment and development in utility-scale solar and wind projects in Vietnam, they have ultimately given rise to significant issues. These early FiT projects were developed against the backdrop of an underdeveloped regulatory framework. The rush to achieve the commercial operation date ("COD") of these projects by the applicable deadlines in this context caused significant non-compliance issues for many projects. These non-compliance issues have, in turn, led to inconsistent application of the applicable PPAs by EVN, resulting in significant exposures for both sponsors and financiers. These issues have become an obstacle to Vietnam's renewables transition process, and many of them remain unresolved.

FiT availability in Vietnam expired in 2021, and significant further development under FiT models in Vietnam is not anticipated in the foreseeable future.

C&I rooftop solar

The development of rooftop solar in the Commercial & Industrial ("C&I") space also began in 2017 and accelerated in 2019 as a result of anticipated access to attractive FiT models and early developments in the applicable regulatory regime. The period from 2017 to 2021 saw a massive increase in investment and development in the C&I rooftop sector, alongside the corresponding growth in the utility-scale sector. Although many C&I rooftop projects successfully benefited from the FiT scheme available until 2021, the overall performance of projects aimed at securing FiT eligibility has been mixed. Several key factors have given rise to headwinds in the C&I rooftop sector, including regulatory compliance issues similar to those described above in relation to utility-scale solar and wind projects, as well as grid infrastructure quality and capacity issues.

From 2021 to 2024, the C&I rooftop industry in Vietnam shifted away from FiT projects and towards the development of direct-to-offtaker PPA models, with sales of excess capacity to EVN generally not contemplated or viable in most cases. These commercial PPA models operated with a modest degree of success but have now been superseded by the DPPA and self-consumption models described below.

DPPA framework

From 2024 to the present, the Vietnamese government has developed a legislative framework that facilitates and encourages investment and development in direct power purchase agreement ("DPPA") projects, including:

(a) "virtual" DPPA models, under which: (i) the develop-er sells generated electricity to EVN via the national grid at the prevailing market price; (ii) the offtaker buys electricity from EVN via the national grid; and (iii) the developer and the offtaker enter into a contract for difference at a pre-agreed strike price ("Virtual DPPA"); and

(b) "private wire" DPPA models, under which the developer sells electricity directly to the offtaker via privately developed infrastructure, without reliance on the national grid, at a commercially negotiated price ("Private Wire DPPA").

The DPPA framework (whether the Virtual DPPA model or the Private Wire DPPA model) is applicable only to "large power consumers" that consume on average at least 200,000 kWh of electricity per month.

For a number of reasons (including, among others, the need for further regulatory clarification), the licensing and development of DPPA projects has not yet taken off in earnest. It is, however, clear that the Vietnamese government is committed to fostering and encouraging investment and development under the DPPA model. Investment and development activity within this space is expected to surge in the near team and continue accelerating over the next five to ten years—particularly in the C&I space and Vietnam's inevitably burgeoning data centre industry.

Self-consumption framework

The last two years have also seen the development of a legislative framework that facilitates and encourages investment in and development of renewable projects on a self-consumption basis. The self-consumption model is not limited to large power consumers and is available to power consumers of all types and sizes in Vietnam.

Developers can participate in renewable projects under the self-consumption framework by deploying various lawful commercial models, such as equipment-leasing arrangements, the sale of equipment on deferred-payment models, and other permissible mechanisms – albeit that care must be taken in formulating and documenting these types of commercial models, to avoid adverse interpretations by regulators as to the existence of unlawful sales of electricity or regulated "financial leasing" arrangements. The essence of the self-consumption framework is that generators are not permitted to sell electricity directly to offtakers. Developers must therefore formulate their commercial models to avoid not only transactions that in essence constitute the sale of electricity, but also those that fall within the definition of "financial leasing", an activity reserved exclusively for entities licensed by the State Bank of Vietnam.

BESS

After a relatively slow start (due largely to the absence of a dedicated regulatory framework), BESS is currently building major momentum as an important component of Vietnam's electricity efficiency landscape, particularly in the C&I space. Although the regulatory framework is not yet fully developed, there is already sufficient legislative for developers and offtakers to integrate BESS into their electricity infrastructure—often in conjunction with rooftop solar capacity—and many are doing so successfully.

PDP VIII recognises storage (including BESS) as playing an increasingly important role in balancing intermittent renewable generation and supporting grid stability. PDP VIII identifies storage as a key tool for improving transmission efficiency, particularly in the many areas of Vietnam where renewable generation is expanding faster than grid capacity.

While PDP VIII envisions increasing BESS presence within Vietnam's electricity generation structure (including in ancillary services) BESS is currently positioned primarily as an integrated or grid-supporting and flexible source, as opposed to a fully standalone (independent) power source with broad wholesale market access or independent PPAs (beyond pilots) – having regard to the express provisions of Vietnam law which currently recognise BESS.

PDP VIII envisions a significant expansion of storage participation in Vietnam's electricity market by facilitating ancillary services such as frequency regulation, peak shaving, and renewable firming. The plan anticipates the deployment of utility-scale storage alongside major renewable projects by 2030 and foresees storage becoming a fundamentally important part of Vietnam's energy security matrix by 2050.

Offshore wind

Despite concerted efforts from investors and developers - including several major international players - during the past decade, the offshore wind sector in Vietnam has yet to develop in a significant way. Key obstacles have included sensitivities in relation to territorial waters as well as regulatory approval processes that prospective participants have thus far found insurmountable.

Nevertheless, PDP VIII is clear in its recognition of offshore wind as a fundamentally important element of Vietnam's future power generation mix. The Vietnamese government has recently been working on reforms and strategies to make the path to offshore wind project development more feasible. It is expected that state-owned enterprises (namely, PetroVietnam and its subsidiaries) together with private joint-venture partners will play a key role in the development and operation of offshore wind projects in Vietnam's territorial waters going forward.

LNG

Vietnam's LNG electricity generation sector is comparatively underdeveloped compared to other emerging market jurisdictions worldwide. As at the time of this publication, there are two combined-cycle LNG plants in operation in Dong Nai province (namely, Nhon Trach 3 and 4) in Vietnam, having a combined capacity of approximately 1.6 GW. These LNG-fire projects have pioneered a hybrid corporate financing model which blends international and domestic loans without full sovereign guarantees, thereby setting a precedent for future LNG-fired projects.

A number of LNG projects are currently in the construction or pre-construction phases in Vietnam, with capacities of up to 2.5 GW and a COD scheduled to occur between 2027 and 2030. Numerous other LNG projects are in the licensing, feasibility study, or investor selection phase. PDP VIII envisions approximately 22.5 GW of LNG-fired capacity online in Vietnam by 2030.

LNG project development in Vietnam faces a number of key challenges, including bankability issues associated with long-term PPAs with EVN, offtake guarantee issues, LNG supply and price volatility, heavy reliance in LNG imports, and delays in obtaining the myriad governmental approvals required. These and related financing issues have resulted in the slower-than-expected growth of Vietnam's LNG power generation sector.

Nevertheless, the Vietnamese government's commitment to fostering LNG as a crucial component of Vietnam's power source mix remains clear. The Vietnamese government has repeatedly signalled a move towards more flexible financing approaches, as evidenced by the Nhon Trach 3 and 4 model, and is actively considering policy reforms, such as draft legislative amendments to enhance offtake guarantees to improve project bankability (for example, by raising minimum volumes and extending guarantee periods).

Nuclear

There are currently no nuclear power plants operating or approved for construction in Vietnam. Two fledgling nuclear projects were cancelled in 2016, largely as a result of cost concerns.

Nevertheless, nuclear power projects continue to receive broad policy and legislative recognition in Vietnam. PDP VIII envisions nuclear as a potential – and potentially significant – part of Vietnam's power generation mix, albeit in less definite and committed terms compared to other key generation sectors. This recognition includes specific allowance for and recognition of small modular reactors ("SMRs") as part of advanced and next-generation technology options for flexibility and diversification – albeit only in theoretical terms at this stage.

The potential for nuclear development in Vietnam is being actively examined and is actually being progressed by the Vietnamese government. As of the time of this publication, there is one nuclear power plant project (Ninh Thuan 1) in relation to which bilateral agreements have been entered into and a feasibility study has been finalised, thereby elevating this project from the theoretical policy stage to the actual implementation stage. This provides a clear indication of the Vietnamese government's resolve to give effect to the policy objectives of PDP VIII as they relate to a key strategic role for nuclear as part of Vietnam's power generation mix during the period between now and 2050.

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