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QAZAQ GREEN

KONRAD ADENAUER STIFTUNG

2025
№ 15 (19) December

The Path to Sustainability


QAZAQ GREEN
RES ASSOCIATION
UNITED PLATFORM
for Kazakhstan and international players in the field of renewable energy sourses
AIM – SECTOR CONSOLIDATION
to bring together actors in the field of renewable energy sourses in order to create favorable conditions for development of the sector
MISSION:
formation of a holistic position of association memebers to obtain attractive conditions for investing in the projects of renewable energy sourses
Astana,
Chubary microdistrict, A. Knyaginina Str., 11
qazaqgreen.kz
Members and partners of the Association
MINISTRY OF ECOLOGY AND NATURAL RESOURCES OF THE REPUBLIC OF KAZAKHSTAN
MINISTRY OF ENERGY OF THE REPUBLIC OF KAZAKHSTAN
MINISTRY OF WATER RESOURCES AND IRRIGATION OF THE REPUBLIC OF KAZAKHSTAN
Development Bank of Kazakhstan
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ATAMEKEH

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KONRAD ADENAUER STIFTUNG

"This industry [editor's note]: energy is the backbone of our economy and a vital component of our strategic partnership. Today, we are implementing joint infrastructure projects and establishing secure and efficient routes for transporting energy resources. A prime example of successful cooperation in this area is the Green Energy Corridor project being carried out by Kazakhstan, Azerbaijan, and Uzbekistan. We believe renewable energy sources, particularly solar power, deserve special focus. In this regard, we propose establishing a Council for Best Practices in Energy Efficiency within the Organization of Turkic States. At the same time, the exploration and efficient use of oil, gas, uranium, coal, and rare earth minerals remain the foundation of Kazakhstan's energy strategy."

STATEMENT BY THE PRESIDENT OF THE REPUBLIC OF KAZAKHSTAN MR. KASSYM-JOMART TOKAYEV
AT THE 12TH SUMMIT OF THE
ORGANIZATION OF TURKIC STATES

October 7, 2025

Electricity generation from renewable energy sources in the first **9 MONTHS OF 2025** rose compared to the same period

INSTALLED CAPACITY

including: 3,248.12 MW

1,670.05 MW

Wind Farms

313,685 MW

small HPPs

Solar Power Plants

1,262.61 MW

Biogas Power Plants

1,77 MW

POWER GENERATION

including: 6 447 mln kWh

Wind Farms

3,771,5 mln kWh

Solar Power Plants

1,725 mln kWh

small HPP

948 mln kWh

Biogas Power Plants

2,5 mln kWh

The share of electric power generated by the RES in the total volume of electric energy production 7,17%

Electricity generation from renewable energy sources in 9 months of 2025 increased by 11,5% compared to the same period in 2024.


Qazaq Gr
Ассоциация ли
ВИЭ Казахст
ы объединяем:
Журнал Qazaq
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Школа ВИЭ
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ля экспертов отрасли
ергии
жения в сфере ВИЭ

THE WELCOME SPEECH OF NURLAN KAPENOV, THE CHAIRMAN OF THE BOARD OF DIRECTORS OF QAZAQ GREEN RENEWABLE ENERGY SOURCES ASSOCIATION

DEAR COLLEAGUES, PARTNERS AND FRIENDS!

As 2025 draws to a close, it has been a year of intensive work, new initiatives and significant milestones for the Qazaq Green Renewable Energy Sources Association in advancing renewable energy across Kazakhstan.

One of the year's major achievements was the completion of the White Paper on “Application of Battery Energy Storage Systems (BESS) within the Unified Power System of the Republic of Kazakhstan”, developed with support from Huawei. This document represents the first comprehensive study of its kind, examining the potential for energy storage deployment in Kazakhstan, its contribution to grid stability and its role in renewable energy integration.

On 28 May 2025, Qazaq Green RES Association with support from TotalEnergies hosted the 1st International Conference on Energy Storage Systems “BESS Forum 2025” at Nazarbayev University. The event convened representatives from leading global storage manufacturers including SAFT, Sungrow, Huawei and Envision. The forum featured discussion of the White Paper, marking an important milestone in establishing professional dialogue around BESS implementation in Kazakhstan's energy sector.

Another landmark event was the IV International Business Festival on Renewable Energy “Qazaq Green Fest 2025” held on September 11-13 in Aktau. As in previous years, the festival served as a platform for experience sharing and discussion of critical issues in renewable energy development. Through the Qazaq Green Expedition, participants toured a 50 MW solar facility in Zhanaozen and the Bozhyra tract.

The festival addressed core sectoral themes: direct corporate renewable energy procurement, grid integration and forecasting, renewable energy participation in the balancing market, legislative initiatives, green hydrogen prospects and gender dimensions of the sustainable transition. Following these discussions, a Charter — an Appeal to the Government of the Republic of Kazakhstan was drafted, identifying key barriers and proposing pathways for sectoral advancement.

On 30 October 2025, Qazaq Green RES Association convened Astana ESG Forum focused on sustainable development, responsible investment and corporate social responsibility. The forum yielded practical recommendations for businesses and development institutions.

Throughout the year, the Qazaq Green Renewable Energy Sources Association participated in drafting alternative energy legislation, representing the professional community. The Association put forward measures to advance direct corporate renewable energy procurement and energy storage systems to enhance the flexibility and competitiveness of the national grid.

Another important development was the joint work between Qazaq Green and the Ministry of Energy of the Republic of Kazakhstan to clarify the upward and downward coefficient values for renewable energy facilities participating in the balancing electricity market that signed long-term power purchase agreements with the Single Buyer from 1 July 2023 to 12 April 2025. These measures will support the financial stability of some 70 projects totalling approximately 2 GW of installed capacity.

Dear colleagues, this year the Government of the Republic of Kazakhstan designated 22 December as Energy Worker's Day. My warmest congratulations to all industry professionals on this occasion. Your work, expertise and dedication form the foundation of our country's sustainable, green future.

I also extend my best wishes for 2026. May you find inspiration, achieve new milestones and enjoy wellbeing and prosperity. May the coming 2026 year bring fresh opportunities for renewable energy development in Kazakhstan and the strengthening of partnerships toward a sustainable future.

Nurlan Kapenov
Chairman of the Board of Directors
QAZAQ GREEN RES Association

KAZAKHSTAN STRENGTHENS COLLECTIVE

COMMITMENT TO SUSTAINABLE DEVELOPMENT

On 30 October 2025, the Astana ESG Forum 2025 took place — a flagship event on sustainable development jointly organised by the International Finance Corporation (IFC), the Qazaq Green Renewable Energy Sources Association, and the United Nations Development Programme (UNDP Kazakhstan). The forum served as a cross-sector platform for aligning policies, sharing practical experience, and formulating systemic recommendations for embedding ESG principles into Kazakhstan's economy, with a particular focus on small and medium-sized enterprises.

The event gathered representatives of government agencies, financial institutions, the private sector, academia, international organisations, and civil society. Discussions focused on the practical realisation of the strategic directions outlined by President Kassym-Jomart Tokayev in his Address "Kazakhstan in the Era of Artificial Intelligence: Key Tasks and Their Solutions through Digital Transformation", as well as on the goals of the Strategy of the Republic of Kazakhstan on Achieving Carbon Neutrality by 2060 and the Concept for the Transition of Kazakhstan towards a Green Economy by 2050.

In his address, Magzum Mirzagaliyev, Adviser to the President of Kazakhstan, noted that despite global uncertainty, ESG issues remain as pressing as ever. He stressed that climate change is having a stronger impact on Central Asia than on many other regions, and that the

Environmental Code adopted in 2021 laid a solid foundation for improving environmental governance in the country. "The government is working with a number of investors to develop facilities using advanced technologies that minimise environmental harm," he said.

Deputy Minister of Energy Kudaibergen Arymbek stated that Kazakhstan is entering a new phase of energy development — shifting from raw material exports toward the production of high value-added products. He underlined that the energy transition is not an end in itself but a driver of sustainable growth and technological modernisation: "Kazakhstan's energy future will combine traditional resources, clean technologies, and artificial intelligence."

At the close of the forum, participants adopted a document titled "ESG Transformation of Kazakhstan: Collective Commitment to Sustainable Development," which was submitted to the Government of Kazakhstan. The document outlines key recommendations for the gradual introduction of ESG reporting standards, the expansion of green finance instruments, support for regional energy transition programmes, the advancement of educational initiatives, and stronger business engagement in climate and social projects. It also highlights the importance of integrating ESG approaches into corporate strategies, strengthening public–private partnerships, developing ESG management expertise, and increasing public awareness of sustainability principles.

Participants agreed that successful ESG transformation requires coordinated efforts by government, business, academia, and civil society. Their combined actions will form the foundation for Kazakhstan's transition to a sustainable, competitive economy grounded in transparency, social responsibility, and sound governance.

At the close of the forum, participants adopted a document titled "ESG Transformation of Kazakhstan: Collective Commitment to Sustainable Development," which was submitted to the Government of Kazakhstan.

PLENITUDE ANNOUNCES THE COMMISSIONING OF A 50 MW SOLAR POWER PLANT

The plant is part of the 247 MW hybrid power facility in Kazakhstan developed by Eni and KazMunayGas

Plenitude announces the commissioning of the 50 MW Solar Power Plant in Zhanaozen, Mangystau Region, Kazakhstan. The plant is a part of an innovative project led by Eni and KazMunayGas (KMG), the first large-scale of its kind, for the realization of a 247 MW Hybrid Power Plant which integrates solar, wind and gas power generation. The plant will contribute to provide electricity to KMG facilities in the surrounding area.

The launch of the solar plant is a significant milestone in the partners' shared commitment to advancing Kazakhstan's energy transition. Equipped with state-of-the-art photovoltaic technology, including more than 80.000 panels on an area of around 80 hectares, the facility is expected to produce 86 GWh of renewable energy annually. The hybrid configuration combines renewable energy sources with gas generation to guarantee a stable supply, even under variable weather conditions.

"The commissioning of the solar plant represents a milestone for the Mangystau Hybrid Power Project, contributing to Kazakhstan's broader energy transition.

It reflects the effectiveness of combining international expertise with local commitment and lays a strong foundation for future collaboration in the country's renewable energy sector." said Federico Pugliese, Managing Director of Plenitude Kazakhstan.

Thanks to the long-standing partnership between KazMunayGas and Eni, strengthened by Plenitude's expertise in renewable energy, the project will contribute to the Mangystau region's energy transition pathway, support its economic growth through job creation, technological development and local capacity building.

Plenitude, a company controlled by Eni, is present in more than 15 countries around the world with a business model that integrates the production of electricity from renewable sources, with 4,5 GW of installed capacity, the sale of energy and energy solutions to over 10 million European customers, and an extensive network of 22,000 charging points for electric vehicles. By 2028, globally the company aims to reach 10 GW of installed renewable capacity.

Saken Kalkamanov:

"The challenge isn't energy versus environment - it's finding the right balance"

The International Green Technologies and Investment Projects Center (IGTIC) celebrates its seventh anniversary this year. Over this period, the organization has become a key platform for advancing the green agenda and fostering dialogue between science, business, and government. Today, the Center continues its work on implementing best available techniques (BAT), supporting cleantech startups, and expanding international cooperation. In this interview with Qazaq Green, Chairman of the Management Board of IGTIC Saken Kalkamanov discusses current priorities and directions of Kazakhstan's green transition.

INTERVIEW

– This year marks the 7th anniversary of the International Green Technologies and Investment Projects Center. What goals and objectives does the Center pursue? What has been achieved so far?

– The International Green Technologies and Investment Projects Center celebrated its seventh anniversary this year. During this period, it has become a key platform for advancing the green agenda and creating conditions for Kazakhstan's environmental transformation. Our mission is to facilitate the country's and the region's transition to sustainable development through promoting green technologies, developing the BAT system, and attracting investment in environmentally friendly projects.

The BAT Bureau plays a crucial role. Over recent years, 20 BAT reference documents have been prepared and published, covering sectors such as energy, cement, oil and gas, and metallurgy. These documents formed the foundation for a new format of environmental permits, where enterprises must not only comply with regulations but also implement BAT. This approach ensures genuine industrial modernization and reduced environmental impact.

In parallel, the Center actively develops international cooperation. We serve as the national coordinator for the Global Cleantech Innovation Programme (GCIP) in partnership with UNIDO and GEF, supporting clean technology development and innovation-driven startups in Kazakhstan. Additionally, IGTIC annually represents Kazakhstan at UN Climate Change Conferences (COP), where we promote national initiatives and showcase the country's progress in sustainable development and the green economy.

Another major area is the Green Bridge Partnership Programme, which brings together governments, businesses, research institutions, and investors to facilitate green technology transfer and joint projects. This platform has become a bridge between Europe and Asia, enabling broad international collaboration.

Over seven years, IGTIC has evolved into a strategic platform uniting science, business, and government in pursuit of a sustainable and environmentally responsible future.

– IGTIC is a participant in the Global Cleantech Innovation Programme. Could you tell us about this initiative?

– The Global Cleantech Innovation Programme (GCIP) is a global initiative implemented by the United Nations Industrial Development Organization (UNIDO) and the Global Environment Facility (GEF). Launched in 2011, it aims to transform the future through innovation in clean technologies. The program operates in 16 countries, bringing together entrepreneurs, governments, investors, and scientists to build a sustainable green economy. GCIP not only supports startups but also cultivates a new generation of cleantech pioneers, giving SMEs access to international accelerators, advanced knowledge, global investment, and strategic partnerships.

Negotiations with UNIDO to launch GCIP Kazakhstan began in 2021. In 2022, with strong support from the Ministry of Ecology and Natural Resources, an agreement was signed to implement the program nationally. Since 2023, Kazakhstan has been an official GCIP participant.

The program covers the full startup lifecycle, from idea to commercialization. Participants receive comprehensive project support, training from UNIDO experts and international partners – including organizations from the United States –on innovation, ecology, ESG entrepreneurship, business modeling, and international certification, as well as assistance in attracting funding.

Each participant is mentored by experienced experts who oversee solution development and environmental impact assessment.

Over two years, GCIP Kazakhstan has received more than 200 applications and accelerated 46 startups. Several have reached international recognition—teams such as Ozen-M and Murat Beton Technology won awards at the Cleantech Days finals in Vienna and Istanbul.

The results are tangible: more than 500,000 tons of CO_2-equivalent emissions have been reduced, and the participants' combined economic impact exceeds USD 6 million. Companies like Science and Technology Water Center, KUB-Corporation, and FACEPLATE have demonstrated the highest growth.

Starting in 2026, we plan to scale GCIP Kazakhstan into a regional program, extending it to Central Asia to unite the region's efforts in advancing cleantech solutions.

– The Center actively supports startups and innovation in cleantech. What technologies are emerging from Kazakhstan's innovators? How mature are they? What are the main barriers to commercialization, and how can the Center help overcome them?

– Kazakh innovators are developing a broad range of cleantech solutions – from low-carbon materials and renewable energy to digital platforms and waste management systems. Promising areas include energy efficiency technologies, recycling of electronic and industrial waste, green building materials, water treatment, and biotechnology. Many of these solutions have already reached maturity and been piloted across various regions of Kazakhstan. Examples include Science and Technology Water Center with microalgae-based wastewater treatment, KUB-Corporation with an

innovative wind generator, and FACEPLATE with a digital platform for energy-efficient construction. These projects are already showing economic returns and attracting investors.

However, challenges remain – limited scaling finance, restricted market access, lack of international partnerships, and the need for regulatory support to speed up adoption.

IGTIC's role is crucial. Through GCIP, we accelerate startups, help them attract investors, and bring them to international platforms like Cleantech Days and COP.

We also work on regulatory frameworks and partnerships with tech parks and universities.

Our goal is to ensure that innovation leaves the lab and becomes a real driver of economic and environmental progress.

– The energy sector accounts for most emissions, largely from traditional power plants. Yet, new coal plants are being announced. Isn't there a conflict between energy security and ecology?

– This is a critical question at the core of Kazakhstan's current energy policy. Energy remains the main source of GHG emissions, and concerns about new coal projects are legitimate. On one hand, the country must ensure energy security and stable supply. On the other, it must honor its emission reduction commitments.

The conflict between coal-based generation and ecology is not inevitable – it arises when a strategic, integrated approach is missing. Kazakhstan's situation,

with simultaneous emission reduction goals and plans for new coal capacity, reflects systemic tension. Yet, part of the country's power is still imported, and dependence on neighboring systems remains.

Today, around 66% of the generating fleet is critically worn out; 76% of thermal plants have operated for more than 45 years. This poses direct risks to energy security. Simply shutting them down without replacement is impossible.

Meanwhile, demand for electricity grows by about 2% annually, and renewables, despite rapid growth, cannot yet cover the base load due to intermittency. Coal remains cost-competitive and locally available.

Thus, building new coal plants is largely a forced measure – a response to immediate energy deficit risks. This is a short-term solution.

The issue is now being addressed jointly with the Ministry of Energy, the Ministry of Ecology and Natural Resources, and the Government. Projects under development use advanced technologies such as supercritical and ultra-supercritical steam pressure systems, representing BAT in coal generation. BAT should be viewed as a step toward a low-carbon future, not the end goal.

The long-term path is synergy. The key lies in strategic and technological discipline. New plants must strictly follow BAT principles, incorporating infrastructure for flue gas cleaning and ash management systems from the outset.

New coal capacity should function as part of an integrated strategy, balancing the intermittency of renewables rather than competing with them.

The conflict between coal-based generation and ecology is not inevitable — it arises when a strategic, integrated approach is missing. Kazakhstan's situation, with simultaneous emission reduction goals and plans for new coal capacity, reflects systemic tension. Yet, part of the country's power is still imported, and dependence on neighboring systems remains.

Diversifying the energy mix through renewables, nuclear, and gas generation is the only long-term way to reduce coal dependency.

Thus, the challenge is not to oppose energy and ecology but to balance their development. Kazakhstan must ensure reliability today while confidently moving toward a low-carbon future.

– Last year, the Government postponed the transition of 50 major polluters to BAT from 2025 to 2031. What caused this decision? Will these enterprises be ready by 2031?

– I need to clarify something important about your question. The Government only extended the deadline for 22 essential service facilities in the heat and power sector. Other category I facilities remain within the original timeline.

The decision followed a comprehensive analysis and was driven by multiple interrelated factors. Audits revealed critical depreciation of key generation assets – averaging 66%.

Modernization is not about installing filters; it often requires full-scale technical re-equipment or new construction. The total investment needed for the 22 energy-producing facilities exceeds 3 trillion KZT. The six-year delay prevented a scenario where enterprises unable to complete upgrades would face forced shutdowns, threatening energy and economic security.

At the same time, Kazakhstan must maintain stable power supply, and it is impossible for all plants to halt simultaneously for modernization.

The extension gives all stakeholders—government, business, investors—time to build financing mechanisms and conduct industrial pilot tests to verify technology effectiveness under local conditions before large-scale rollout.

Will enterprises be ready by 2031? That depends on consistent joint work over the next six years. Progress so far allows for cautious optimism:

– Roadmaps for each of the 22 energy-producing facilities have been approved.

– Industrial pilot test planning is underway. Pilot projects for emission control systems are being prepared to provide real, not theoretical, cost and efficiency data.

Readiness by 2031 is achievable but not guaranteed. Success depends on strict adherence to these roadmaps and continuous state oversight. The delay reflects economic realities but must not become a pretext for endless postponement. In essence, the shift from 2025 to 2031 aims at a realistic, not merely formal, transition to BAT principles.

From Kashagan to 1 GW of Wind Power:

A New Era for TotalEnergies in Kazakhstan

In 2025, global energy reached a historic milestone: for the first time, electricity generation from renewable sources surpassed coal generation, mainly due to growth in China and India. Against the backdrop of this global shift, Kazakhstan is also actively pursuing a decarbonization course, setting a goal to increase the share of renewable energy sources (RES) in electricity generation to 15% by 2030. Currently, according to the Ministry of Energy of the Republic of Kazakhstan, there are 158 RES facilities operating in the country with a total capacity of over 3.2 GW, which in the first half of 2025 provided 6.8% of all electricity produced in the republic. To achieve these goals, Kazakhstan plans to commission 8.5 GW of new "green" capacity by 2035. We spoke with Thierry Plaisant, Managing Director of TotalEnergies Renewables Kazakhstan, about the company's current projects, plans, and role in the development of Kazakhstan's RES sector.

– Thierry, thank you for your time. Please tell us about TotalEnergies' renewable energy strategy in Kazakhstan and globally.

– Thank you for your interest in TotalEnergies' activities and the opportunity to talk about our goals, projects, and plans. Globally, the company is implementing a multi-energy approach to achieve carbon neutrality by 2050.

To reach this ambitious goal, the company actively invests in the development of low-carbon energy sources worldwide. By 2030, we plan to deliver close to 120 TWh of power production by 2030. This will account for approximately 20% of the company's total energy production by that time.

We are building an integrated model that combines solar and wind energy sources with flexible capacities – gas-fired power plants and energy storage systems – to provide consumers with clean electricity without interruption.

As for Kazakhstan, we are implementing a flagship project here – the 1 GW "Mirny"

wind farm (WPP) in the Zhambyl region. The Mirny WPP will be equipped with 150 turbines and a 600 MWh energy storage system. This is the largest renewable energy project in the country, and it sets new benchmark in renewable energy sector of Kazakhstan both scale-wise and from technological standpoint of view with the first ever BESS. The planned generation of "Mirny" is about 4 billion kWh– enough to power over 1 million households. The expected annual decarbonization effect will be up to 3.5 million tons of CO_2.

Our project is being implemented jointly with Samruk-Energy JSC and KazMunayGas NC JSC. Construction is scheduled to begin in 2026, with commissioning in 2028.

Furthermore, we already operate two solar power plants with a total capacity of 128 MW in the Zhambyl and Kyzylorda regions. These projects directly support Kazakhstan's national goals – increasing the share of RES to 15% by 2030 and achieving carbon neutrality by 2060.

In general, TotalEnergies has been present in Kazakhstan since 1993. Our journey has begun with development of the Kashagan offshore oilfield, and we are proud to be among pioneers of this challenging project. Today Kashagan, where our company holds 16.81% of shares, accounts for around 1/5th of crude oil production in Kazakhstan, which helps position the country as one of the key players in global energy market. We are also successfully represented in the lubricants and motor oils market. As you can see, we have a long-standing and fruitful relationship. And I am glad that Kazakhstan, which I love very much, has become another country where our company is implementing its multi-energy strategy.

– At what stage is the Mirny project?

– Together with our partners, we have completed the selection of turbine suppliers for "Mirny." The corresponding letters of award for supply were signed on October 3rd during the Kazakhstan Energy Week in Astana.

Envision Energy and SANY Renewable Energy Co. were chosen as suppliers – both companies are among the top ten global wind turbine manufacturers. In addition to their leadership positions and expertise, a major role in choosing these manufacturers was their ability to provide cost-effective solutions, making clean energy more accessible, as well as their commitments to localization—both Envision Energy and SANY Renewable Energy Co. plan to localize production processes in the Republic of Kazakhstan.

Also, at the end of October, we held public hearings on the project across several communities in the Zhambyl and Almaty regions. The hearings were successful, and all materials have been sent to the authorized bodies to obtain environmental permits for construction work, which is scheduled to begin at the end of the first quarter of next year.

– What specific works are planned as part of the Mirny project? What is the expected economic effect for the region during the construction and operation of the Mirny WPP?

– In addition to preparatory work on the future WPP site, installation of turbines, and the energy storage system, we plan to expand the 500kV substations in the town of Shu and the village of Ulken, which will allow us to integrate "Mirny" into the national energy grid. The work will include the construction of over 230 km of 500 kV overhead transmission lines, laying over 250 km of 35 kV cable lines within the WPP territory, and building two 35/500 kV step-up substations.

Currently, the selection of the general contractor (EPC) for the construction work is underway. Upon completion of the tender, I think a procurement plan will be drawn up and updated, which will clarify which goods, services, and works can be localized during construction. The construction phase is expected to generate a substantial number of job opportunities for Kazakhstani workers.

As for the effect during operation, we expect that about 200 Kazakhstanis will be employed at the Mirny WPP. I find it difficult to give precise forecasts on the economic contribution to the budget of the Zhambyl region from the full-scale operation of the WPP, but I can say with confidence that significant tax revenues are expected for the local treasury. For example, our 100 MW MKAT solar station in the town of Shu, with an annual generation of over 172 GWh, has contributed over 2.6 billion tenge in taxes to the local budget since its launch in late 2019 to the present day.

In addition to additional investments in the region, taxes, and the obvious benefits of a tangible contribution to decarbonization and additional clean electricity generation, which will help balance the deficit in the Southern zone, we are planning to launch social projects in coordination with the local akimats (local executive bodies). The details of the projects are still being worked out, and the needs of the local population, as well as the opinions of the project partners, will be of great importance here.

– Let's talk about the financial component of the Mirny project. How do you plan to attract financing?

– TotalEnergies is known worldwide as a reliable operator in the energy sector, and thanks to this reputation, it is easier for us to find investors for our renewable energy projects. The "Mirny" wind farm, valued at over a billion dollars, is no exception.

Several financial institutions, including the Development Bank of Kazakhstan (DBK) and the EBRD, have expressed interest in funding the project. In our case, a project financing mechanism is implied. We have reviewed all proposals, and negotiations with potential investors are in the final stages. Our potential collaboration with DBK is especially meaningful, as it reflects a shared commitment to the sustainable development of Kazakhstan and contributes directly to achieving the country's strategic goals in the energy sector. We expect that partners and stakeholders will make a Final Investment Decision (FID) on the project early next year.

– Since you have mentioned that "Mirny" WPP is setting up a new technological benchmark in Kazakhstan with its first ever BESS, how would you address shortage of competencies in this specific area?

– You've highlighted a critical point. The renewable energy sector is developing rapidly in Kazakhstan and building a highly qualified workforce to support it is essential.

To address this, we are planning to establish a BESS Excellence Center in Kazakhstan as part of the 'Mirny' project. This center will be dedicated to training and developing local talent to operate and maintain

this advanced new technology. We are currently in the process of designing the training curriculum and identifying the best institutional partners to serve as a learning base for the Center.

Additionally, we are actively developing a dual training program between French and Kazakhstani universities. While the initial framework is still in development, we believe these educational investments are fundamental to building an even more skilled and resilient workforce for our renewable assets.

This commitment to local development isn't new for us. I am incredibly proud that 100% of the staff operating and maintaining our solar assets in the Kyzylorda and Jambyl oblasts are local talents. Moreover, they are residents of the neighboring communities, such as Shu and Zhalagash.

At TotalEnergies, we place great importance on developing and promoting local professionals. It is a core part of our mission, contributing not only to the success of our own activities but to the strength of the entire renewable industry in Kazakhstan.

– What other projects, besides Mirny, are the company currently considering?

– Our business development team is constantly studying potential projects in Kazakhstan where our experience and expertise would bring mutual benefit to both clients and us. We would be happy to work with large industrial enterprises directly, as well as in regions experiencing electricity deficits where there are no prospects for traditional generation sources, and RES is the optimal solution.

The SCO's Energy Future: From Weak Links to Smart Power

Rafis Abazov,
Vice-Rector for International Cooperation
Kazakh National Agrarian Research University (KazNARU)

Summary. The SCO's energy agenda, long seen as fragile, is evolving into a platform for innovation. By linking technology, finance, and climate action, member states such as Kazakhstan are redefining Eurasia's strategic value as a hub of sustainable growth and interconnectivity.

When the Shanghai Cooperation Organisation (SCO) heads of state convened in Tianjin in September 2025, energy emerged not just as a discussion point but as a powerful symbol of shared transformation. The summit highlighted how emerging technologies – from smart grids and digital pipelines to cross-border renewable networks – could redefine Eurasia's energy landscape. Beijing's proposal to establish new "energy and green-industry" platforms, combined with plans to mobilize clean-energy investments across member states, positioned the SCO as a potential incubator for twenty-first-century cooperation rather than a legacy of past geoeconomics.

While critics had long dismissed the SCO's energy track as fragmented, this year's dialogue reflected a different spirit: one of experimentation, technological confidence, and pragmatic regionalism. For the first time, delegates discussed the combination of digital energy corridors, green hydrogen partnerships, and AI-

This renewed optimism also owes much to the shifting global context

driven power-management systems as realistic pathways to energy security and sustainability. In this sense, the SCO 2025 summit was less about old fossil rivalries and more about connecting innovation ecosystems – from Almaty to Shanghai, from Tashkent to Moscow – into a shared technological framework for the future.

This renewed optimism also owes much to the shifting global context. As the world races to meet net-zero targets and navigate post-pandemic supply disruptions, SCO countries increasingly view technology and cooperation as the new drivers of energy resilience. With rising demand for affordable, clean, and secure power, the SCO's members – home to vast solar fields, wind corridors, and digital infrastructure – have a unique chance to build what some analysts call the "Eurasian Energy Cloud." Far from being a weak link, energy collaboration could become the SCO's most dynamic frontier, provided it continues to pair innovation with inclusive growth.

GLOBAL ENERGY TRANSFORMATION AND THE SCO'S TECHNOLOGICAL MOMENT

Energy today is no longer a linear story of extraction and consumption – it's an accelerating ecosystem of digital innovation, climate-smart design, and regional interdependence. Within this transformation, the SCO has an opening to become a laboratory of scalable solutions. From AI-enabled grids to decentralized solar networks, the new energy narrative is being written not only in Silicon Valley or Brussels but increasingly in Almaty, Samarkand, and Shenzhen.

SCO economies, many resource-rich and demographically young, are beginning to leapfrog traditional industrial pathways. They are experimenting with green-hydrogen corridors, satellite-based energy mapping, and blockchain-enabled electricity trade – tools that could make cross-border cooperation more transparent and efficient. If implemented, these technologies could reduce dependency on fossil geopolitics and open the door to shared prosperity through clean-technology transfer. Already today Kazakhstan targets to cover quaoter of its energy needs by alternative energy by 2030.

Global energy transitions are often described as zero-sum competitions. Yet within the SCO, they could evolve into win-win collaborations – balancing pragmatic hydrocarbon use with ambitious renewables growth. China brings capital and scale; Russia offers infrastructure and grid expertise; Central Asia contributes solar and wind potential; India and Iran add innovation and large consumer markets. Together, these strengths could turn the SCO into an energy-innovation hub – one capable of navigating the twin challenges of climate adaptation and sustainable industrialization.

KAZAKHSTAN, THE MIDDLE CORRIDOR, AND THE RISE OF A SMART EURASIA

Few countries embody this promise better than Kazakhstan, the strategic heart of Eurasia and one of the region's most forward-looking "middle powers." Once viewed merely as a landlocked 12th world's largest energy exporter (2023), Kazakhstan is now positioning itself as a regional connector not only for oil, but also for sustainable (alternative) energy flows. Through the Middle Corridor – linking China, Central Asia, and Europe – it envisions a future where pipelines and power lines coexist with data cables, hydrogen grids, and electric freight networks.

The country's strategy aligns with what policymakers in Astana call the "Green Silk Road." This vision integrates renewable-energy projects, smart logistics, and carbon-neutral industry clusters along the Middle Corridor. Recent partnerships – including Chinese-Kazakh ventures on AI, smart-grid technologies and

European financing for green-hydrogen feasibility studies – suggest that Kazakhstan is transforming its geography into a platform for innovation. Its vast steppes, once symbols of remoteness, can become testbeds for gigawatt-scale solar and wind farms and several nuclear power stations that can feed national regional grids and even export clean electricity westward.

This technological optimism is also reshaping Kazakhstan's diplomacy. By framing itself as a middle power of green interconnectivity, it bridges the policy worlds of East and West – from the EU's decarbonization agenda to China's Belt and Road renewable clusters. Within the SCO, this gives Kazakhstan a persuasive voice for cooperative energy governance. It can convene partners around pilot projects, harmonized energy standards, and digital-trade frameworks that make green infrastructure bankable and inclusive.

FROM WEAKNESS TO MOMENTUM: BUILDING THE FOUNDATIONS OF SMART ENERGY COLLABORATION

Every young institution faces its testing phase, and for the SCO, energy cooperation remains its most complex yet promising frontier. The 2025 summit exposed not failure but growing pains – a reminder that multilateral innovation takes time. The perceived weakness of SCO energy collaboration can be reinterpreted as a phase of experimentation, where members are still learning how to synchronize priorities, mobilize finance, and align policy frameworks amid rapid technological change.

Rather than complaining the absence of binding mechanisms, it is more productive to view the current moment as an open-innovation cycle. By keeping the agenda flexible, the SCO allows diverse members – from China's tech giants to Central Asia's renewable pioneers – to pilot their own solutions and gradually converge on shared standards. This adaptive model may prove advantageous in a fast-moving field like clean energy, where agility often outweighs regulation.

The diversity of SCO energy profiles — hydrocarbon exporters, hydropower producers, and clean-tech adopters — is not an obstacle but a reservoir of resilience.

The diversity of SCO energy profiles – hydrocarbon exporters, hydropower producers, and clean-tech adopters – is not an obstacle but a reservoir of resilience. Russia and Kazakhstan can modernize exports through nuclear, hydrogen and carbon-capture projects; China can expand smart-grid and EV networks; India can scale affordable solar; and smaller Central Asian states can test hybrid renewable-storage systems tailored to their landscapes. Such pluralism fosters cross-learning and mutual security.

Finance and technology transfer remain major obstacles, but regional momentum is strengthening. Working together, the new SCO Development Bank and China's Green Energy Cooperation Platform are expected to channel blended finance toward low-carbon infrastructure and renewable energy projects in SCO member states, potentially reaching an estimated value of ¥380 billion yuan (approximately $52.5 billion USD) within the next five years. If these institutions embrace transparency and tap into global green-finance networks, the SCO could close the region's investment gap. Emerging carbon- credit systems, blockchain power trading, and AI-driven forecasting can serve as new currencies of trust, enabling smaller economies to attract sustainable capital.

The Tianjin summit's focus on digital twins, predictive maintenance, and shared energy data symbolized a shift: technology, not ideology, is now the engine of cooperation. If nurtured, these innovations could transform Eurasia's geography into one of the world's most dynamic clean-energy laboratories.

OPPORTUNITIES AND THE ROAD AHEAD: FROM ENERGY NETWORKS TO INNOVATION ECOSYSTEMS

The path forward is demanding but full of promise. The SCO's 2025 summit may ultimately be remembered not for polished communiqués but for sparking a new imagination of Eurasia's energy

future. Across the region, policymakers and innovators are learning how to blend digitalization, green finance, and cross-border connectivity into a single platform for inclusive development.

A logical next step is the creation of an SCO Energy Innovation Fund, focused on renewables, smart grids, and hydrogen infrastructure. Jointly managed with the SCO Development Bank, it could crowd in private capital and accelerate technology diffusion from leading centers such as Beijing, Delhi, and Almaty. Transparent sustainability standards and digital tracking tools would make projects more bankable and measurable.

The Middle Corridor can become the backbone of this new architecture – a route where freight, fiber, and clean power flow together. Pilot projects such as solar-hydrogen clusters in western Kazakhstan, battery hubs in Uzbekistan, and AI-optimized logistics in Azerbaijan could evolve into the living laboratories of Smart Eurasia.

In parallel, policy innovation – from carbon-credit harmonization to green-hydrogen certification – could turn the SCO into a prominent player in the global green economy. By embedding sustainability in trade and transport frameworks, it can link economic sovereignty with environmental stewardship.

Diverse political systems and capacities remain, but what unites the SCO is the understanding that digital and clean technologies are now the true engines of modern power. Once defined by security cooperation, the organization is steadily transforming into an engine of green modernization – bridging continents through data, energy, and shared purpose.

If declarations turn into demonstrable results – interoperable grids, innovation clusters, and climate-smart corridors – energy will no longer be the SCO's weakest link but its defining strength. The 2025 summit in Beijing and Tianjin may thus mark the moment Eurasia began to imagine itself not as a bridge between powers, but as a power in its own right – cleaner, smarter, and connected through innovation.

Silicon Cluster and TopCon: Miami Solar's Development Strategy

In an interview with Qazaq Green, Murat Rakhimzhanov, Founder of Miami Solar LLP, discusses how a small solar panel assembly venture in Kazakhstan has evolved into a modern 200 MW production facility certified by UL International. He reflects on the plant's launch, technological processes, research initiatives, and long-term goal of creating a full-scale silicon cluster in the country.

– How did the idea of building a solar panel plant in Kazakhstan come about? What stages did you go through from concept to launch?

– Since 2012, we've been manufacturing printer cartridges. The business was stable until 2020, when the pandemic changed everything: remote work reduced printing needs, and demand for cartridges collapsed. It was clear the market would not recover.

At the same time, we had been experimenting with solar panels since 2018, assembling around 4,000 units a year by hand. We sold them for street lighting projects in the Almaty region and at local markets – nothing industrial.

Then came a turning point. In January 2021, while on vacation, I read that Joe Biden planned to impose 100% tariffs on Chinese solar panels. I immediately realised this was our opportunity. We decided to shift from cartridges to renewable energy and build our own factory.

We began searching for an investment site. Initially, we approached the Innovation Technology Park SEZ, but after five months of talks, we were turned down. Later, our executive director, Nurlan Sarbalin, visited the Khorgos – East Gate Free Economic Zone, where management offered one hectare of land for construction. In the summer of 2022, we broke ground on the plant.

Around the same time, we started negotiations with Astana Solar LLP to purchase equipment originally bought by KazAtomProm JSC in 2012. After eight months, we acquired it at an excellent price.

In November 2024, we commissioned a 6,000 m² facility with an annual capacity of 200 MW – around 345,000 panels rated at 580 W – in the Khorgos – East Gate Free Economic Zone.

– Take us inside your factory. What does the production process look like?

– Our production line is fully automated, consisting of 33 tightly controlled operations.

We start with inspection of photovoltaic cells – any defect is automatically detected. Then we prepare the encapsulant film and glass, assemble the cells into strings, and run optical checks. The modules are laminated under pressure, trimmed, and fitted with junction boxes and wiring.

Each panel undergoes high-voltage testing and performance measurement. Defective panels are corrected immediately. Frames are installed, joints sealed, labels attached, and the panels are packaged for storage.

Strict control at every stage ensures quality and durability.

– What are the power and efficiency levels of your panels, and what technologies do you use?

– We currently produce bifacial panels using TopCon technology, with outputs ranging from 360 to 590 W and an efficiency of 22.45%, as well as 620–700 W models with 23.2% efficiency. Panels up to 400 W are lightweight and suited for rooftop use – they're common in the U.S. market. Panels with 24.8% efficiency are made with HJT technology, though they're still niche due to higher costs, roughly 0.2% above TopCon.

– Let's talk about international markets. Do your panels meet global standards? Are you seeing interest from abroad?

– In March 2024, we sent 24 panels to UL Laboratories in Phoenix, Arizona. Testing covered everything from materials to documentation. And then on October 28, 2024 — my birthday — the UL 61730 certificates arrived for the US and Canada. Best birthday gift ever! (Laughs.) The certification took over 10 months, but it was absolutely worth it.

In January 2025, we passed our initial UL plant audit and were added to the official register. We now undergo quarterly inspections, two in-person and two online.

Miami Solar became the first Kazakh company to earn UL certification for its own products – a major milestone.

We began exports to Los Angeles and Houston in March 2025. Following a 25% tariff increase on Kazakh goods, shipments were paused. We're now negotiating with Turkish and Indonesian partners to supply our panels to the U.S. under their brands.

We're also monitoring potential EU tariffs on Chinese panels – if imposed, our partners in Germany are ready to purchase Kazakh-made modules.

– Why is UL certification such a benchmark for quality and safety?

– UL is a global organisation that certifies product safety and performance. The UL mark is one of the world's most respected – over 22 billion products are certified annually.

It's among the strictest standards, assessing materials, components, and documentation. Products with UL certification guarantee compliance with the highest safety requirements for people and the environment.

Leading global brands – Samsung, LG, Tesla, Huawei, Siemens, Panasonic, ABB – all carry UL certification.

– Does your company participate in international renewable energy exhibitions?

– Yes. Miami Solar regularly takes part in major global renewable energy events. In 2024, we showcased our products at RE+ in the U.S.; in 2025 – at Intersolar North America, Intersolar Europe, SNEC in Shanghai, and RE+ in Las Vegas.

– China dominates global solar panel production. Can Kazakh manufacturers compete, and what are your advantages?

– Yes, we can compete.

First, our company has a special investment agreement with the Ministry of Industry and Construction, exempting us from customs duties and VAT.

Second, logistics are highly efficient. The plant is located just ten kilometres from the Nur Zholy customs post and 500 metres from a dry port served by both Chinese and Kazakh railways. Components arrive directly from China and clear customs within hours, significantly reducing delivery times.

Third, we use trusted component suppliers and fully automated assembly – the same model used by leading Chinese producers.

These advantages allow us to compete with Chinese manufacturers in both price and quality.

– What challenges do you face as a domestic manufacturer?

– The main difficulties arose during the construction phase. Initially, the activity code for "solar panel production" did not exist under General Classification of Economic Activities (GCEA –ОКЭД in Russian) 2611. It took more than 18 months to obtain recognition of this priority category.

We also lack state support mechanisms for selling domestically produced panels. Together with the Ministry of Energy, we're preparing amendments to the Auction Rules to account for Kazakh manufacturers' interests.

We also propose changes to the Law on Renewable Energy Support to introduce additional measures for local producers.

– Are you engaged in scientific and technical research?

– Yes. We work with the Institute of Physics and Technology on silicon-related research. In August 2025, our paper "The Influence of Metal Impurities on the Stability, Chemical, and Sensory Properties of $MoSe_2$ Surfaces" was published in the international journal MDPI.

We have also applied for a patent on a TopCon-type photovoltaic cell design in collaboration with scientists from the Academy of Sciences under the President of Kazakhstan.

– What are your future plans?

– Our key goal is to establish a full-scale silicon cluster in Kazakhstan. Between 2026 and 2028, we plan to build three facilities for advanced polysilicon processing:

- A plant producing solar-grade silicon ingots (99.999999% purity);
- A plant producing silicon wafers;
- A photovoltaic cell plant using modern N-Type and TopCon (22-busbar) technologies, enabling panels with capacities of 720–800 W.

It sounds ambitious, but we've already shown we can compete with global brands. In early 2025, we held meetings with Baiterek, the Development Bank of Kazakhstan, and the Industry Development Fund, receiving preliminary approval for project financing.

We've signed a consortium agreement with Qaragandy Power Silicon and the Academy of Sciences to jointly implement the Silicon Cluster pilot project, with Chinese partners providing equipment, technology transfer, and training.

Our vision is for Kazakhstan to produce solar panels from raw silicon to finished modules. This is entirely achievable.

As President Kassym-Jomart Tokayev stated in his Address to the Nation, Kazakhstan must accelerate economic diversification and focus on critical materials. Silicon and its derivatives are among them.

The U.S. Department of Energy and Geological Survey listed silicon as a critical mineral in 2022, and the European Commission included it in its 2023 Critical Raw Materials List.

INTERVIEW

Carlos Alvarez Ortega, Huawei:

Grid-forming technology can unlock Kazakhstan's renewable energy potential

During the IV International Business Festival on Renewable Energy Qazaq Green Fest in Aktau, Timur Shalabayev, Executive Director of the Qazaq Green RES Association, interviewed Dr. Carlos Alvarez Ortega, Director for Grid Solutions at Huawei. Their discussion explored Kazakhstan's evolutionary approach to renewable energy development, the critical role of battery storage and grid-forming technologies in maintaining grid stability, and how global expertise can accelerate the country's transition toward a sustainable energy future.

– Dr. Ortega, you just took part in the session on green grid forming and grid stability. First of all, you know about development of renewables in Kazakhstan. How do you assess development of renewables? Are we going through revolutionary or evolutionary way?

– Evolutionary, but let me start by saying that your work here organizing this fantastic event has been outstanding. About the development of renewables in Kazakhstan, it's evolutionary. So, you need to achieve the autonomous behavior, the self-production of energy, you need to achieve that. So, based on that, I think you need renewables. But the challenge is how to manage this new technology into the grid. This is what we have been discussing in the previous session and I think it's a very challenging, very interesting topic and we can work together on that.

– Kazakhstan's power system is still heavily dependent on fossil fuels, with about 70% of generation coming from coal plants. There is also a shortage of balancing capacities, and balancing often relies on energy purchases from neighbouring countries. This year, Qazaq Green and Huawei prepared a White Paper on battery energy storage systems (BESS) for Kazakhstan. Do we need BESS, and how should it be developed within our energy system?

– If you want to minimize the need for taking energy from neighboring countries, you need to rely on renewables like wind and PV. There is a huge project now, a wind power plant. But you cannot rely on the availability of that power. So, to make it flexible, you will need storage.

The good thing about fossil fuels is the availability. Even if you have some sources, so you need to compensate with neighboring countries. But the good thing is that from the electrical point of view, it's very reliable. The grid is stable and strong.

If we are moving to renewable sources, the problem is the stability of the grid. If you are based on wind turbines, PV inverters, power electronic-based generators, there will be an issue with the stability of the grid. This is something we have seen in many other countries that worked that way before Kazakhstan.

To do that, there are batteries to provide flexibility. And thinking about the stability of the grid, you will need batteries with grid-forming capabilities. So, there will be two changes here in Kazakhstan.

One very positive thing I'm seeing here is that the system operator, KEGOC, is considering that already. This is very positive for the stability of the grid of Kazakhstan and the development of the business.

– What solutions in energy storage can Huawei offer Kazakhstan? Could you share examples of real projects where your solutions have been implemented?

– Huawei is providing the storage. There's one main point of interest for Huawei. One main concern is that the system that we are deploying should be safe. This is one of the main drivers for Huawei's storage products.

This is why, if you check the different products, the different options in the market, the storage capacity of Huawei products is always a little bit less. Because to provide a safe product is the most important thing for Huawei. That's why we are not going to 12 megawatt hours yet, because the process for testing the different cells takes a lot of time in Huawei.

About the storage capacity, we are a little behind the figures of other competitors. But this is a product we are providing. Super safe, reliable storage container.

The storage is direct current (DC). How to integrate that into the AC power with the PCS, power conversion system. It's the power electronics.

Huawei is also a specialist in that. Takes the DC power from the storage and converts it to AC for integrating into the system. That is the part where Huawei is implementing the grid forming capabilities.

Back to your question about the experience from other projects that we can apply here in Kazakhstan. We are working in Saudi with this grid forming technology. In China, also in Latin America, we have projects.

In the Philippines, we are deploying 4.5 gigawatt hours with grid forming technology. Also in Spain, we have projects. So it's not only some pilot projects in China. We have deployed commercial projects worldwide. And hopefully we will apply this in Kazakhstan.

– You mentioned grid-forming technologies. What is the difference between grid-forming and grid-following, and what solutions can Huawei provide for Kazakhstan in this field?

– It will be a little bit technical, but I hope it will be understandable that the grid following technology, like the traditional one in renewable energy, measures the voltage and then it injects current according to the voltage that has been measured already. So you connect.

First idea is that you need to connect to one grid that is already established. You measure the voltage and you inject current. The problem is if there is no voltage outside, what can you do? You need something else.

Or if the voltage is very weak, when you are putting current on it, you will distort the voltage. If you distort the voltage, the measuring of the voltage will be distorted. So the current will be distorted and finally the system will be unstable.

That's why if you are integrating a lot of renewables in one system, in one bus, at some point you will not be able to integrate more current source technology. So you need to change. To change to what? To change to the grid forming technology.

Back to your question about the experience from other projects that we can apply here in Kazakhstan.

The main concept of the grid forming technology is that you will create the voltage. You will not measure anything, you will create the voltage. It's like a synchronous generator.

The synchronous generator is creating the voltage. That's how the grid forming technology is working inside. But grid forming technologies can work not only for microgrids.

They can also work together with connection to the grid as well. So in microgrids, in grids with no other generation, of course, should be a grid forming technology.

But it could be applied also in grids. It could be even strong grids. It's not so common, it makes no sense.

But in weak grids. So if there is one grid that is very weak already and you cannot install more renewable power, the traditional one, you can switch to grid forming in order to make it more stable, more strong. In that way, the grid forming technology will help the system operator to integrate more traditional renewable power.

Another point related to this is that the grid forming technology could be not 100%, just a percentage defined by the system operator and the rest could be the traditional one.

– Do you have examples of having such kind of grid forming technologies in microgrids or connected to the grid?

– In microgrids, we have in China, we have Saudi, the Red Sea project, that if you search on the internet, you will find very nice hotels. But we're not talking about pilots. It's real. This is totally real. You can enter the website and you can book a room, you can travel there. It's fully commercial. And the hotels are very nice. One marketing thing is that it's 100% green energy. The 100% is because it's isolated, working only with PV and storage.

In Latin America, there another one, islanded. But in China, we have the grid forming project connected to the grid. And also in Spain, we are building one connected to the grid. It's not operative right now, but it will be.

– Now, Kazakhstan has 7% of generation depending on renewables. And for our grid operator, it's headache already, even this 7%. But when we talk about the grid forming technologies, does it mean that such kind of technologies discovers the opportunity in the future to have 100% of renewables in the grid?

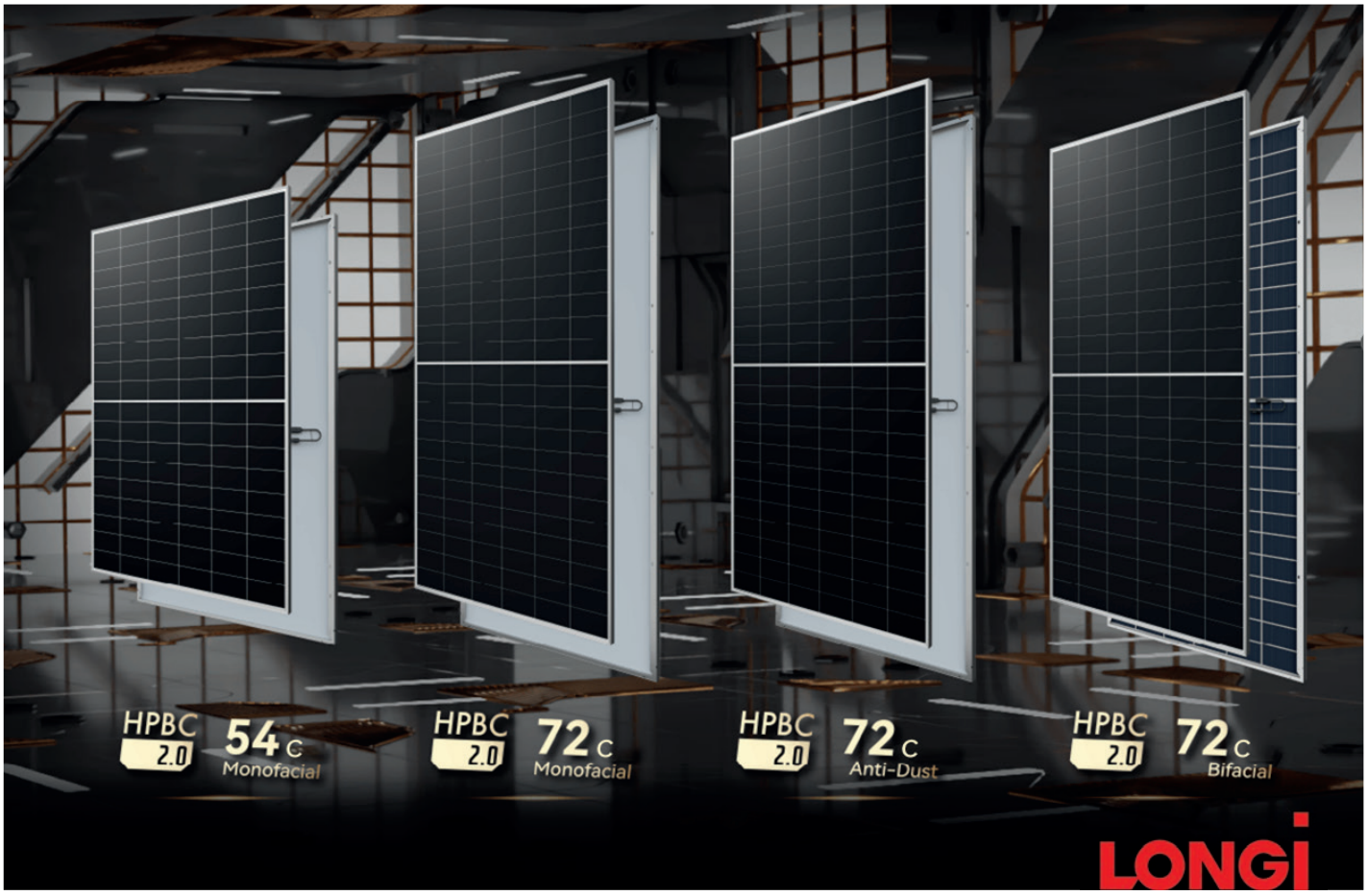
– Could be with the combination of the traditional one. But there is one point that is always controversial or make a little bit misunderstanding, is that in some countries, the renewable could be 20% of the total mix. I'm not thinking about the installed capacity. I'm thinking about the covering of the demand. Imagine it's 20%. But so full located in one bus, that then the system could be unstable. And I'm thinking about, for example, Kazakhstan, one gigawatt compared to the size of the country is not so big. But you need to check what is happening with one gigawatt in one specific location. So that's why the grid forming could be quite important, depending on the project you are considering. It's not about the size of the country and their percentage in the total energy mix. It's about the concentration of the renewable in one particular area. And that's why in some cases, the grid forming technology is relevant, but in others it could be not.

– Based on our experience working together on the White Paper, studying Kazakhstan's grid rules, energy system situation, and strategic renewable development goals including large capacity projects, what would you recommend? How can we build both a stable and sustainable green energy system?

– I think the role of the system operator is the key. And right now, they are considering the grid forming. So they have like long-term vision that is very good. So there was one discussion with the system operator in Spain a long time ago saying, we need right now some capabilities. We can talk later if we should activate or not. So this could be one way for Kazakhstan, and in my opinion, one of the best. So asking for certain capabilities, for example, grid forming is one. And when we are talking about grid forming, it's not just on and off. There are so many different things inside the grid forming, like inertia or what will happen when there is a jump in the phase of the voltage, what will happen with the voltage control. There are many things inside the grid forming. So we need to be able to provide those functions, but how to activate, when to activate, in which location, this is something that KEGOC needs to calculate and needs to tell the developer. So I'm thinking about the business, because you cannot change a rule once or it's better not to do for keeping a very safe environment for the business and attracting more investors. The grid forming capability should be required. And then how to activate the different functions will be something that KEGOC will tell in the future, because a grid today and the grid in the future will be different. So you will need different features. You will need different capabilities. So then it's better to have the product ready right now for tomorrow. And tomorrow KEGOC will say which functions you need to activate. And tomorrow is not in 25 years. It will be very soon, because we have seen that in other countries. And I don't know, we should talk about the, for example, the Spanish blackout that everyone knows, but this will be a big topic maybe for another day.

– Thank you for the interview.

– Thank you. It was a pleasure to be here.



Hi-MO X10 and HPBC Technology: Setting a New Benchmark for Solar Module Efficiency from LONGi in Kazakhstan

Asset Ongarbayev,
Regional Head, Kazakhstan,
LONGi Solar

As Central Asia's largest economy, Kazakhstan plays a key role as a regional leader and a vital bridge between China and Europe. As a strategic Belt and Road Initiative partner, the country actively attracts investment to develop green infrastructure. Abundant solar potential gives Kazakhstan significant potential for renewable energy growth.

Industrial and commercial expansion is expected to accelerate in the coming years. A balanced foreign policy and favourable investment climate will drive growth in oil refining, mining, metallurgy, cement, and other industries.

The active development of these sectors will demand more energy, and solar power plants offer the fastest, most efficient solution to potential electricity shortages. To help Kazakhstan meet this challenge and

advance its carbon neutrality goals, LONGi is ready to offer its most advanced photovoltaic technologies for projects in Kazakhstan.

Founded in 2000, LONGi is committed to being the most valuable solar technology company in the world.

Under the mission of "To make the best of solar energy to build a green world" with a brand positioning of "The most trusted, reliable solar company that blazes the trail for green technology". Focusing on scientific and technological innovation, LONGi operates across five business lines: monocrystalline silicon wafer production, solar modules, rooftop solar systems, ground-mounted power stations, and hydrogen energy equipment. LONGi's development is guided by the principles of "Green Power + Green Hydrogen" advancing the global zero-carbon transition.

LONGi was the first Chinese company to join global initiatives such as RE100, EP100, EV100, and SBTi, actively contributing to the worldwide clean energy transition. LONGi's Central Asia team works to introduce the most advanced technologies and provide full support for regional projects.

One of LONGi's most promising achievements in the field of photovoltaics is HPBC (Hybrid Passivated Back Contact) technology, built on TaiRay silicon wafers. This innovation significantly enhances thermal stability and conductivity, boosting the efficiency, reliability, and lifespan of solar panels.

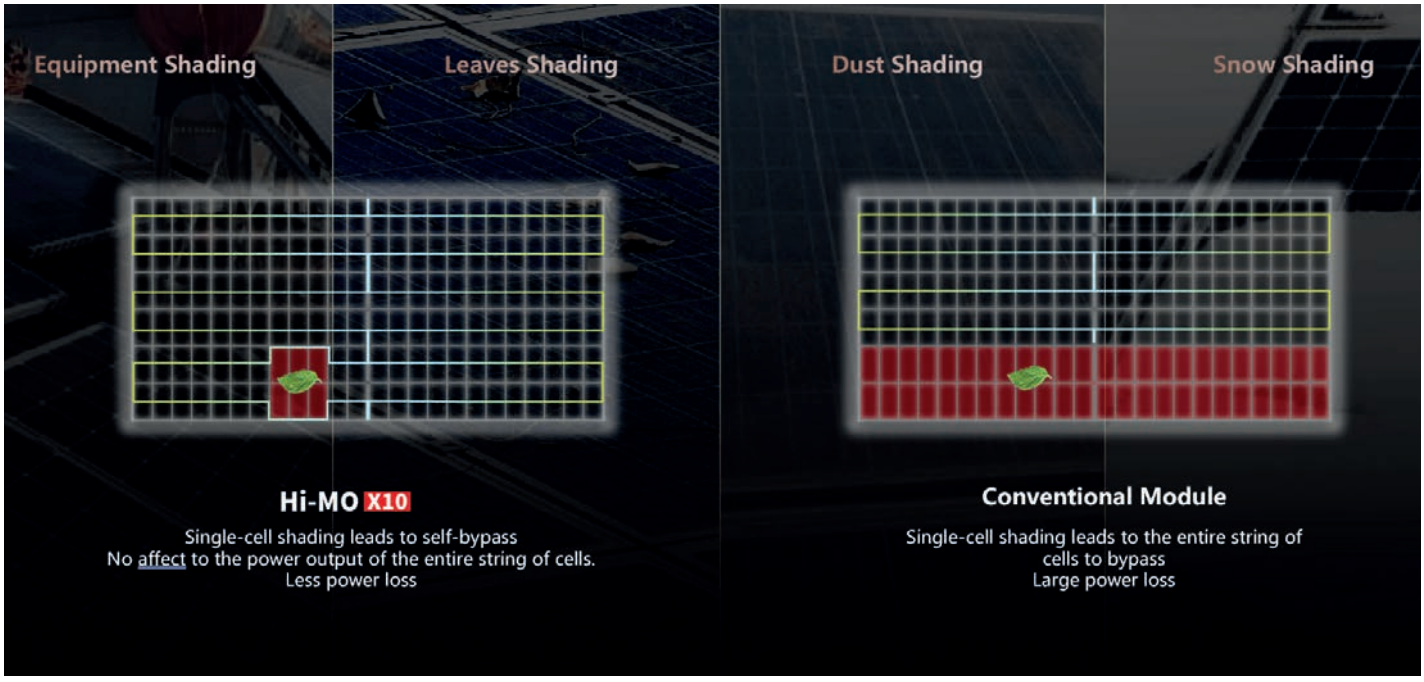
Over the past two years, BC (Back Contact) technology has repeatedly set world records for monocrystalline cell efficiency, now reaching 27.81%. In mass production, BC cells outperform TOPCon by roughly 1.6%, and this advantage continues to grow. HJT (Heterojunction) technology lags behind BC in terms of efficiency and power generation, given the slow pace of industrialisation and current market supply of less than 5 GW.

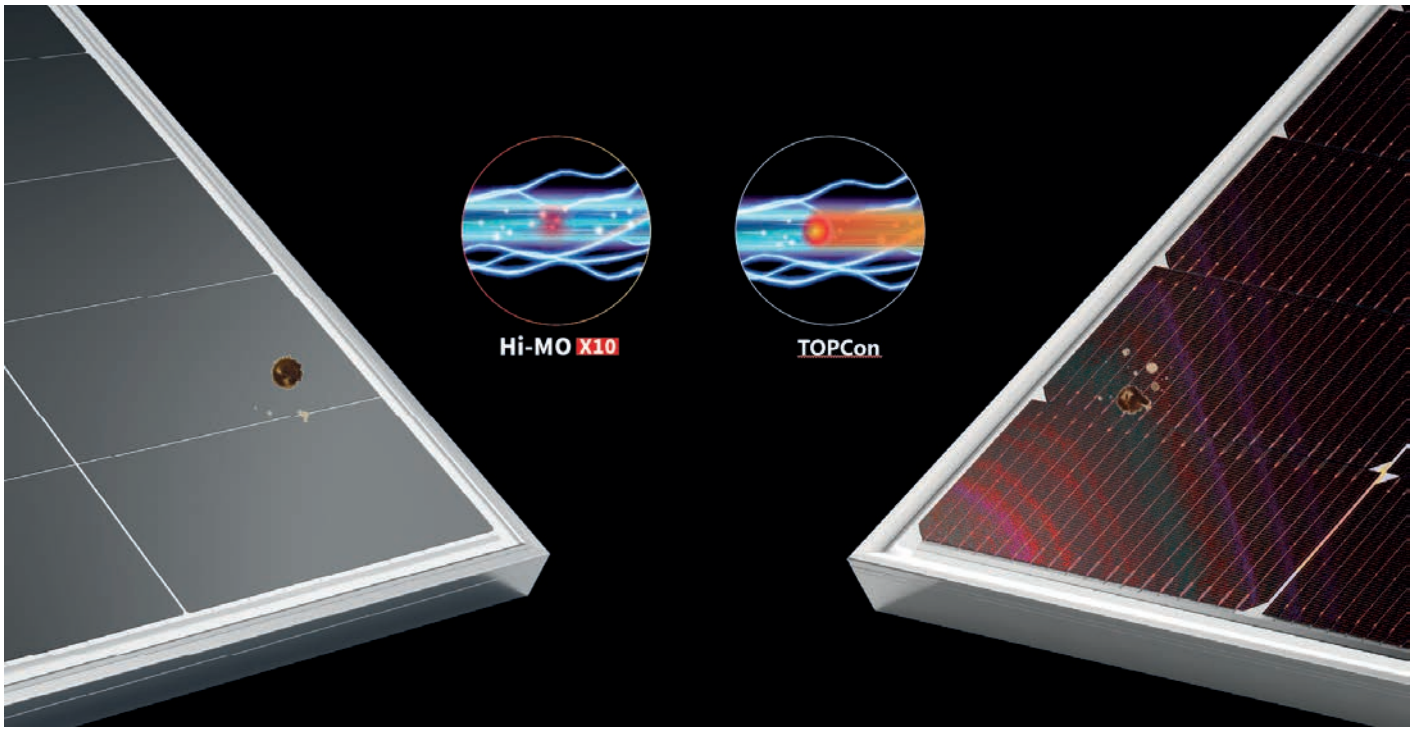
HIGHER EFFICIENCY

HPBC 2.0 is currently the most efficient solar technology in mass production. Cell efficiency exceeds 27%, while the Hi-MO X10 module achieves up to 24.8%, delivering over 5% higher energy generation per unit area compared with TOPCon.

Hi-MO X10 has gained global recognition for its adaptability to diverse distributed energy applications.

LONGi manufactures functional products with a precise understanding of customer needs: dust-resistant and anti-glare solar modules, various lighting designs and other solutions.





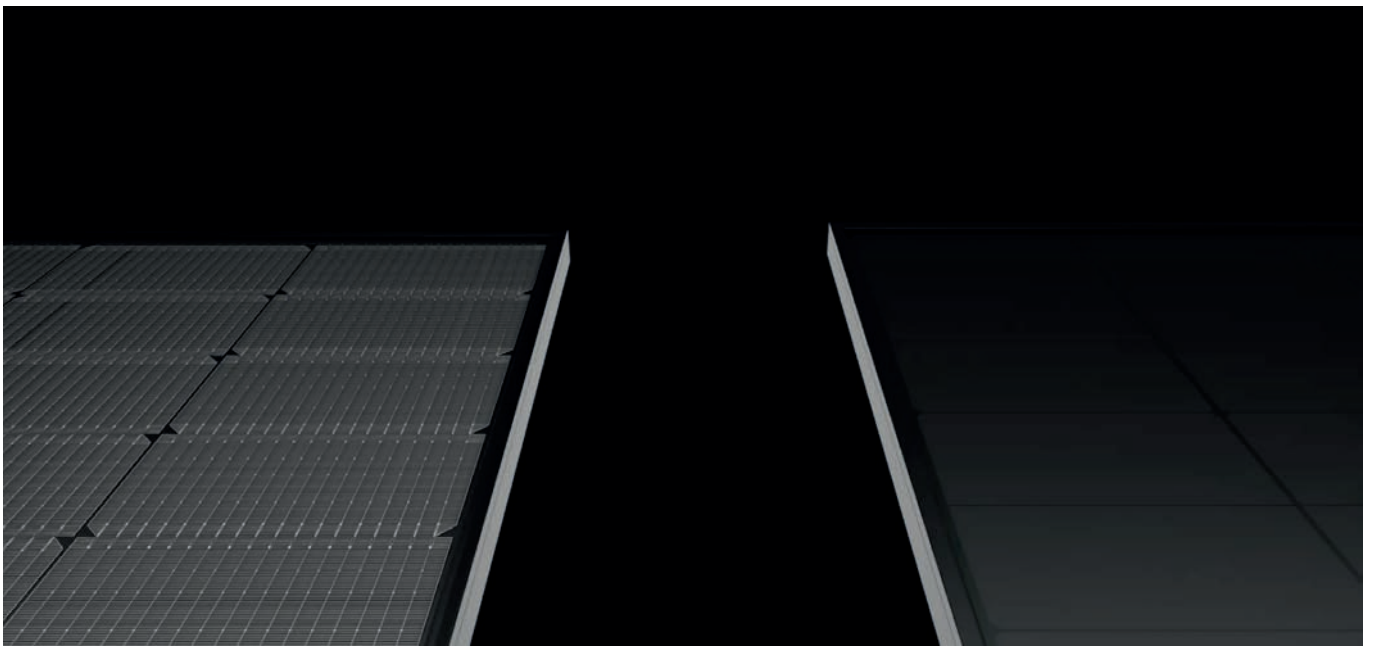
Extra Energy even in the morning and evening

Thanks to HPBC 2.0 and its unique surface structure, the Hi-MO X10 captures diffused light efficiently and continues generating in low light, adding up to half an hour of extra output daily.

Advanced technologies

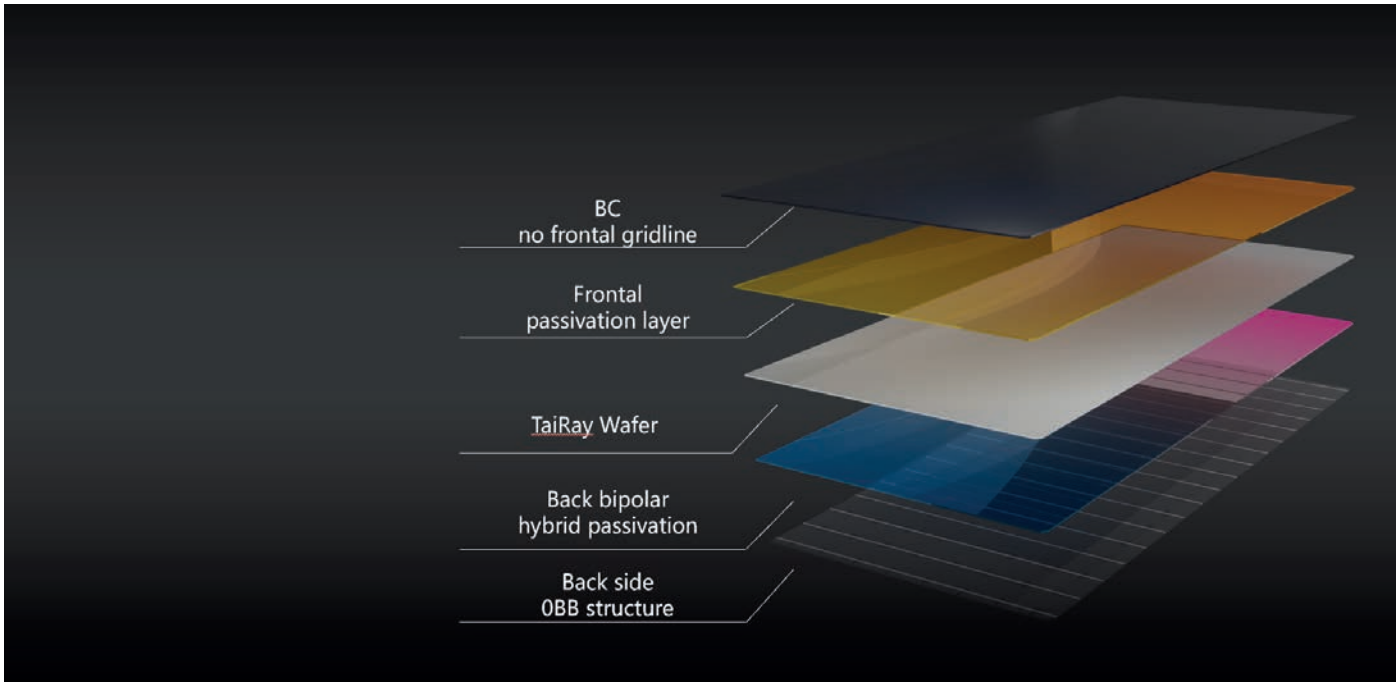
The HPBC cell platform integrates three major innovations: TaiRay silicon wafers, bipolar hybrid passivation, and zero busbar (0BB) design. This system incorporates approximately 400 patented technologies, ensuring increased energy generation performance.

Hi-MO X10 provides 30 W more power than TOPCon modules of the same size. Power density per unit area is 5% higher – a key advantage for space-limited rooftops. As a result, each Hi-MO X10 module generates over 60 kWh of additional energy annually, providing additional income.



Comparison with TOPCon

Indicator	Hi-MO X10	TOPCon
Efficiency	up to 24.8%	up to 24.0%
Temperature coefficient	−0.26 %/°C	−0.29 %/°C
Heat & humidity degradation	1.9%	8.95%
UV degradation	1.8%	5.1%
Microcrack risk	Minimal	Above average
Bifacial efficiency	up to 70%	around 60%
Soldering reliability	Enhanced	Standard



High Efficiency and Lower Losses in Hot Weather

The Hi-MO X10 module has a temperature coefficient of just −0.26%/°C, which is 0.03% better than TOPCon technology. This delivers up to 2.2% more power generation in hot weather, when panels from other manufacturers lose output.

Resistance to Overheating and Hot Spots

The Hi-MO X10 is protected against overheating: the temperature in shaded areas is 38°C lower than conventional panels, thanks to innovative Zero Busbar (0BB) technology that prevents localized hotspots and fire risk. This minimizes energy losses from shading and maximizes the effective use of the solar module installation area.

Reliability and Durability

Hi-MO X10 modules undergo rigorous durability tests for strength and resistance to external influences. In humidity and heat testing (DH3000), degradation was just 1.9% versus 8.95% for TOPCon. UV resistance was 1.8%, while TOPCon had a rating of 5.1%.

Every module is digitally monitored through MES, QMS, LIMS, and AI-based systems to ensure consistent quality and long-term reliability.

CONCLUSION

Hi-MO X10 outperforms TOPCon in all key indicators of efficiency, reliability and service life. This module is designed for those who value maximum output per square metre, durability and protection from external factors, reliability and predictability of investment. Hi-MO X10 is suitable for any facility, from private rooftops to large solar parks, and is an excellent choice for increasing the profitability of your projects.

Kazakhstan is modernising its energy sector. Why is this also an economic issue?

Kazakhstan continues large-scale modernisation of its energy sector. A separate strategy has been adopted – the National Project for the Modernisation of the Energy and Utilities Sectors – aimed at attracting trillions in investment and implementing extensive upgrades of generation networks and facilities. According to recent data, over the next five years more than 13 trillion tenge will be required to repair and build 86,000 km of utility networks and commission additional generation sources with a total capacity of 7.3 gigawatts.

At the same time, work continues on upgrading existing facilities, including the conversion of coal-fired plants to natural gas. For many years, coal was the backbone of Kazakhstan's electricity and heat supply, but its environmental cost has proven high: major cities such as Almaty regularly face smog and high emissions. Under these conditions, switching power plants to gas is both a necessary and strategic step — reducing the environmental burden while improving the overall efficiency of the energy sector.

Why is this important? On one hand, gasification of combined heat and power plants (CHPs) is a tool for tackling air pollution. On the other, it strengthens Kazakhstan's energy security. Natural gas serves as a "transition fuel," creating conditions for the subsequent development of renewable energy sources.

Projects already underway in Kazakhstan will halve carbon dioxide emissions and virtually eliminate sulphur dioxide and ash. One such project is the modernisation of Almaty's CHP-2, discussed below.

WHAT IS THE ESSENCE OF THE PROJECT?

The Zhakutov CHP-2 in Almaty, operating since 1980, is one of the city's main power stations, supplying residents and businesses with electricity, heating, and hot water.

The plant currently runs on coal, which contributes to severe air pollution — images of Almaty's smog are widely known. To address this, the government has launched the largest environmental project in the city's history: the modernisation of the CHP-2 using

advanced technologies and equipment.

According to Andrey Chibuk, a representative of Almaty Electric Power Plants (AlES), the modernisation project includes two construction phases: a modular boiler house and the main plant building.

The first stage comprises four hot-water boilers and three steam boilers with a capacity of 125 tonnes of steam per hour for internal needs. The second stage involves constructing the main building with two power units. The project's complexity lies in the site's challenging soil conditions and strict seismic safety requirements, which required special technical solutions and the installation of a pile field.

The station will be equipped with modern purification systems allowing the co-combustion of gas. (…) By 2030, the station will achieve virtually zero harmful emissions. This is a significant environmental milestone for Almaty, which has long struggled with air quality," says Andrey Chibuk.

At the same time, there are clear economic benefits — reliability and stability of energy supply to Almaty and nearby districts of the Almaty region will increase, ensuring steady growth for local businesses.

The project introduces modern combined-cycle technology, which has a higher efficiency rate than even nuclear generation. Emissions from gas-fired stations are minimal and meet the strictest international standards.

As a result, total emissions will decrease tenfold. Residents will notice it immediately: the smoke visible above the plant today will disappear. This will apply not only to Almaty, but to all power stations converted to the modern combined-cycle system," adds Chibuk..

The EPC contract for design, construction, and commissioning was signed in 2023 with a consortium of three Chinese companies. According to the client, work is proceeding on schedule — gas turbines, generators, and boilers have been delivered and partially installed. Equipment suppliers include leading manufacturers from China, the United States, and Europe.

Parallel to construction, another crucial process is nearing completion — signing a contract for the supply of natural gas in the required volumes to ensure timely commissioning.

The modernisation is scheduled for completion in December 2026. By then, TPP-2 will fully transition to natural gas, with an installed electric capacity of 557 MW and a thermal capacity of 952 Gcal/h.

Commissioning will take place in stages. As new power units go online, the old facilities will be gradually decommissioned. During the transition period until around 2027, some of the old boilers will operate alongside the new units to maintain reliable heat supply, especially in winter. Once the new gas units demonstrate stable performance, the old infrastructure will be permanently shut down..

WHY IS THIS IMPORTANT?

The modernisation of Almaty's CHP is a major contribution to Kazakhstan's climate commitments and carbon footprint reduction. It also demonstrates how the energy sector can serve both economic and environmental objectives through responsible management.

Funding for this large-scale project comes from three sources. The first is the company's own capital of 37 billion tenge, used for advance payments and design. The second is loans from financial institutions — including the Asian Development Bank (ADB), the European Bank for Reconstruction and Development (EBRD), and the Development Bank of Kazakhstan — which finance about 80% of total project costs. The third is state support through investment incentives.

According to Utsav Kumar, ADB Country Director for Kazakhstan, the bank has cooperated with Kazakhstan for 31 years, investing about $7.5 billion in projects across transport, public sector management, energy, and finance.

Kazakhstan has set ambitious targets: to reduce greenhouse gas emissions by 20–35% compared to 1990 levels by 2030, and to achieve carbon neutrality by 2060. In this context, we are supporting the country with investments and projects exceeding $500 million in the energy sector," says Kumar.

These projects include the construction of a 100 MW solar power plant in Shu, a 50 MW solar power plant in the Zhambyl region, the conversion of Almaty's CHP-2 from coal to gas, and cooperation with KEGOC to expand the southern power grid for renewable energy integration.

The Almaty CHP-2 modernisation project holds particular significance for ADB, notes Alibek Abdrakhmanov, the bank's Country Operations Head. It directly contributes to Kazakhstan's transition to cleaner energy sources.

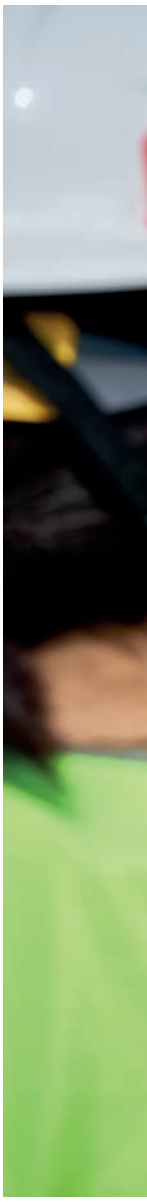
With the commissioning of the upgraded plant, harmful emissions will sharply decline — in some cases, nearly to zero. This applies primarily to particulate matter and other pollutants. Carbon dioxide emissions will also drop significantly, helping Kazakhstan meet its international climate targets," says Abdrakhmanov.

From the investors' perspective, the project aligns with ADB's mission to foster economic development and energy transition. Upon completion, it will bring tangible economic returns.

The direct effect will be additional tax revenues from construction and operations. The indirect effect — though harder to quantify — includes lower healthcare costs and improved public health due to better air quality," adds Abdrakhmanov.

In essence, the modernisation of Almaty's CHP-2 delivers broad, multi-level benefits — improving both environmental conditions and economic resilience. It not only strengthens the city's sustainability but also advances Kazakhstan's national goal of achieving carbon neutrality and modernising its energy infrastructure with cleaner technologies.

PATH TO CARBON NEUTRALITY: ADB SUPPORTS KAZAKHSTAN'S ENERGY SECTOR



HOW THE ADB WORKS

The Asian Development Bank, established in 1966, is one of the world's largest multilateral development banks. Its mission is to promote inclusive, sustainable, and resilient growth across the Asia-Pacific region. ADB has 69 member countries and holds 'AAA' credit ratings from major agencies, enabling it to attract funding on favourable terms and extend financing to member states.

ADB has been working with Kazakhstan for 31 years, notes Utsav Kumar, ADB Country Director for Kazakhstan. The Republic became the first Central Asian country to join ADB in January 1994, and last year the partnership marked its 30th anniversary.

> **Over this period, approximately US$7.5 billion has been allocated. The main areas of investment include transport, public sector management, energy, and the financial sector," says Kumar**

Cooperation is guided by ADB's Country Partnership Strategy with Kazakhstan, approved in May 2023, which focuses on three priorities: promoting inclusive economic growth, addressing climate change impacts and supporting decarbonization, and strengthening governance and developing capacity.

ADB supports Kazakhstan in meeting its 2030 greenhouse gas reduction targets and its 2060 carbon neutrality goal through investments and projects that already exceed US$500 million in the energy sector.

Kazakhstan has set an ambitious target of achieving carbon neutrality by 2060. This goal requires deep modernisation across multiple sectors of the economy – not only in energy, but also in industry, transport, and agriculture. Achieving this transformation demands substantial investment, estimated in trillions of tenge. A key source of such support is international financial institutions, including the Asian Development Bank (ADB), which has been cooperating with Kazakhstan for more than 30 years. Using this partnership as an example, it is clear why working with multilateral financial institutions is vital and what benefits this brings to the country.

KEY INVESTMENT PROJECTS

Currently, four major investment projects are being implemented in the energy sector:

- Two solar power plants with capacities of 100 MW and 50 MW in southern Kazakhstan. According to ADB, both contribute directly to Kazakhstan's commitments under the Paris Agreement;
- Financing the conversion of Almaty's CHP-2 from coal to gas, which will reduce CO_2 emissions from 5.1 to 2.3 million tonnes per year, eliminate sulphur dioxide and ash emissions, and significantly reduce CO and NOx. This will improve air quality for 2.2 million Almaty residents;
- A financing agreement with KEGOC to expand and strengthen the southern transmission grid for renewable energy integration, enabling large-scale renewable generation and stabilising power transmission.

These projects are key milestones on Kazakhstan's path to a green economy, bolstering both energy security and environmental resilience.

According to the Ministry of Energy, by mid-2025 the country's installed renewable energy capacity exceeded 3.1 GW, accounting for 6.81% of total electricity generation — an almost 9% year-on-year increase. Wind power leads with 1.57 GW, followed by solar (1.26 GW), small hydropower (287 MW), and bioenergy (1.77 MW).

IMPACT OF ADB SUPPORT: THE M-KAT SOLAR POWER PLANT

Located near the city of Shu in the Zhambyl region, the 100 MW M-KAT solar power plant is one of the largest in Kazakhstan, producing 176 GWh of electricity annually. The ADB emphasises that this

project aligns with its Strategy 2030, which prioritises climate action and environmental sustainability.

The M-KAT project supports sustainable green growth by promoting renewables and strengthening the role of the private sector in Kazakhstan's energy transition.

The plant operates on a standard photovoltaic principle: sunlight activates electrons in the silicon panels, generating an electric current. The direct current is converted to alternating current via inverters and transmitted to the national grid through KEGOC.

Operations manager Salamat Zhandos notes that monitoring systems cover the entire plant, tracking each panel and inverter for deviations. Staff can remotely oversee performance and quickly address any issues.

He adds: "We cooperate closely with local farmers. To prevent fires and shading, we regularly mow the grass, and since late 2024 we have used sheep for natural maintenance. This supports local farmers and ensures eco-friendly upkeep without reducing generation efficiency."

The station's key technological advantage is its tracking system — panels automatically follow the sun, boosting output by 30–40% compared to fixed installations.

Economically, the plant contributes more than 2.2 billion tenge in taxes to the

local budget. Fourteen permanent employees — all local residents — operate the facility, supported by 26 security staff

MAKING THE ENERGY SYSTEM GREENER

The growing generation capacity requires expansion of the transmission system. The Almaty energy hub currently faces a deficit, with peak winter loads reaching 2,140 MW, mainly covered by interregional transfers.

The region's 51 power plants — including 4 thermal, 27 hydro, 9 solar (260 MW), and 11 wind (197 MW) — still lack sufficient capacity, relying on 500 kV substations for system stability.

To address this, ADB and KEGOC signed a financing agreement for new 500 kV transmission lines and the modernisation of Shu, Zhambyl, and Shymkent substations. The project will enhance power supply reliability in southern Kazakhstan and facilitate the integration of new renewable sources.

BEYOND FINANCING

ADB's support for Kazakhstan extends beyond funding. It provides expert assistance, policy advice, and partnerships to advance the green transition.

One initiative is the Energy Transition Facility (ETF), which aims to reduce greenhouse gas emissions and help Kazakhstan achieve long-term decarbonisation goals.

At COP29 in November 2024, ADB and Kazakhstan's Ministry of Energy signed a memorandum of understanding under which the bank, government, and private sector will jointly explore pathways for a cleaner energy mix while ensuring reliable electricity and heat supply.

ADB also supported the drafting of Kazakhstan's new Law on Heat Supply, signed by President Kassym-Jomart Tokayev in July 2024. The law improves sector governance, attracts investment for infrastructure modernisation, enhances efficiency, and promotes renewable integration — all contributing to the 2060 carbon neutrality goal.

Additionally, ADB provides technical assistance to the Ministry of Energy and KEGOC to improve power system flexibility through forecasting software and updated tariff methodologies, supporting a smooth renewable energy transition.

In essence, the Asian Development Bank remains one of Kazakhstan's key partners in its transition to clean energy. Through investment, expertise, and strategic cooperation, ADB helps lay the foundation for a sustainable, low-carbon economy capable of meeting global environmental challenges.

GETTING A GOOD DEAL: WHY CENTRAL ASIA NEEDS NEGOTIATION SUPPORT FOR FDI

Central Asia is entering a new era of investment. With ambitious plans for infrastructure and renewable energy megaprojects, the region is poised to attract billions in foreign direct investment. These projects will shape the next generation—but as governments sign long-term contracts, a critical question arises: are they getting the best deal?

While Central Asia has seen dramatic transformation through both private and public investment, governments must reflect on the quality of those deals. The stakes are high, and the balance of power in negotiations often favours the investor.

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WHAT GOVERNMENTS ARE UP AGAINST / VALUE OF NEGOTIATION SUPPORT

The private sector (or a foreign state-owned company) typically comes to the table with few constraints. Their negotiation teams are large, often comprising of 30-40 people across legal, financial, technical, strategic and social/environmental expertise. These teams are seasoned, having negotiated multiple contracts across jurisdictions and understand the business value of coordination.

In contrast, many governments have limited financial and human resources. Some rely on external transaction advisors, but many are left to navigate complex negotiations on their own. This imbalance can lead to suboptimal outcomes, especially when governments are under pressure to secure investment quickly.

Negotiation support can help level the playing field. With the right expertise, governments can critically evaluate a company's financial model, analyse feasibility studies, and use scenario planning to understand the long-term tax and revenue implications of a contract. They can also clarify operational and maintenance obligations and third party access rights for large-scale infrastructure and prioritise key negotiation points based on national interests, such as contractually agreeing on the procurement of the use of local goods and services.

Governments should consider and critique an investor's motivation and most importantly, how a project fits in with a government's priorities. Two important aspects are the financial model and the feasibility study. Both of those are prepared by the investor, with "its" view of the project. What is the view of the government? Finally, many governments are receiving unsolicited bids. While governments should be flexible enough to understand how such projects may fit into their

priorities, governments should remain more strategy-driven and less opportunity-driven.

Fortunately, support mechanisms exist. One example is CONNEX. They offer multidisciplinary, short-term and tailored expertise to requesting governments at no cost. CONNEX is a G7 initiative, focused on supporting governments to negotiate better contracts in infrastructure, renewable energy and mining (www.connex-unit.org). In over 40 projects around the world, CONNEX has offered that tailored advice, which has meant millions of dollars more in revenues for several countries. In one case, CONNEX's financial modeler kickstarted a process in a mining negotiation that led to an in principle agreed multibillion dollar billion USD boost for the government. The modeler was involved for just 60 days and led to a massive change in government revenue options.

CONSIDERING THE COMING REALITIES

Given the long-term aspects of some contracts, governments should be keeping in mind how much the landscape of contracts have changed. Looking back at the year 2000, the world was considerably different. The cliché aside of the only constant is change, governments should, as much as possible, try to understand what is on the horizon in contracts and begin to broach certain areas. Three issues that stand out are climate change, circularity and an age of disruption.

Climate change - in 2000, the world knew about climate change, but did nothing about it in contracts. Fast forward to 2025 and it seems logical to include climate change in contracts. Infrastructure is the immediate sector, in which climate change should be discussed. Not only is infrastructure under more strain through climatic conditions, but GHG emissions from concrete and steel – two of the largest inputs for infrastructure – are extremely carbon intensive.

Circularity - the use and reuse of materials – is gaining traction in policy and investment circlesand has not made it into contracts. However, given the billions of dollars required for infrastructure as well as the energy required to make steel, concrete or other inputs into infrastructure, in the creation of those inputs (so-called embodied energy), considering how all materials are sourced and reused can have considerable budget implications.

Materials - while concrete and steel are usually the mainstays of infrastructure, some possibilities exist to adjust materials in the future. First off, which materials will be used (and how are new materials regulated by a government in infrastructure projects)? The innovation and evolution of materials (such as composites, used in wind turbines or glass fiber reinforced polymer (GFRP)) may provide investors and governments with more options. Second, when materials are used, what are the benefits to the project, and how are those benefits "split" or shared by the investor and the government?

PRESSURE OF GETTING IT RIGHT

Once they are signed, many of these contracts are virtually impossible to change. A government may get lucky that a company has some flexibility, but frankly, that company has shareholders and they want predictability. Contracts, in general, are not prone to further discussion. As the CEO of a major American company once said, "a contract is a contract". Considering the enormous rise in arbitration (2025-1 ENG - The ICSID Caseload Statistics (Issue 2025-1).pdf), governments should try as much as possible to guard themselves against arbitration, which can turn a country's investment reputation toxic virtually overnight.

Finally, looking at the last 25 years, a great deal has changed in many sectors and in many geographies. Is the era of "disruption" settling in or is the last several years an anomaly and the world will go "back to normal"? Looking at the last 25 years (and the previous 25), disruption feels like a smart bet. Building in flexibility in the contract, through periodic review or avoiding situations of "all or nothing", will not only avoid legal problems, potentially arbitration, but also preserve the value of assets over generations.

With the right negotiation support, governments can secure not just investment—but a fair, future-proof deal.

CONTRACT NEGOTIATION SUPPORT

IMPACT STORY: MONTSERRAT

Going Underground: Facilitating Montserrat's Geothermal Journey

THE CHALLENGE

Similar to many small island developing states, Montserrat faces the dual challenges of fluctuating global fuel prices and high shipping costs, with the armed conflict between Ukraine and Russia only exacerbating the situation.

To advance its renewable energy transition, Montserrat's government launched an international tender to develop the island's geothermal resource, aiming to replace all imported fossil-fuel generation with domestic renewable power, primarily geothermal.

Montserrat's geothermal potential is concentrated in three wells, two of which can meet current electricity demand. The preliminary project estimate exceeded USD 20 million (XCD 62.8 million), placing it beyond the reach of the national budget.

The project's scale required specialised procurement, risk management, and investor engagement capacities. Realising the need for external expertise, the government, through the Ministry of Building, Utilities, Infrastructure, Labour, Transportation and Ecclesiastical Affairs (BUILT), requested CONNEX's support.

OUR ROLE

Following agreement on the required scope of expertise, CONNEX mobilised legal, financial, and strategic advisors. This interdisciplinary support enabled the government to navigate the complex tender and design the island's first geothermal project structure.

Prolonged inactivity and limited infrastructure made well reliability uncertain, and testing in 2022 heightened the technical risks. Advisors helped Montserrat align investor expectations with an objective assessment of well conditions and performance potential.

To reinforce financial resilience, CONNEX proposed integrating climate objectives into the financial model, widening access to financing and increasing investor interest.

Given Montserrat's limited experience with major energy projects, tender management was challenging. CONNEX introduced modern process approaches, ensuring procedural flexibility and efficient coordination with all stakeholders.

During bid evaluation, officials needed to assess complex technical and financial parameters. CONNEX supported the creation of a qualified evaluation committee and provided training on technical review, company due diligence, and risk assessment.

OUR IMPACT

Incorporating climate objectives helped the government understand the project's full value: a potential minor tariff increase aligns with Montserrat's carbon-neutrality trajectory and broader sustainability priorities.

The analysis revealed legal gaps, including arbitration provisions important for large-scale projects. Advisors clarified the legal safeguards required and highlighted areas for improving the investment climate.

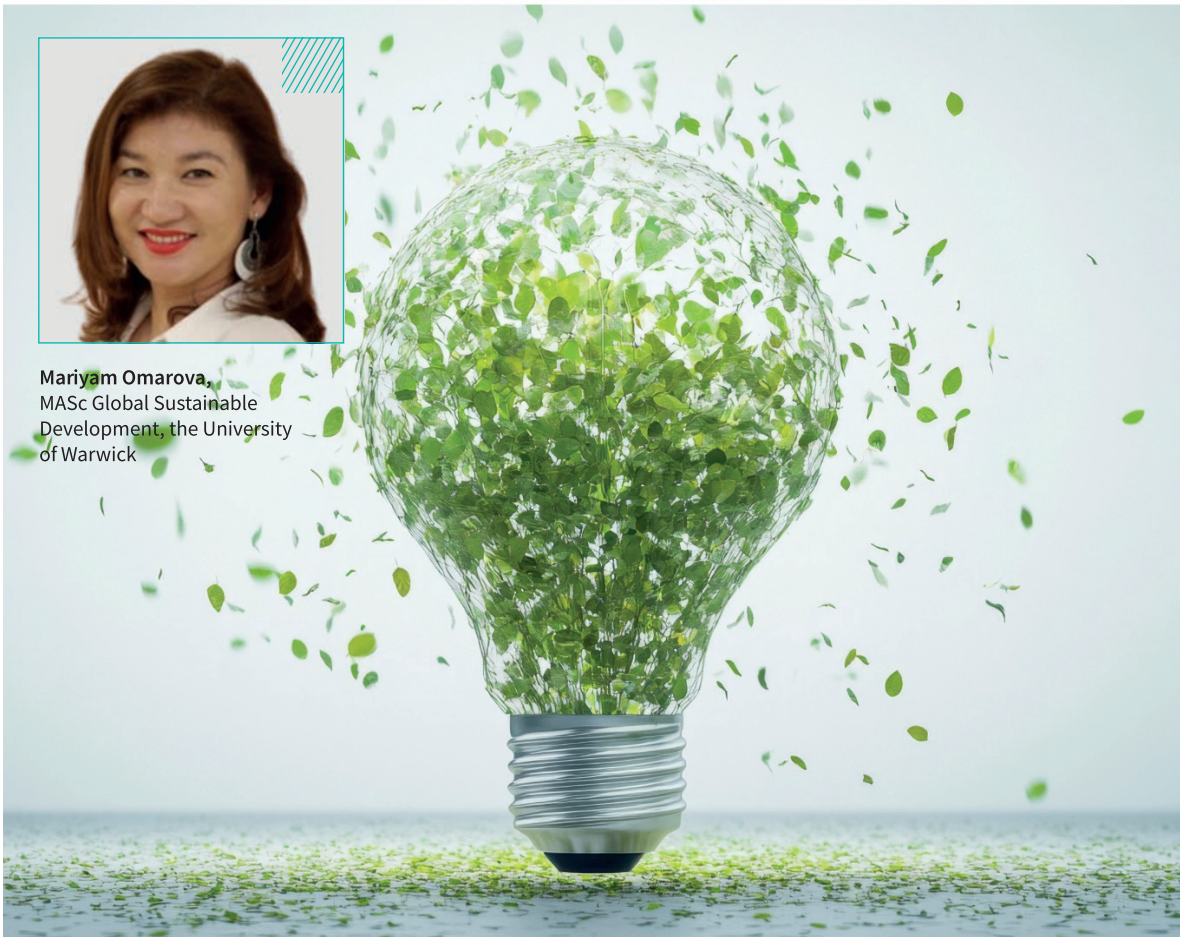
Recommendations for updating regulatory frameworks established a basis for stable project implementation, enhancing regulatory predictability and Montserrat's readiness to attract sustainable investment.

CONNEX's advisors equipped Montserrat's officials with essential skills to engage with bidders, negotiate complex terms - empowering Montserrat's team for managing large-scale renewable energy projects. Ultimately strengthening Montserrat's institutional resilience and readiness for future projects.

2025 Renewable energy project auction results

Auction Date	Company Name	Type of RES	Auction Price KZT/ kWh (excl. VAT)	Installed Capacity, MW
April 15, 2025	Turan Wind Energy LLP	WPP	18.72 KZT/kWh	1,000
May 26, 2025	Zhasyl Mura LLP	WPP	13.19 KZT/kWh	50
May 27, 2025	Zeta Wind LLP	WPP	11.49 KZT/kWh	100
May 28, 2025	Green Energy Industrial Company Aktobe LLP	WPP	12.30 KZT/kWh	50
June 16, 2025	Vigor Holding LLP	SPP	14.72 KZT/kWh	30
June 17, 2025	KSN Solar LLP	SPP	13.99 KZT/kWh	20
June 18, 2025	KSN Solar LLP	SPP	13.98 KZT/kWh	20
June 19, 2025	Vigor Holding LLP	SPP	13.85 KZT/kWh	20
June 23, 2025	Ulken Qaqpaq HPP-2 LLP	HPP	40 тг/kWh	2.5
	DOSTYQ-HYDRO LLP		39.67 KZT/kWh	0.450
	TAUENERGO LLP		39.72 KZT/kWh	3.2
	Jasyl qýat LLP		41.05 KZT/kWh	2
	QazQuat-AQSU LLP		40.7 KZT/kWh	4.99
	Electrical Energy LLP		41.18 KZT/kWh	3.93
	NEC Zharyk Energo LLP		39.69 KZT/kWh	8.6
	Smart ReEnergy LLP		40.02 KZT/kWh	1
	QazQuat-TURGEN LLP		40.2 KZT/kWh	2.6
	TK-Most XXI LLP		39.82 KZT/kWh	1
	Qaratal Hydro LLP		40.05 KZT/kWh	4.9
	TOO «Qaratal Hydro»		41.17 KZT/kWh	4.9
June 24, 2025	KGE Hydro LLP	HPP	41.23 KZT/kWh	27.4
	KazHydroEnergo LLP		41.22 KZT/kWh	12.9
	KGE Hydro LLP		41.21 KZT/kWh	27.4
Nov 10, 2025.	TolebiHydro Operating LLP	HPP	41.21 KZT/kWh	3
	KegenHydro LLP		41.2 KZT/kWh	4.5
	SPC «Yntymak»		41.18 KZT/kWh	4.9
	Yntymak-Energo LLP		41.17 KZT/kWh	2
	Sun Volt LLP		41.16 KZT/kWh	4.5
Nov 11, 2025	GES Lepsy-2 HPP LLP	HPP	41.23 KZT/kWh	16.99
	Miliar Company LLP		41.22 KZT/kWh	12
Nov 11, 2025	No winner was determined following the auction.	BioPP	-	-

source: Kazakhstan Electricity Grid Operating Company (KEGOC) JSC



Mariyam Omarova,
MASc Global Sustainable Development, the University of Warwick

Beyond Politics: How public attitudes toward renewable energy affect the development of green technologies in Kazakhstan

Kazakhstan's difficult path toward a low-carbon future presents a unique paradox. Being one of the most carbon-intensive economies, the country has pursued highly ambitious goals for decarbonisation and renewable energy development since the early 2010s. However, neither advanced legislation, nor state commitment, nor growing foreign investment has produced the expected transformation of the national economy toward green technologies.

This paradox formed the basis of my scientific research project conducted at the University of Warwick in the United Kingdom. After analysing previous studies on the stagnation of renewable energy development in Kazakhstan and comparing them with the experience of other countries in the region, I concluded that the main challenge lies in the population's cautious attitude toward this process. The disconnect between ordinary citizens and government policy, as well as the lack of dialogue and public awareness about the critical

importance of decarbonisation, do not give a chance for these measures to be accepted with understanding and an adequate attitude.

To gain deeper insight into the problem, we conducted an online survey of Kazakhstan residents and interviews with energy experts.

I would like to present the results of this research.

EXISTING BARRIERS

According to the Ministry of Energy of the Republic of Kazakhstan, the share of renewable energy in 2025 reached 6.81%, which corresponds to the set goals of achieving a renewable energy share of 6% by 2025, 10% by 2030 and 50% by 2050. Further progress, however, will require much more serious infrastructural changes in Kazakhstan's economy and industry.

After reviewing available literature on the stagnation of renewable energy deployment in Kazakhstan, I identified several recurring problems. To verify or assess their impact, I consulted experts from the fossil fuel sector, power grid management, renewable energy construction, and renewable energy policy and legislation.

The interviews I conducted helped me draw the following interesting conclusions. On the one hand, I understood that experts working in the field of traditional fossil fuel energy sources and holding quite high positions live in their own information bubble; their skepticism and unwillingness to acknowledge the need for decarbonization affect the perception of renewable energy for all Kazakhstanis working in this field, and in some regions they are the majority.

Also, experts in the field of energy grids noted the critical need to modernize about 50% of all existing grids, which we inherited from the Soviet Union. The development of renewable energy even at the level of 20–30% is impossible without modernizing existing grids.

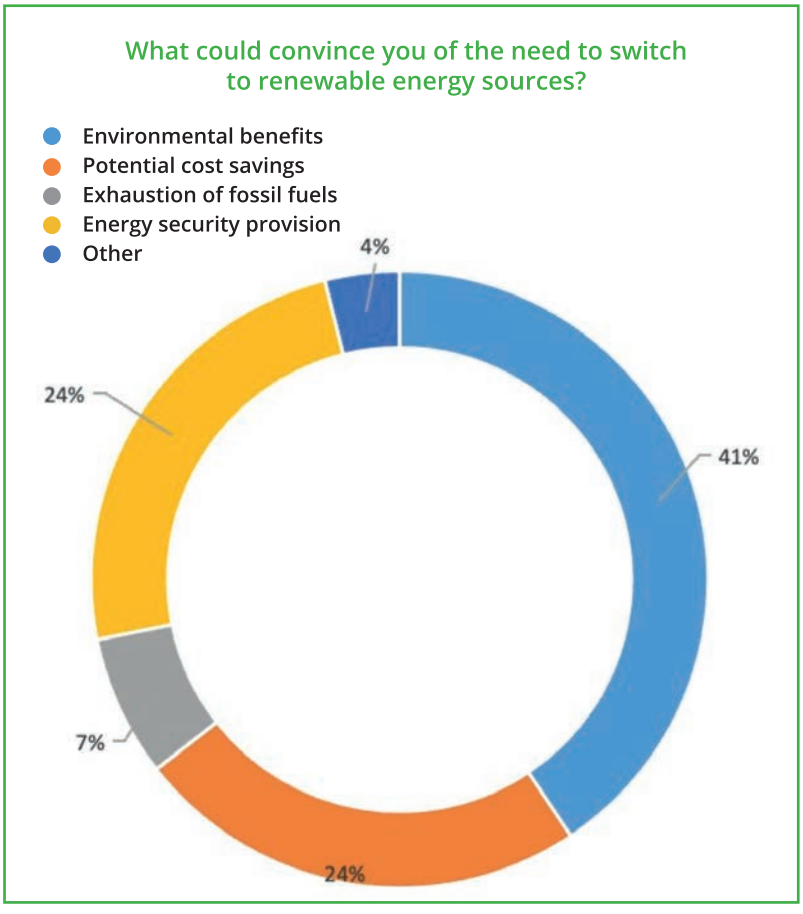
The expert who directly managed projects for the construction of wind power plants noted that the country critically needs to develop the production of components for renewable energy. The growing demand for these components often forces overpayment to factories in other countries and reduces the percentage of local content in renewable energy projects.

Interviewees also noted that global decarbonisation trends strongly influence the introduction of green technologies. Thus, the Carbon Border Adjustment Mechanism (CBAM), being implemented by the EU on certain types of raw materials, forces producers of this product in Kazakhstan to convert operational capacities to lower-carbon types of energy.

I separately touched upon the topic of nuclear power plant construction in Kazakhstan and the necessity of its construction from the standpoint of energy deficit and overall feasibility. All experts noted that Kazakhstan does not need a nuclear power plant. References to France are outdated, as France developed nuclear power plants at the beginning of the 20th century and at the moment, it is better to develop renewable energy and gas power plants (as a transitional type of energy), rather than invest in expensive nuclear power plant projects.

ONLINE SURVEY

But the most striking results were shown by the online survey of Kazakhstan residents. This survey covered all regions of Kazakhstan and was participated in by 256 citizens. The



majority of respondents (61%) were women, which speaks to the growing demographic dynamic and women's interest in the development of more environmentally friendly and sustainable solutions in the energy sector in the country. The age of participants covered quite a large cross-section from 17 to 68 years. Questions regarding the impact of the country's transition to renewable energy on individual household expenses elicited quite a mixed reaction: 42% are confident that expenses will increase, 18% that they will not increase, 40% do not think about it.

Regarding the most important factor in switching to renewable energy, 41% cited supply reliability, reflecting concerns about technical readiness and grid ageing. Rising energy costs were a concern for 32%, while 16% and 10% mentioned grid readiness and accessibility, respectively.

Environmental benefits were the main motivating factor for 41% of respondents, followed by economic considerations and energy security (24% each). Only 7% were concerned about the depletion of mineral resources, demonstrating persistent dependence on fossil fuels, which is also noted by many academic sources.

42%

are confident that expenses will increase

18%

that they will not increase

40%

do not think about it

The survey shows that the Kazakhstan's population neither categorically opposes renewable energy nor unconditionally supports it. On the contrary, their views are shaped by pragmatic considerations regarding costs and, especially importantly, reliability of supply. To bridge the gap between progressive policy and its actual implementation on the ground, it is necessary to invest both in grid infrastructure and in effective communication strategies that link environmental goals with tangible benefits for households. By identifying these interconnected problems, the research illustrates the importance of quality online surveys as policy analysis tools that transform complex public sentiments into practical solutions.

My research provides a foundation for longer-term studies that combine 5 public opinion with expert assessment to address multifaceted energy policy challenges. Five key factors shape public perception: environmental concern, economic motivation, social influence, institutional trust, and perceived personal benefit. Leveraging these drivers enables the development of messages that resonate with citizens and promote sustainable change.

The study also identified regional disparities. Regions rich in fossil fuels demonstrated higher scepticism toward renewable energy, while support was notably stronger in major metropolitan areas.

Finally, the research revealed a persistent gap between government directives, business ambitions, and public needs. Insufficient public engagement and awareness of the importance of the energy transition risk hindering progress. Kazakhstan's discourse on renewable energy remains fragmented—government, business, and citizens operate in separate informational spaces. Without constructive dialogue, a socially accepted and successful transition will remain elusive.

In a country as vast as Kazakhstan, ensuring regional equity in the transition process is essential. Fossil-fuel-dependent regions may react negatively to rapid decarbonisation, making a balanced and inclusive approach vital. Only through open dialogue and comprehensive strategies can Kazakhstan achieve an effective and equitable energy transition.

The Impact of Energy Infrastructure on **Biodiversity in Kazakhstan**

Ksenia Zyukova,
Senior Specialist
Association for the Conservation of Biodiversity of Kazakhstan (ACBK)

Energy infrastructure is a cornerstone of Kazakhstan's sustainable development, supporting economic growth and modernization. Alongside traditional energy sources, renewable solar and wind power are expanding rapidly. However, this growth also brings increased environmental risks, with the impact of energy facilities on biodiversity, particularly on birds, being especially significant.

THE PROBLEM: EFFECTS OF ENERGY INFRASTRUCTURE ON BIRDS

One of the most pressing issues is bird mortality on overhead power lines (OPLs). Birds collide with wires during flight or are electrocuted when landing on certain OPL structures, many of which are mounted on reinforced concrete supports carrying 6–10 kV. Research and data extrapolation indicate that roughly 58,000 birds of prey die on power lines in Kazakhstan each year, with 61% of these being eagles. Mortality is particularly high on 6–10 kV lines with porcelain or glass pin insulators, where contact between a live wire and a grounded element results in a fatal shock for the bird and often a line failure causing short circuits.

The growing network of renewable energy facilities also contributes to this issue by increasing the total length of power lines. Wind turbines, if sited without thorough environmental assessment, can pose collision risks to migratory birds and bats. Solar power plants can alter habitat quality and reduce food availability, particularly affecting steppe species.

ACBK'S EXPERIENCE

Since 2004, the Association for the Conservation of Biodiversity of Kazakhstan has run programs to study and protect rare bird species, including raptors like the steppe eagle and saker falcon. The organization monitors the impact of energy infrastructure

on birds, develops practical recommendations to mitigate harm, and engages actively with energy companies, government agencies, and international partners. ACBK also participates in global initiatives to conserve migratory species and promotes best environmental practices in Kazakhstan's infrastructure development.

RESEARCH FINDINGS

As part of its work on energy infrastructure and biodiversity, ACBK surveyed power lines in Western Kazakhstan in 2023 and 2024 within the habitats of the Steppe Eagle population in the Volga-Ural region. In 2023, a survey at the Bokey Orda State Nature Reserve recorded 319 dead birds of 16 species, over 80% of which were steppe eagles. In autumn 2024, research in West Kazakhstan and Aktobe regions confirmed the severity of the problem: of 754 km of lines surveyed, 248 km were deemed hazardous, with 459 bird fatalities of 16 species recorded, mostly due to electrocution, and in some areas mortality reached 44 birds per 10 km of line. These results align with earlier studies; for instance, a 2011 survey of 680 km of power lines in Karaganda and Kostanay regions recorded over 1,100 dead birds of 35 species.

ACBK also conducts satellite tagging of birds, yielding unique data on migration routes and concentration areas for rare species. This information is critical for planning infrastructure projects, including renewables, by assessing potential risks and designing mitigation measures. Tagging data inform both conservation strategies and infrastructure placement.

REGULATORY FRAMEWORK AND GAPS

Bird protection in energy infrastructure is addressed in Kazakhstan's Environmental Code (Articles 245 and 246) and the Law "On the Protection, Reproduction and Use of Wildlife" (Article 17). However, these regulations are broad and lack detailed requirements for preventing bird mortality. Many facilities are therefore designed and operated without fully considering their impact on birds.

Some companies have adopted effective bird protection devices, demonstrating positive results. Yet existing penalties are inadequate: a fine for killing a single steppe eagle is only 20 MCI, far below the species' ecological value.

SOLUTIONS

Mitigating risks to birds requires a comprehensive approach:

- Conduct pre-construction ornithological studies for energy projects.
- Install protective devices on power line poles to prevent electrocution.

- Use visual markers on wires to reduce collisions.
- Consider bird migration routes when siting wind farms.
- Develop national standards and guidelines for infrastructure design and operation that integrate conservation requirements.

These measures allow energy development to coexist with natural ecosystems, a key consideration as Kazakhstan transitions to a green economy.

CONCLUSION

Energy infrastructure can and must develop in harmony with nature. Adopting environmentally responsible practices at every stage, from planning to operation, will prevent bird fatalities and preserve Kazakhstan's biodiversity. Implementing protective technologies, strengthening legislation, and fostering collaboration among government, business, and environmental organizations will ensure that energy infrastructure becomes a model of sustainable coexistence between humans and nature.

CHARTER –

APPEAL TO THE GOVERNMENT OF THE REPUBLIC OF KAZAKHSTAN

FROM THE RENEWABLE ENERGY BUSINESS COMMUNITY

(based on the results of the IV International Business Festival on Renewable Energy “Qazaq Green Fest”, held on September 12-13, 2025 in Aktau)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2025

FROM THE RENEWABLE ENERGY
BUSINESS COMMUNITY

(based on the results of the IV International Business Festival on Renewable Energy “Qazaq Green Fest”, held on September 12-13, 2025 in Aktau)

THE BUSINESS COMMUNITY OF THE RENEWABLE ENERGY SECTOR (HEREINAFTER – RES) SUPPORTS THE INITIATIVES OF THE PRESIDENT OF THE REPUBLIC OF KAZAKHSTAN KASSYM-JOMART TOKAYEV ON THE TRANSITION OF THE REPUBLIC OF KAZAKHSTAN TO A GREEN ECONOMY AND SUSTAINABLE DEVELOPMENT.

As is known, the Republic of Kazakhstan has declared its commitment to achieving carbon neutrality by 2060. In February 2023, President of Kazakhstan signed the Strategy for Achieving Carbon Neutrality of the Republic of Kazakhstan by 2060. Under the Paris Agreement the country pledged an unconditional greenhouse gas emissions reduction of 15%, and a conditional (with international support) reduction of 25% by 2030 from the 1990 level.

Today, Kazakh society is more aware than ever of its responsibility for the country’s environmental future and the health of its people. One of the key tools for achieving these goals is the expansion of renewable energy technologies.

However, a number of factors continue to constrain the growth of the renewable energy market in Kazakhstan. These issues were thoroughly discussed at the 4th International Business Festival “Qazaq Green Fest”, which brought together more than 300 representatives of the green energy sector. Following the event, the business community has put forward the following proposals to the relevant government bodies and the Government of the Republic of Kazakhstan.

DEVELOPMENT OF DIRECT RES CONTRACTS

One of the key drivers for expanding the renewable energy market is the segment of PPA contracts for RES, under which industrial enterprises enter into direct contracts with renewable energy producers to lower their carbon footprint by purchasing green electricity. Experts note that this segment has significant potential, as most real-sector companies have already adopted corporate strategies to decarbonize their production processes. Overall, the bilateral contracts market has the potential to far exceed the size of the renewable energy auction market and become a key driver of the sector's further growth, while not affecting electricity tariffs for households and businesses, since the cost of "green" electricity would be borne directly by industrial consumers.

The draft Law of the Republic of Kazakhstan "On Amendments and Additions to Certain Legislative Acts of the Republic of Kazakhstan on the Development of Alternative Energy Sources" introduces provisions to further strengthen this segment. In particular, it defines the terms "direct contract" and "direct consumer of green energy."

However, one of the main challenges in this area is the potential risk that a direct consumer of green energy might, for objective reasons, withdraw from a contract with a renewable energy producer, since such agreements are civil B2B transactions. Financial institutions have also raised concerns about this issue, noting that long-term commitments to purchase electricity from renewable facilities are essential to prevent financial defaults. To address this, the draft law introduces a mechanism allowing such projects to be transferred to contracts with the Single Purchaser, provided they meet the following criteria:

1. The energy-producing company must be included in the official list of renewable energy producers.
2. At least thirty-six months must have passed since the start of power supply under direct contracts with green energy consumers.
3. The company must ensure the construction of regulating capacity equal to at least thirty percent of its installed renewable generation capacity, connected to the system operator's automatic power regulation system.
4. The company must obtain confirmation from the transmission organization (to whose grid it is connected) and/or from the system operator confirming the technical ability to supply electricity to the Single Purchaser without compromising the stability of Kazakhstan's Unified Power System (UPS).
5. The company must update the technical conditions previously issued by the transmission organization and/or the system operator to reflect the new supply arrangement with the Single Purchaser.

The draft Law of the Republic of Kazakhstan provides that direct contracts may be converted into sales to the Single Purchaser at a price equal to the lowest auction price for the relevant renewable technology recorded in the thirty-six months preceding the application date. Only price indexation for changes in the consumer price index will apply to such projects. When a direct contract transitions to a Single Purchaser agreement, the contract term is reduced by the period that has elapsed since the facility's commissioning up to the date of the new agreement. Projects transferred under this mechanism will not receive priority dispatch.

The draft law of the Republic of Kazakhstan stipulates that under direct contracts, producers may sell the electricity they generate to the Single Buyer at a price equal to the lowest auction price established during auctions (for the relevant type of renewable energy) over the thirty-six months preceding the date the renewable

energy producer applies to the Single Buyer. At the same time, it is envisaged to apply to such projects only the mechanism of price indexation to changes in the consumer price index. And when transitioning from a direct contract to a contract with the Single Buyer, the term of the contract is determined minus the period that has passed from the moment of commissioning the facility until the date of conclusion of the purchase and sale agreement with the single buyer of electricity. Priority dispatching will also not apply to such projects in case of transition to a contract with the Single Buyer.

It should be noted that during the transition, the auction price indicator may be irrelevant – in practice there are cases when companies with the lowest auction prices did not sign PPA contracts and lost the financial security of participation in auctions. In this regard, the fairest approach would be to take into account the lowest auction prices for projects that have been commissioned over the past 3 years, or consider an approach where the authorized state body, taking into account market conditions, determines a single tariff by types of RES technologies.

The Ministry of Energy of the Republic of Kazakhstan, together with interested state bodies, needs to assess the potential for developing the direct RES contracts segment, based on the decarbonization plans of the country's organizations and enterprises. This analysis would help refine Kazakhstan's strategic targets for renewable energy development.

We call on the Government of the Republic of Kazakhstan to review and endorse these measures aimed at accelerating the energy transition in the real sector of the national economy and achieving carbon neutrality.

2 CANCELLATION OF PRIORITY DISPATCHING FOR RES

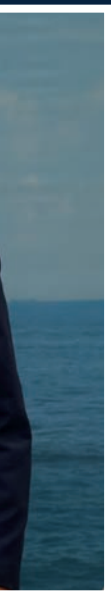
As of January 1, 2025, 156 RES facilities with a total installed capacity of 3037 MW were commissioned in the UPS of the Republic of Kazakhstan. At the same time, a substantial amount of new renewable energy capacity is scheduled to come online in the coming years. According to the 2023–2027 Auction Plan for selecting RES projects, 6.7 GW of new capacity is expected to be commissioned. In addition, under intergovernmental agreements outlined in the Action Plan for the Development of the Electric Power Industry until 2035, another 5 GW of renewable capacity is planned in partnership with major investors.

According to the system operator KEGOC JSC, given the shortage of regulating capacity in the Unified Power System (UPS) of the Republic of Kazakhstan, it is necessary to exclude priorities when forming daily schedules for generation based on RES for periods of elimination of emergency violations and in cases of necessity to ensure the preservation of stable operation of the Unified Power System of Kazakhstan.

KEGOC JSC, in turn, has prepared amendments to the draft Law of the Republic of Kazakhstan "On Amendments and Additions to Certain Legislative Acts of the Republic of Kazakhstan on the Development of Alternative Energy Sources," suggesting the following.

If the transmission capacity of power grids operated by transmission companies is limited, priority should be given to electricity generated from renewable energy sources. This requirement does not apply in the following cases:

1. The cancellation of priority dispatching should not affect RES projects that have concluded PPA contracts with the Single Buyer before the cancellation of priority dispatching comes into force;
2. If priority dispatch is revoked, the Ministry of Energy of the Republic of Kazakhstan must introduce equivalent measures to ensure fair compensation for potential investor losses. When renewable generation is curtailed by dispatch order, compensation must be paid (curtailment compensation mechanism), as such restrictions directly affect project payback. This practice is standard in mature renewable energy markets such as Germany and the United Kingdom;
3. In line with the national policy on carbon neutrality, it is essential that when renewable generation is limited, daily scheduling minimizes the use of fossil-fuel plants to the technically required minimum. Coal or gas generation that does not provide critical or reserve capacity should be curtailed on the same basis as renewables.
4. Under Kazakhstan's commitments to reduce emissions and implement climate strategies (including the Paris Agreement and the Strategy for Achieving Carbon Neutrality), clean energy should retain dispatch priority, except in cases that threaten power system reliability. Even when restrictions are unavoidable, they must be temporary and supported by a clear plan to address the underlying causes (such as grid inflexibility or overload).
5. When forming daily generation and electricity consumption schedules, prioritization should be determined not only by technical parameters, but also by indicators of economic feasibility. The energy sector is increasingly integrated with market mechanisms, and therefore economic feasibility is becoming an equally important prioritization criterion. This means that the choice of certain generators to participate in the schedule should take into account the cost of electricity production, market demand, tariff rates, compensation and other financial aspects.
6. When dispatching generating facilities, the System Operator must give priority to renewable energy installations to the extent compatible with the safe and stable operation of the national grid, using transparent and non-discriminatory criteria.
7. The system operator, in case of plans to apply restrictions to RES facilities in the future, needs to develop rules ensuring transparency and an appropriate level of communication: decisions on restrictions should be public, well explained and communicated by the system operator to each investor and represent an extreme measure (reasons, volumes, areas of action, calculated data). This increases the trust of market participants and reduces risks for investors. RES developers and operators should understand why their generation is being limited and have the opportunity to challenge such actions.
8. Clear indicators of potentially possible restrictions as a percentage by types of RES generation (SPP, WPP, HPP) should be reflected;



9. Investors participating in renewable project auctions must be allowed to incorporate potential curtailment levels into their financial models and reflect them in their tariff bids;

10. Instead of long-term plans for RES restrictions, attention should be focused on: developing energy storage systems (BESS), constructing flexible capacities (CCGT, GTU), stimulating demand management (demand response), developing smart grids. RES restrictions should be only a temporary tool, not a new norm, and should be applied only in exceptional cases (for example, periods of accident elimination, etc.).

In connection with the above, the RES business community notes that the cancellation of priority dispatching for RES can cause serious damage to the development of renewable energy, the investment attractiveness of the sector and the goals of the energy transition. Instead of unilateral restrictions, it is necessary to build a balanced dispatching policy, eliminate the root causes of problems in the network, ensure transparency and fairness of decisions, stimulate the involvement of RES facilities in network management.

3

OPERATION OF RES FACILITIES WITHIN THE SINGLE BUYER AND THE BALANCING ELECTRICITY MARKET IN REAL TIME.

In the current version of paragraph 132 of the Rules for the Functioning of the Balancing Electricity Market (as amended by Order of the Minister of Energy of the Republic of Kazakhstan dated March 28, 2025, No. 141-n/қ), for renewable energy producers that signed long-term power purchase agreements with the Single Buyer after July 1, 2023, the upward and downward adjustment coefficients are set at 1.3 and 0.7, respectively. The Order took effect ten calendar days after its first official publication — that is, on April 12, 2025 (official publication date: April 2, 2025). Accordingly, the provisions of this Order apply to legal relations that arose after July 1, 2023, and affect power purchase agreements with the Single Buyer concluded following renewable energy auctions held in 2023 and 2024.

It should be noted that under paragraph 132 of the Rules for the Functioning of the Balancing Electricity Market that were in force during the 2023 and 2024 auctions, renewable energy producers with long-term PPAs signed with the Settlement and Financial Center were subject to fixed coefficients equal to 1 for the entire duration of their agreements. Thus, the new provisions introduced by the 2025 Order retroactively affect earlier agreements and significantly worsen investment conditions for projects that already signed PPAs with the Single Buyer.

In 2023, auctioned renewable capacity totaled 860 MW, and in 2024 — 1,270 MW. All investors implementing projects from these auctions could not have anticipated regulatory changes concerning the adjustment coefficients, which were only introduced by the Ministry in 2025. As a result, more than 2 GW of renewable capacity currently under construction face serious financial risks from the start of generation and electricity supply, even before investors have begun to recover their initial capital.

Under Article 43 of the Law of the Republic of Kazakhstan "On Legal Acts", a regulatory legal act does not apply to relations that arose before its entry into force. Furthermore, any legislation that imposes new obligations or worsens the position of citizens or entities has no retroactive effect.

Since the norms adopted under Order No. 141-n/қ of March 28, 2025, apply to relations that arose before the Order came into force and materially worsen investor conditions, amendments should be introduced to ensure that the new adjustment coefficients apply only to renewable energy projects selected through auctions held after April 12, 2025.

According to the Ministry of Energy's official position (Letter No. 05-20/10665 dated June 17, 2025), the new coefficients (1.3 and 0.7) do not apply to power purchase agreements concluded before the entry into force of the Order. However, given that the Settlement and Financial Center for RES LLP is already applying these new coefficients to projects with PPAs signed after July 1, 2023, it is necessary to amend the relevant regulatory acts to eliminate this legal inconsistency.

We urge the Ministry of Energy of the Republic of Kazakhstan to amend the Rules for the Functioning of the Balancing Electricity Market so that the new coefficients (1.3 and 0.7) apply only to new renewable energy projects that sign power purchase agreements after the corresponding Rules come into effect.

4

IMPROVING THE DEVELOPMENT OF FORECAST BALANCES OF ELECTRICITY AND CAPACITY

The official publication of forecast electricity and capacity balances is essential for effective industry planning, including renewable energy development. Integration and detailed project planning are carried out at the regional level. Publishing approved forecast balances only by system zones, without regional detail, is insufficient — it prevents proper generation planning, makes it difficult to assess the need for new or upgraded grid infrastructure, and delays the development and approval of grid connection schemes for new projects.

To improve the quality of forecast balance development, we ask the Ministry of Energy of the Republic of Kazakhstan to amend the Rules for the Development of Forecast Electricity and Capacity Balances (Order of the Minister of Energy of the Republic of Kazakhstan dated December 3, 2015, No. 687, as amended on April 29, 2021, No. 151) to include a regional breakdown in addition to the existing system zone division.

For accurate long-term forecasting of renewable electricity volumes and prices purchased by the Single Buyer under the support mechanism for renewables, we also request that the Ministry of Energy of the Republic of Kazakhstan, together with Settlement and Financial Center for RES LLP, establish, maintain, and annually update a unified, publicly accessible database of all renewable power plants (operational and planned). The database should specify the exact plant name, geographical location, installed capacity, auction price or established tariff with indexation for past periods, as well as actual and forecast generation data since commissioning.

To ensure transparency in forecasting and to reflect the interests of both business and electricity consumers — while preventing inflated demand projections that could lead to unjustified increases in capacity requirements — it is proposed to make the participation of business and industry associations mandatory in the approval process for forecast balances. These should include, among others, the Atameken National Chamber of Entrepreneurs, the Qazaq Green Renewable Energy Sources Association, the Kazakhstan Electric Power Association, the KAZENERGY Association, and the Association of Mining and Metallurgical Enterprises (AMME), etc.

APPLICATION OF PRODUCTION CONTROL REQUIREMENTS TO RES FACILITIES

5

By Order No. 385 of the Minister of Energy of the Republic of Kazakhstan dated October 30, 2024, the Model Provisions on Production Control (hereinafter – the Provisions) were approved. The Provisions were developed to support energy-producing and energy-transmitting organizations, the system operator, as well as heat-generating and heat-transporting entities within centralized heat supply systems, in implementing production control in the fields of electricity and heat. The Provisions also stipulate that each organization must appoint an official responsible for production control. This appointment must be agreed upon with the relevant territorial division of the state authority for energy supervision and control, taking into account qualification requirements, work experience, and a position not lower than the head of a structural unit.

Under paragraph 3 of Article 6-9 of the Law of the Republic of Kazakhstan "On Electric Power," energy-producing and energy-transmitting organizations, as well as the system operator, must develop their own production control provisions. It should be noted that according to the Law of the Republic of Kazakhstan "On Support for the Use of Renewable Energy Sources," an "energy-producing organization using renewable energy sources" is defined as a legal entity engaged in the generation of electricity and/or heat from renewable sources, excluding net consumers. Based on this definition, such organizations do not fall under the category of "energy-producing organizations" as defined by the Law "On Electric Power."

We therefore request that the Ministry of Energy of the Republic of Kazakhstan issue clarification confirming that the production control requirements do not apply to energy-producing organizations using renewable energy sources. Given the limited staffing capacity in the RES sector and the inability to allocate separate personnel for these functions, we also ask that the Ministry consider amending the Provisions to explicitly exempt RES facilities from these requirements.

6 SUPPORT FOR LOCAL CONTENT FOR RES

The development of local content in the renewable energy sector remains one of the most urgent issues. At a meeting on the development of the electric power industry and renewable energy sources held on May 26, 2021, the Head of State instructed the Government of the Republic of Kazakhstan to prepare proposals for localizing the production of components and other equipment for renewable energy and the energy sector as a whole.

Currently, major foreign manufacturers and equipment suppliers operate in Kazakhstan's renewable energy market, providing solar panels, inverters, and generating equipment for wind and hydropower. At the same time, domestic companies supply metal structures, cable products, and transformers, particularly for solar projects. Local entrepreneurs are also working to establish solar panel production, and efforts are underway to localize the manufacturing of equipment for wind power.

However, the development of local content depends directly on the annual auction volumes and the commissioning pace of renewable energy capacity. According to Order No. 187 of the Minister of Energy of the Republic of Kazakhstan dated May 23, 2023, "On approval of the auction schedule for 2023 and the auction plan for 2024-2027", substantial auction volumes for RES projects are planned. This provides an opportunity to plan medium-term commissioning targets for new renewable energy capacity.

To promote local content development, the RES business community proposes the following measures:

1. Conduct one-stage auctions for the construction of RES facilities with a capacity of 3–5 MW. This will lower the connection costs (for example, to a 10 kV line).
2. Include in the auction documentation a requirement for the winning bidder to purchase components and equipment from domestic producers within the established timeframe. This will help ensure demand for locally manufactured products, provided they meet competitive standards.

We request that the Ministry of Energy of the Republic of Kazakhstan introduce the necessary amendments to regulatory acts and include in the 2026 Auction Schedule a separate auction category for RES projects requiring the use of equipment produced by domestic manufacturers.

BESS play a crucial role in enhancing energy security. Such systems support the stability and resilience of electrical grids, offer a way to provide backup power for homes, businesses (including hospitals and other critical infrastructure). Batteries can also provide critical services in emergencies caused by extreme weather conditions or other disruptions.

In order to study the potential and define the role of BESS systems in Kazakhstan's energy sector, in 2025 the RES Association "Qazaq Green" together with Huawei developed the White Paper "Application of BESS Energy Storage Systems in the United Power System of the Republic of Kazakhstan."

Based on the analysis conducted, the development of energy storage systems is presented within the framework of the following measures:

- Implementation of energy storage system projects through the capacity market;
- Creation of an "energy arbitrage" mechanism (different price signals for charging-discharging of ESS);
- Development of the ancillary services market (frequency regulation, inertia, etc.);
- Implementation of energy storage system projects with connection to system operator substations (similar to grid boosters in Germany);
- Separate auctions for energy storage systems with RES;
- Stimulation of "behind-the-meter" energy storage systems at the household and business level within the retail electricity market.

To date, the Ministry of Energy of the Republic of Kazakhstan, within the framework of the draft Law of the Republic of Kazakhstan "On Amendments and Additions to Certain Legislative Acts of the Republic of Kazakhstan on the Development of Alternative Energy Sources," has planned to introduce such mechanisms for implementing BESS systems as the capacity market and energy arbitrage. In 2025, for the first time in Kazakhstan's energy history, auctions were held to select a wind power project with an installed capacity of 1 GW, equipped with energy storage systems totaling at least 30% of the plant's capacity.

At the same time, we draw the attention of the Ministry of Energy of the Republic of Kazakhstan and the system operator KEGOC JSC to the need to develop the ancillary services market (frequency regulation, inertia, etc.), use the potential of the balancing electricity market, stimulate "behind-the-meter" energy storage systems.

7

DEVELOPMENT OF ENERGY STORAGE SYSTEMS

8 ENSURING ENVIRONMENTAL SUSTAINABILITY OF RES – RECYCLING AND DISPOSAL OF USED EQUIPMENT

With the growth of the share of renewable energy sources (RES) in Kazakhstan's energy balance, a new environmental and regulatory challenge arises – ensuring safe recycling and disposal of used equipment, in particular solar panels, wind turbines and battery systems. Large-scale commissioning of RES facilities on an industrial scale, which began in 2014-2015, means that in the coming years the country will face a wave of decommissioning of the first generation of equipment, whose service life is 20-25 years, and in some cases even less.

To date, there is no systematic practice of recycling RES equipment in Kazakhstan, key concepts, requirements for recycling and disposal, environmental safety criteria are not enshrined, and there is no responsible regulatory framework. This creates a risk of forming a new source of pollution and waste, including those containing hazardous substances, especially in solar panels.

In many countries, recycling of used RES components is already part of state policy. In the European Union, in accordance with the Waste Electrical and Electronic Equipment (WEEE) Directive, manufacturers of solar panels are required to ensure their collection and disposal. Germany, Japan, the USA and South Korea are investing in creating recycling infrastructure, developing technologies for secondary processing of glass, silicon, rare earth and non-ferrous metals from panels and turbines.

China, as one of the largest manufacturers of solar panels, is also preparing to solve the problem of "solar waste," including the development of appropriate technical standards and requirements for manufacturers.

Thus, the issue of recycling RES equipment is an integral part of the sustainable development of renewable energy. In this regard, we propose to include this issue on the agenda of state policy in the field of "green" energy and sustainable waste management, thereby ensuring environmental safety and the closed life cycle of equipment.

At the first stage, it is necessary to study in detail the best international practices of countries with large installed RES capacities (China, European Union, USA, India, etc.).

At the second stage:

- adapt and apply these practices to the environmental and energy legislation of Kazakhstan (including introducing definitions of recycling, disposal and reuse of RES equipment);
- develop technical regulations and standards for recycling RES components (including requirements for safe handling of hazardous substances);
- define, establish and delineate the responsibilities of equipment manufacturers and/or RES operators for equipment disposal;
- provide financial (including preferential loans), tax (including temporary exemption from corporate income tax) and other incentives for the formation and subsequent development of the RES component recycling market in Kazakhstan.

At the third stage – stimulate the creation of domestic companies engaged in recycling RES equipment waste and opening research and production centers, stimulate the implementation of innovative solutions in the field of secondary recycling.

A key element of the investment attractiveness of projects based on renewable energy sources (RES) in Kazakhstan is long-term power purchase agreements (PPA) concluded with the Single Buyer. Until 2020, the term of such agreements was 15 years, which means that the first contracts signed in 2014-2015 will expire as early as 2029-2030. This creates a new legal and market reality for participants in the RES industry, requiring advance regulation.

To date, there is no mechanism in Kazakhstan's legislation for the prolongation or new use of existing RES assets after the completion of the PPA term. This creates uncertainty for project owners, hinders planning, reduces predictability for investors, and can also lead to underutilization of already built and amortized generation facilities.

Meanwhile, projects that have completed PPAs are projects with already returned investments, capable of offering a competitive, low tariff for electricity. This opens up opportunities for:

- direct contracts with industrial consumers interested in reducing their carbon footprint;
- entry into the centralized electricity market;
- formation of a secondary, sustainable segment of green generation.

In a number of countries around the world, mechanisms are provided for integrating "post-PPA" projects into the market. In the USA, projects can conclude new bilateral PPAs with corporate buyers through corporate PPA models upon completion of the PPA term. In Germany and Spain, projects that have completed subsidies gain access to the wholesale market and can also participate in guaranteed income mechanisms through capacity mechanisms or green certificates. In India, forms of flexible tariff revaluation and opportunities for secondary sales at market rates are provided. These approaches ensure both investment sustainability and the integration of cheap green energy into national markets.

9 ENSURING SUSTAINABILITY OF RES PROJECTS AFTER THE COMPLETION OF PPA CONTRACT TERMS

In this regard, advance regulation of the functioning of RES projects after the completion of PPA contracts is of strategic importance for the sustainability of the sector, the stability of the investment climate and the availability of cheap green energy for the domestic market. Our country needs to ensure clear rules and a legislative basis that facilitates the effective use of existing assets and the continuation of economic decarbonization. Most importantly – in the short term, provide clear signals to investors about the rules for completing PPAs and available options.

10

EDUCATION AND GENDER EQUALITY AS THE FOUNDATION OF AN INCLUSIVE ENERGY TRANSITION

Within the framework of the IV International Business Festival on RES Qazaq Green Fest, with the support of the GIZ (the German federal enterprise for international cooperation), a session "Inclusive Energy Transition – The Role of Education and Gender Equality" was organized. Representatives of the business community in the field of renewable energy sources (RES) expressed the opinion that a sustainable energy transition is impossible without the active participation of all segments of society, including women and youth. Inclusivity, fairness and accessibility of opportunities should become the cornerstone principles of energy transformation.

In this regard, we address the Government of the Republic of Kazakhstan with proposals aimed at strengthening human capital and ensuring equal access to opportunities in the field of RES.

Development of scientific and technical base at universities.

We ask for support in creating and equipping educational and research centers and laboratories for RES at the country's universities, including the installation of educational solar panels, wind turbines and smart systems. This will create conditions for practice-oriented training of engineering and technical specialists capable of effectively working in the conditions of the energy transition.

Bringing educational programs closer to the needs of the industry.

It is necessary to ensure systematic cooperation between business and educational institutions for the development and implementation of educational programs that meet modern requirements of the RES market. This will allow for the formation of personnel with relevant skills and accelerate the integration of graduates into the professional environment.

Support for gender equality through legislative and institutional measures.

We propose to develop and adopt legislative initiatives aimed at eliminating barriers for women in the field of RES, including:

- ensuring equal access to employment and career growth;
- introducing flexible forms of employment and

- programs to support return to profession;
- developing corporate practices that take into account gender equality.

Early career guidance and promotion of STEM fields among girls.

We consider it necessary to introduce school career guidance programs with an emphasis on popularizing STEM directions among girls. We also recommend developing information and educational work with families and school teachers to overcome gender stereotypes in choosing professions related to science, technology and energy.

We call on the Government of the Republic of Kazakhstan to ensure interagency and intersectoral interaction in the implementation of these initiatives, as well as to create favorable conditions for the participation of women and youth in the formation of sustainable and inclusive energy of the future.

11 DEVELOPMENT OF HYDROGEN ENERGY TAKING INTO ACCOUNT ENVIRONMENTAL SUSTAINABILITY AND INTERSECTORAL INTERACTION

Within the framework of the session " Hydrogen of the Future – Protecting the Caspian While Driving Progress" priority approaches and proposals were outlined, reflecting the interest of business in responsible and environmentally balanced development of the hydrogen economy.

Representatives of the business community in the field of renewable energy sources view the development of hydrogen energy as a strategic direction of the energy transition in the Republic of Kazakhstan. Hydrogen can become not only a key element of economic decarbonization, but also an important driver for the development of the green energy market. However, it is necessary to separate 2 processes: hydrogen production, which is quite energy- and resource-intensive, and energy production from hydrogen, which is still expensive and unprofitable. In this regard, it is important to conduct and support domestic scientific developments and conduct research studies in this direction, which will allow our country to develop its own competencies in hydrogen energy.

In this regard, we address the Government of the Republic of Kazakhstan with the following proposals:

Support for hydrogen as a priority direction for RES use. Hydrogen production should be considered as one of the most promising directions for consuming energy from renewable sources. We call for the development of incentive measures aimed at creating conditions for scaling up the production of "green" hydrogen – both for export and for domestic needs.

Launch of pilot projects. To assess the potential, technological readiness and economic efficiency of hydrogen solutions, it is necessary to implement pilot projects with the participation of business and scientific organizations. This will create conditions for working out financing models, logistics, regulatory regulation and attracting investment.

Improvement of the regulatory and strategic framework. The business community expresses its readiness to take active part in the refinement and implementation of the Concept for the Development of Hydrogen Energy until 2030, approved by the Ministry of Energy of the Republic of Kazakhstan, as well as in the discussion and development of the Law of the Republic of Kazakhstan "On Alternative Energy". The participation of the private sector will ensure the realism and applicability of the decisions taken.

Intersectoral approach to the development of hydrogen energy. The development of the hydrogen industry requires a comprehensive, interdepartmental and intersectoral approach. It is important to ensure close coordination between state bodies responsible for energy, industry, economy, transport, foreign trade, environmental safety and export strategy. Only an integrated approach will allow for the creation of a sustainable ecosystem of the hydrogen economy and the realization of national potential in full.

Environmental responsibility and preservation of the Caspian region. The hydrogen strategy should be built on the principles of environmental sustainability. We emphasize the importance of conducting environmental assessments and taking into account potential risks to the ecosystem of the Caspian Sea. We ask to ensure the implementation of effective mechanisms for environmental monitoring, transparency and sustainable management in the implementation of hydrogen projects.

The development of hydrogen energy is not only a technological and economic challenge, but also an opportunity to demonstrate that Kazakhstan is capable of becoming a leader in the field of sustainable energy, where progress does not contradict the environmental agenda. The business community expresses its readiness for partnership with the state and international organizations to form a comprehensive and sustainable policy in the hydrogen sphere.

QAZAQ GREEN

IV International business festival on renewable energy sources

QAZAQ GREEN FEST 2025

ENERGY TRANSFORMATION: FROM RENEWABLES TO ALTERNATIVE ENERGY

IMPLEMENTATION OF RENEWABLE ENERGY

I. Participation in the auction

1. Check the auction schedule

Order of the Minister of Energy of the Republic of Kazakhstan "On approval of the auction schedule for 2025" No. 117 н/қ dated March 4, 2025

2. Register at the website of KOREM JSC, conclude an agreement and undergo a training on the use of the trading system

- title documents *
- documents on the land plot
- documents on the connection point

* Foreign legal entities shall provide the equivalent documents with notarized translations of each document into the Kazakh and Russian languages

3. Financial guarantee for auction participation

- for auctions without documentation - 2000 KZT per 1 kW of installed capacity
- for auctions with documentation - 5000 KZT per 1 kW of installed capacity

4. Auction participation

- FSC provides envelopes with financial guarantee
- observers gather in the hall
- 30 minutes before the auction, the envelope is opened, and the data is entered into the system
- trading session opens (accepting and changing bids)
- trading session closes, auction results

5. Auction results

- auction winners
- auction prices
- volumes of selected capacity

II. Post-auction activities and project implementation

1. Inclusion in the RE Facilities Siting Plan and the List of Energy Producing Organizations Using RES

The Ministry of Energy of the Republic of Kazakhstan shall include the winners in the RE Facilities Siting Plan and the List of Energy Producing Organizations Using RES within 5 working days from the date of receipt of the Register of winners from the organizer

2. PPA conclusion

The winner submits an application for the conclusion of the PPA to the FSC within 60 calendar days from the date of inclusion in the List of Energy Producing Organizations using RES

3. PPA financial guarantee

The amount of financial guarantee of the fulfillment of the terms of the purchase agreement is 10,000 (ten thousand) KZT per 1 (one) kW of installed capacity

4. Project implementation terms (from the date of PPA conclusion)

- for SPP - 24 months
- for WPP and BioPP - 36 months
- for HPP- 48 months

5. Registration of land rights, design and survey works

- land plot selection
- obtaining the permit to use the land plot for design and survey works
- design and survey works (D&S)
- obtaining the land plot rights
- obtaining the water use rights (for HPP)

Moreinformation:USAID,Investor'sGuideto Renewable Energy Projects in Kazakhstan, 2022

PROJECTS IN KAZAKHSTAN

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6. Grid connection

- request to identify the closest connection point to the energy transmitting organization
- development of power generation scheme
- obtaining technical specifications for a connection to the electric grid
- approval of the power generation scheme by the system operator
- conclusion of an agreement on RE facility connection

7. Preliminary project procedures and design

- obtaining source materials to develop construction projects
- approval of schematic design with the construction authority
- development of project documentation (Feasibility study, Design and estimate documentation), approval, expert examination of DED by a design institute (state or private)
- installation and construction works

8. Environmental Permit

- environmental impact assessment (Ministry of Ecology)
- environmental emissions permit (egov.kz)

9. Investment preferences under Entrepreneurial Code

10. State registration of the right to a constructed renewable energy facility

- inclusion of identification and technical information on newly created immovable property in the information system of the legal cadastre (egov.kz)

III. Commissioning *

** SPP as an example*

1. The contractor notifies the customer of the facility's readiness for commissioning

2. The customer asks to provide (within 3 days):

- contractor -declaration of compliance
- technical and designer supervision - conclusion on the quality of the works performed
- technical supervisor- conclusion on the quality of the completed construction and installation works

3. Substation commissioning

Grid connection:

- Acceptance in Commercial Operation of Automated Commercial Energy Metering System (ACEMS) and registration in the ACEMS register
- signing contracts for system services with SO and REC
- compliance with technical conditions for grid connection
- notification of FSC about carrying out complex tests in set period
- successful completion of complex tests
- connecting the substation to the grid

Substation commissioning:

- signing of the commissioning act by the customer, general contractor, authorized technical supervisor
- registration of the act with the justice authorities
- registration of rights to immovable property
- creation of a facility's technical passport
- sending documents to FSC in the set period

4. Solar park commissioning

- signing of the commissioning act by the customer, general contractor, authorized technical supervisor
- registration of the act with the justice authorities
- registration of rights to immovable property
- creation of a facility's technical passport
- sending documents to FSC in the set period

QAZAQ GREEN Association

PLATFORM FOR NATIONAL AND INTERNATIONAL PLAYERS IN RENEWABLE ENERGY SOURCES

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Chairman of the Board of Directors

ISLAMBEK SALZHANOV
Chairman of the Supervisory Board

AINUR SOSPANOVA
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Member of the Board

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Member of the Board

ORAZ JANDOSOV
Member of the Board

ANATOLIY SHKARUPA
Member of the Board

VALERIY TYUGAY
Member of the Board

ASSOCIATION AS INFORMATIONAL RESOURCE

The Association is a resource that will allow members of the Association to receive information about changes in legislation immediately.
Association is a resource that creates public opinion, and also contributes to the promotion of renewable energy. It will allow you to form a positive image around an event in the activities of both a member of the Association and the Association itself.

AIDA MAKSUT
Member of the Board

ARTYOM SLESARENKO
Independent Director

ARSENIY KATERUSHA
Independent Director

TIMUR SHALABAYEV
Executive Director

ZHANAR KUANYSHBEK
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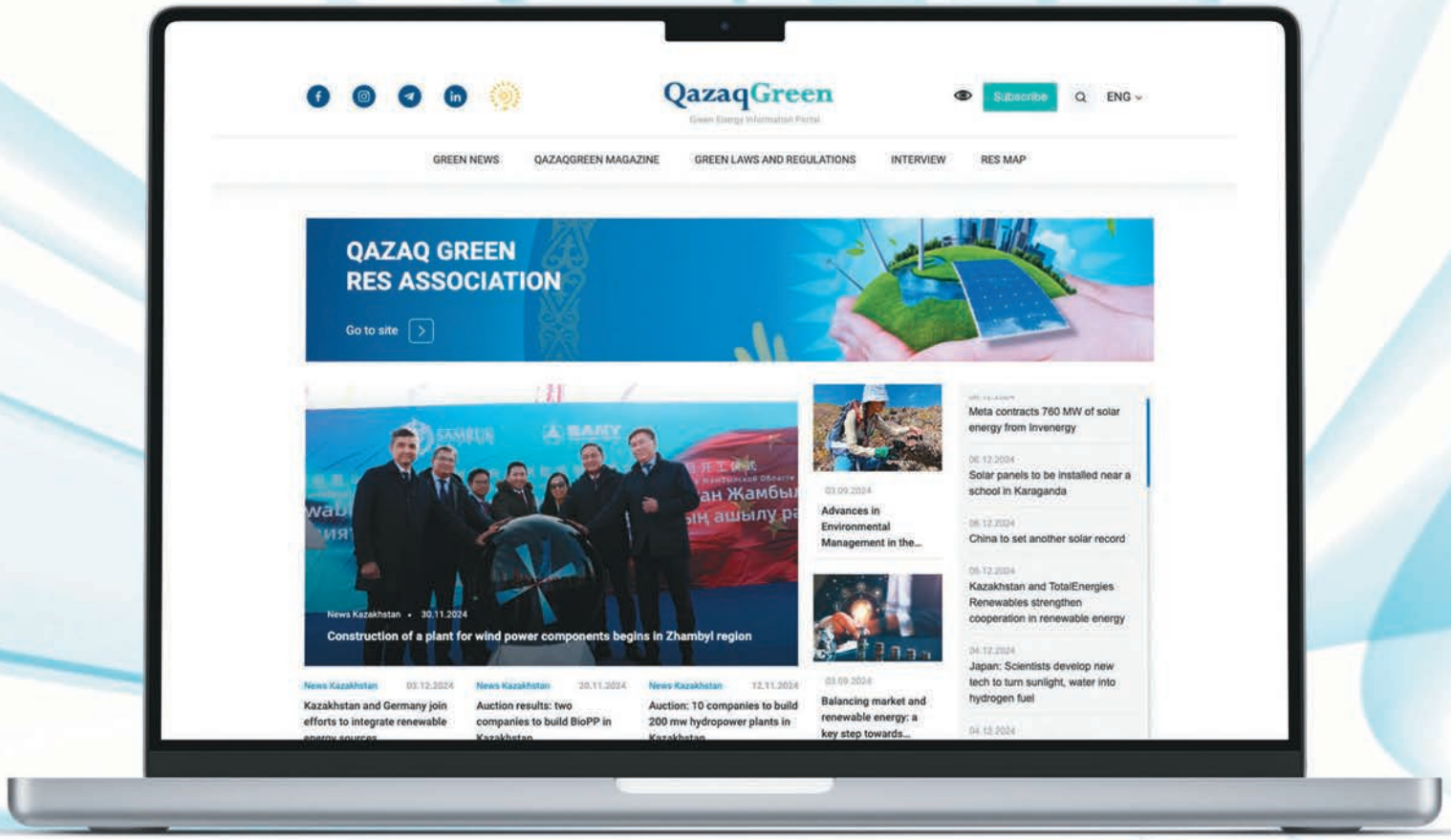

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of the «green» energy of Kazakhstan and the world!

www.qazaqgreen.com

Information portal will present latest news from Central Asia, Kazakhstan and all over the world, as well as articles of QazaqGreen magazine.

KONRAD ADENAUER STIFTUNG

The Konrad Adenauer Foundation is a political foundation of the Federal Republic of Germany. With its programmes and projects, the Foundation actively and effectively promotes international cooperation and mutual understanding.

The Representative Office of the Foundation in Kazakhstan began its work in 2007 at the invitation of the Government of the Republic of Kazakhstan. The Foundation works in partnership with government agencies, the Parliament of the Republic of Kazakhstan, civil society organizations, universities, political parties and enterprises.

The main purpose of the Foundation's activities in the Republic of Kazakhstan is to strengthen mutual understanding and partnership between the Federal Republic of Germany and the Republic of Kazakhstan through cooperation in the field of political, educational, social, cultural and economic development, thus contributing to the further development and prosperity of Kazakhstan.

The Konrad Adenauer Foundation has the following priorities in the Republic of Kazakhstan:

- **Policy and Party Counselling**
- **Interparliamentary Dialogue**
- **Energy and Climate**
- **Local Self-Governance**
- **Political Education**
- **Media**
- **Sur-Place Scholarships**

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