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SPRING ISSUE
April 2023

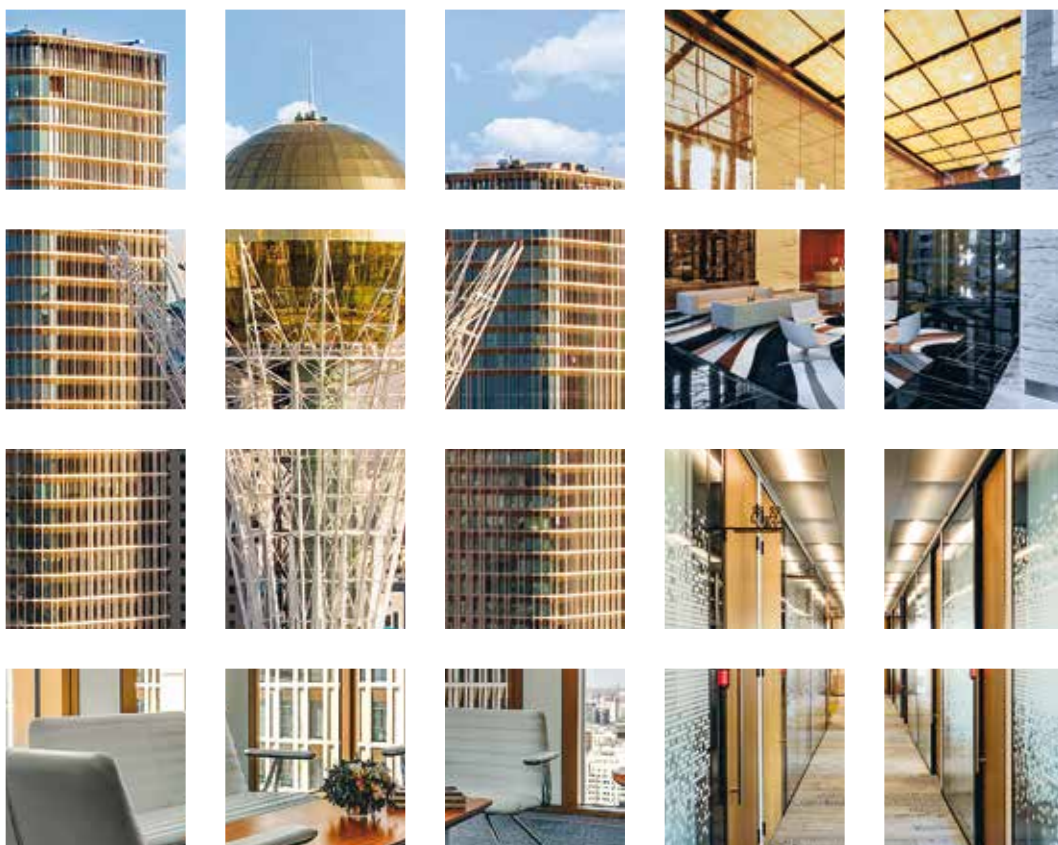
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Caspian Spring Issue 2023



- ▶ **ExxonMobil - Future Perspectives – Enhancing Strategic Thinking**
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- ▶ **Shell Celebrates Milestone Anniversary in Kazakhstan**
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- ▶ **Novus Bolashak: Commitments and Services to Kazakhstan**
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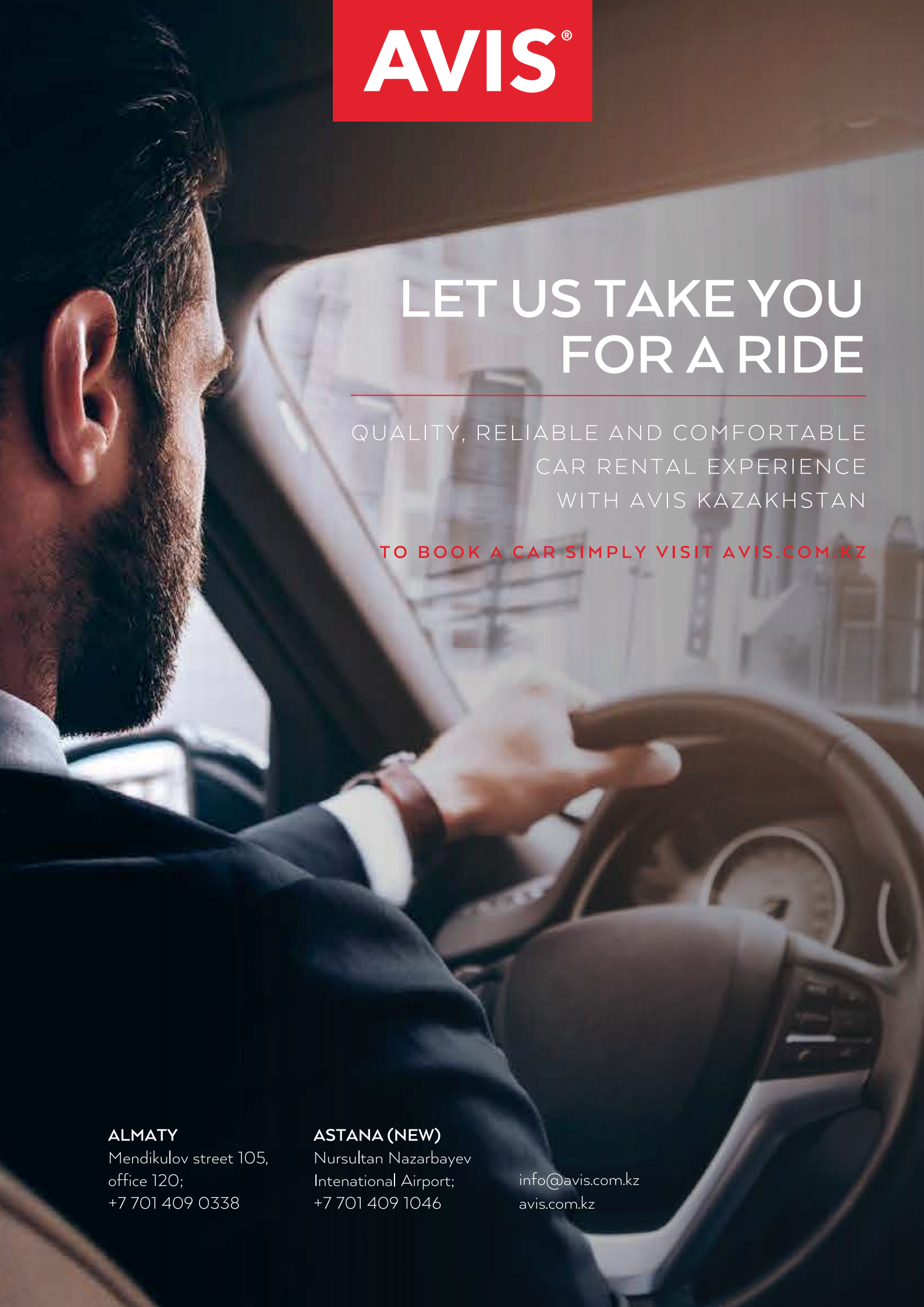
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EDITOR'S NOTE



Dear Readers,

The *Caspian Spring Issue of Investors' Voice* is a regular AmCham publication in which the status of the oil and gas industry is examined as winter melts away and spring approaches. Kazakhstan's Caspian oil patch is ready for a very welcome change of seasons. This year's *Caspian Spring Issue* features an expanded frame of reference through inclusion of the broader energy industry and enquiry into the changing nature of Kazakhstan's oil and gas industry.

This past year was a hectic year filled with unexpected twists and turns of fate, but the country's investment community has met the challenges well and continues to charge ahead in 2023. As always, Kazakhstan's investors are resilient and resourceful, ready for whatever may arise. This is especially true of the oil industry, the leading industry sector for AmCham in Kazakhstan.

The 2023 *Caspian Spring Issue* is filled with articles from the major oil companies (*ExxonMobil, Chevron, Tengizchevroil, Shell, Totalenergies, the North Caspian Operating Company - NCOC, Karachaganak Petroleum Operating – KPO*), reporting on their progress and their plans for this year and the years ahead. In addition, we will hear from the leading oilfield service companies (*Halliburton, Schlumberger, Fluor, Parker Wellbore, Novus Bolashak*) and the related engineering and energy companies (*Honeywell, nVent Thermal – Raytheon*), always on the cusp of innovation to implement the industry's strategies. Last, but definitely not least, the global technology leader, *Microsoft*, which plays an ever-increasing role in the oil industry, will glance into its future in propelling the industry ahead.

This collection of articles from the major players in the Caspian oil patch creates a full overview of the industry's continuing development and, as Kazakhstan's economic powerhouse, the industry's contribution to Kazakhstan's economic resurgence following the Covid-19 pandemic and more recent internal and geopolitical challenges.

The world never stands still and so we can expect further challenges in the future, but we can also be confident that the oil industry and its supporting partners will be ready and will never miss a beat as the full range of global energy resources continues to propel the world ahead.

Doris Bradbury
Editor-in-Chief, *Investors' Voice*
Executive Director, AmCham in Kazakhstan



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Brian Thomson is an accomplished business development professional with a proven track record of driving revenue growth across diverse industries. With over ten years of experience in the oil and gas sector, he has held various senior positions, including Director of Business Development and General Manager for Parker Wellbore in Europe, Africa, and the Caspian region.

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TENGIZCHEVROIL: 30 YEARS OF PARTNERSHIP WITH KAZAKHSTAN DRIVING ECONOMIC PROGRESS AND SUSTAINABLE DEVELOPMENT

Tengizchevroil has played a crucial role in the development of Kazakhstan's economy over the past 30 years. The company has contributed one-fifth of the revenues to the republican budget, one-third of the country's total oil production, and created tens of thousands of jobs.

As the company celebrates its 30th anniversary this year, it is worth noting that Tengizchevroil has overcome numerous challenges while increasing its performance by 29 times. The agreement signed on April 6, 1993, between Kazakhstan and Chevron has been recognized as the "contract of the century" and has brought immense benefits to both parties.

Tengizchevroil has been Kazakhstan's key partner for over 30 years, contributing significantly to the country's economic progress. With investments of over \$43.6 billion in local goods, works, and services, and direct financial payments of over \$176 billion to Kazakhstani entities, Tengizchevroil has created over 300,000 jobs throughout Kazakhstan.

The company has focused on the localization of its procurement activities in Kazakhstan, with 71% of its purchases being made from local companies by the end of 2022. In total, TCO has purchased \$43.6 billion worth of goods and services from Kazakhstani suppliers over 30 years. This has led to the development of domestic businesses in many regions of Kazakhstan, benefiting almost all regions of the country economically.

Tengizchevroil's focus on safe and reliable operations, and the implementation of the latest technologies, have led to significant production progress. The company now contributes 35% of total crude oil production in Kazakhstan, up from 1 million tons in 1993 to 29.2 million tons in 2022. Tengizchevroil has also invested over \$3 billion since 2000 in environmental protection activities.

Beyond its contributions to the oil and gas industry, Tengizchevroil has supported the development of sustainable business models for Kazakhstani companies and invested over \$2.7 billion in employee and community social programs, including social infrastructure. By fostering partnerships, transferring knowledge between Kazakhstani and international companies, and supporting Kazakhstan's initiatives to increase the localization and procurement of goods, Tengizchevroil has helped develop the skills and knowledge of the national workforce in areas such as safety, reservoir management, drilling, and production operations.

Using technology to improve safety, production, and decision-making across its entire value chain, Tengizchevroil is making significant strides in digitalization, enabling the company to assess opportunities to increase oil production in Tengiz and Korolev in the future. The *Future Growth-Wellhead Pressure Management Project (FGP-WPMP)* is the next major expansion project at Tengiz, which is set to further cement the company's position as a leader in Kazakhstan's oil and gas industry.

In conclusion, Tengizchevroil has been a vital contributor to Kazakhstan's economic progress over the past 30 years. The company's commitment to localization, investment in local businesses, and social and environmental programs has had a positive impact on the national workforce and communities across the country. As Tengizchevroil looks to the future, it will continue to play a key role in the development of Kazakhstan's oil and gas industry, and the country's overall economic growth.





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Understanding the role of scenarios and ExxonMobil's Outlook for Energy

We consider a range of scenarios – including remote scenarios – to help inform perspectives of the future and enhance strategic thinking.



No single transition pathway can be reasonably predicted, given the wide range of uncertainties. Key unknowns include yet-to-be-developed government policies, market conditions, and advances in technology that may influence the cost, pace, and potential availability of certain pathways. Scenarios that employ a full complement of technology options are likely to provide the most economically efficient pathways.

We use projections and scenarios from reputable third parties such as the IEA and the Intergovernmental Panel on Climate Change (IPCC) to help inform our thinking, including the resiliency of our portfolio and opportunities. While any one scenario may be remote in probability, all of these projections and scenarios are useful in informing our long-term strategic priorities (including potential investments, divestments, mergers, and acquisitions) as we evolve our businesses and integrate learnings to further improve resiliency.

Most projections indicate the world population will grow and that people will strive for better living standards, driving greater energy demands) as we evolve our businesses and integrate learnings to. At the same time, aspirations to limit the rise of average global temperatures while ensuring reliable and affordable energy products mean that the energy system could be quite dynamic, with a range of scenarios in the energy transition pathway that may unfold.

Our strategy, business model, and emission-reduction plans provide a framework for strengthening resiliency. As an integrated company with assets around the world, we believe taking a portfolio approach is the best way to make capital-allocation decisions, which drive future cash flows. This approach helps ensure flexibility and optionality to shift investments to adapt to an uncertain world and maximize value for our stakeholders. We evolve our portfolio to responsibly

and efficiently meet needs for lower-emission intensity oil and natural gas, chemicals, and lubricants while advancing carbon capture and storage, hydrogen, and biofuels.

In doing so, we position ExxonMobil to grow earnings, cash flow and shareholder value, even in aggressive emission-reduction scenarios like the IEA NZE.

Our Outlook for Energy

The Outlook for Energy is our latest view of energy demand and supply through 2050. It forms the basis for our business planning and is underpinned by a deep understanding of long-term fundamentals. In addition to assessing trends in economic development, technology advances, and consumer behavior, the Outlook seeks to identify potential impacts of climate-related government policies, which often target specific sectors.



To support a robust evaluation, our business planning process annually updates assumptions by major regions for crude oil and natural gas pricing.

We look at refinery and chemical margins, production, and costs, including greenhouse gas emissions prices and policy. During the funding process, we actively test major investment opportunities on key aspects, such as financial performance and greenhouse gas intensity through an opportunity-specific, scenario-based evaluation process. This informs actions that are improving the portfolio mix, such as adding low cost-of-supply oil and gas production, as well as higher-value fuel and chemical products. This enhances resiliency and positions us to lead through the energy transition.

We also publish components of this Outlook on our website so that interested parties can see our key assumptions and conclusions and the data and analysis behind them.

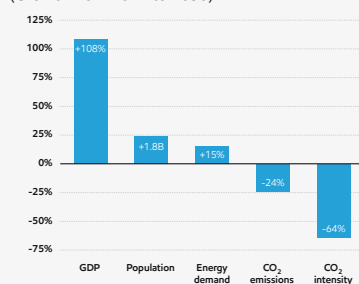
Outlook highlights

Energy and human development are tightly linked. Between now and 2050, the world population is expected to grow to almost 9.7 billion from 7.8 billion people, and global gross domestic product (GDP) is expected to more than double. Billions of people in developing economies are expected to see their incomes grow, translating to more demand for electricity, as well as for homes, transportation, consumer goods, and the energy to power them. Importantly, many across the globe will, during this period, have access to reliable energy for the first time.



Key dimensions of the Outlook for Energy

(Growth from 2021 to 2050)



Source: ExxonMobil 2022 Outlook for Energy

The Outlook projects efficiency gains that will reduce energy use per capita in developed countries. On the other hand, developing nations will increase energy use per capita as they pursue improved living standards. This growing demand in developing countries, which represent about 85% of the increased global population, leads to an estimated 15% increase in energy demand in 2050 versus 2021.

Energy-related greenhouse gas emissions are projected to peak by 2030 before declining about 24% by 2050, marking a significant improvement versus the emissions growth that occurred over the past decade. Efficiency gains and a shift in the energy mix, including increased use of lower-carbon sources, enable an improvement of more than 60% in the carbon emissions intensity of global GDP from 2021 to 2050.

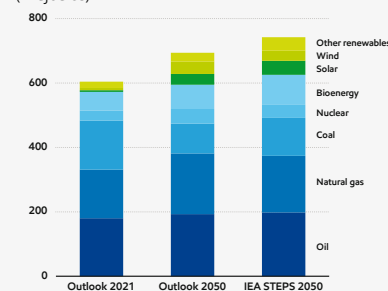
The chart to the right highlights the mix of energy sources the Outlook projects will be needed to meet demand. Our projections are directionally similar to the IEA's Stated Policies Scenario (STEPS), which is based on a sector-by-sector assessment of the current and announced government policies around the world. Both project that wind and solar will make up about 10% of primary energy demand in 2050, up from less than 2% today. Both also indicate that oil and natural gas will account for more than 50% of total primary energy in 2050.

Use of sensitivity analysis

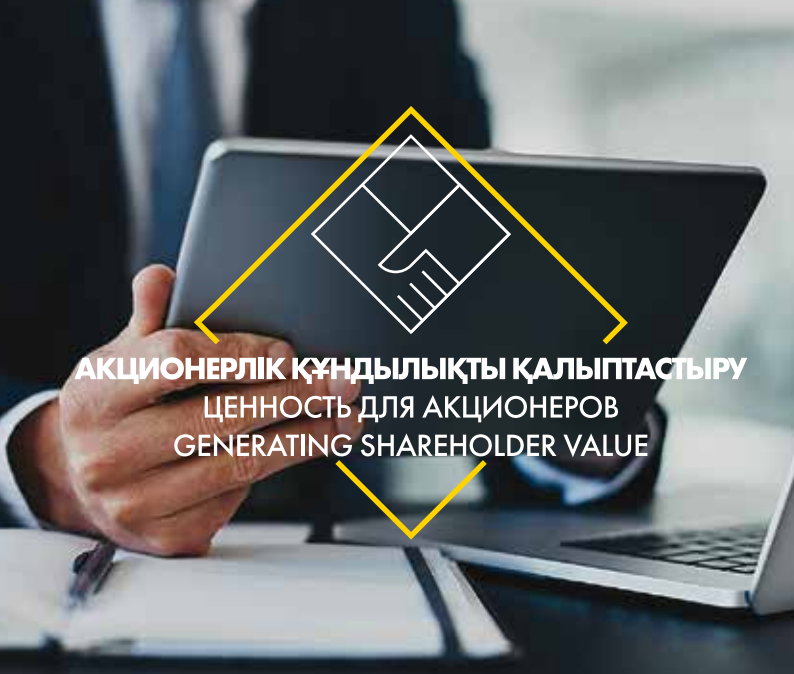
Sensitivity analysis provides greater perspective on how variations to our Outlook assumptions could affect projected energy supply and demand. Analyzing these sensitivities involves evaluating possible technology advancements and their potential impact on energy supply and demand. This results in a range of potential low-to high-demand outcomes for certain energy sources. The projections yielded by sensitivity analysis do not represent our viewpoint or the likelihood of these alternatives, but can provide context.

Oil and natural gas remain important

(Exajoules)



Source: ExxonMobil 2022 Outlook for Energy, IEA World Energy Outlook 2021



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30 YEARS OF POWERING PROGRESS TOGETHER: SHELL CELEBRATES MILESTONE ANNIVERSARY IN KAZAKHSTAN

In the early 1990s, when Kazakhstan had just gained its independence and opened its doors to foreign investors, one name stood out: **Shell**. The multinational oil and gas giant saw great potential in the country's energy sector and embarked on a journey that would transform the industry, boost the local economy and contribute to the development of local communities.

Today, three decades later, Shell's investment in Kazakhstan has helped the country become a major player in the global energy market, and its presence in the region continues to shape the country's energy landscape. With an investment of over \$18 billion, Shell is one of the largest foreign direct investors in Kazakhstan, having interests in such projects like the *North Caspian Sea Production Sharing Agreement*, *Karachaganak Final Production Sharing Agreement* and *Caspian Pipeline Consortium*.

Green Progress

In recent years, the energy industry has witnessed a significant shift towards renewable energy sources as governments and corporations worldwide seek to tackle climate change. Shell is one of the companies at the forefront of this energy transition that has adopted an ambitious green strategy in response to increasing demand for cleaner energy. As a roadmap for *Energy Transition*, the company launched its *Powering Progress* strategy that outlines Shell's commitment to reducing its carbon emissions. In Kazakhstan, where Shell has a significant presence, the company has been taking steps to reduce its carbon footprint and support the country's transition towards a low-carbon economy.

One example of Shell's efforts to implement its *Powering Progress* strategy in Kazakhstan are the energy assessments initiated at the company's joint ventures in Kazakhstan, the *North Caspian Operating Company* and *Karachaganak Petroleum Operating*, to identify possible abatement opportunities to reduce *greenhouse gas (GHG) emissions*.

This allowed NCOC to adopt and start implementing the *GHG Emissions and Energy Efficiency Management Strategy*, which sets out specific objectives and plans for achieving 15-25% GHG emissions reduction by 2030. A similar strategy has been developed by KPO, with both companies envisioning key activities on energy efficiency improvement, waste heat recovery, renewable energy generation, gas flaring minimization, as well as carbon capture, utilization, and storage (CCUS).



Shell Kazakhstan is also actively contributing to shaping the renewable energy policy regime in the country, which has been a major issue holding back developers and investors. In partnership with other international oil companies and leading institutions, Shell has been addressing a number of issues to improve the investment climate, including the bankability of *Power Purchase Agreements (PPA)*, extension of the *PPA* duration, long-term financial stability of the off-taker of renewable energy, inclusion of renewable energy projects into the national list of priority investment opportunities, annual inflation indexation of auction prices, and changes in the exchange rate, providing investment preferences.

Shell Kazakhstan is also contributing to the development of CCUS technology in the country. In 2021, Shell Kazakhstan and *KazMunayGas* signed a *CCUS Memorandum of Cooperation*. The Memorandum provided for joint exploration of potential opportunities for implementation of the *CCUS Pilot Project* seeking to identify and develop the main criteria for carbon capture and utilization. As part of the Memorandum, Shell's technical experts shared their international experience in implementing similar CCUS projects worldwide.

Solar for Schools

As part of Shell Kazakhstan's social investment strategy, the company has been implementing its *Solar for Schools* initiative for the past five years. Shell Kazakhstan has successfully commissioned solar stations in schools in Astana, Uralsk, Aktau, and Atyrau, with launching of another solar energy system in a Turkestan school this year. The primary goal is to encourage young people's interest in sciences,

technology, engineering, and mathematics (*STEM*) and raise awareness of the benefits and opportunities of renewable energy. The project serves as a unique platform to develop small-scale distributed green energy systems in 5 cities across the country.

This initiative also focuses on attracting local companies to design, procure, and build specialized systems equipped with *solar photovoltaic panels* for each school. As part of the project, the company organized a special educational program, *Shell NXplorers*, for students and teachers to motivate Kazakh teenagers to study energy transition issues and help them develop energy-efficient thinking.

The *photovoltaic panel systems* were specifically designed to meet the needs of these schools and are capable of generating 100 kW of energy for each school. These systems can cover up to 30% of the schools' annual energy consumption, reduce expenses on communal services, and redirect excess electricity generated into city networks, thereby providing significant energy savings.

30 Years of Impactful Collaboration for a Sustainable Future

Shell Kazakhstan is also involved in advocacy work via the *Foreign Investors Council* and *Kazenergy* associations, with a current focus on improving the regulatory framework in relation to *Emission Trading System*, *Cross-Border Adjustment Mechanism*, and *CCUS*. With these initiatives, Shell Kazakhstan is making significant strides towards a sustainable

energy future in Kazakhstan, and its efforts are contributing to the country's progress towards a low-carbon economy. Overall, Shell's *Powering Progress* strategy is a global effort, and its implementation in Kazakhstan is just one example of the company's commitment to reducing its carbon footprint and contributing to a more sustainable future.





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THE NORTH CASPIAN OPERATING COMPANY MARKS ITS 30TH ANNIVERSARY LAUNCHING DEVELOPMENT OF THE KAZAKHSTAN SECTOR OF THE CASPIAN SEA

Background: The North Caspian Project

The North Caspian Project is the first major offshore oil and gas development in Kazakhstan celebrating its 30th anniversary this year. In 1992, the Kazakhstan government announced the country's decision to start development of the Kazakhstani sector of the Caspian Sea, and in 1993 an agreement on formation of the Consortium to conduct exploration of the Kazakhstani sector of the Caspian Sea was signed.

This was the start of the North Caspian Project's history. Moreover, this exploration was new not only to Kazakhstan, but also for NCOC foreign partners. Kazakhstan's oil and gas industry was just beginning, and for foreign experts the North Caspian was a new location on the map with highly sensitive ecology and shallow waters. In addition, its high sulphur content and high pressure of the reservoir increased the complexity of the Kashagan field development.

NCOC's Success From the Beginning

First and foremost, the success of NCOC is due to the unparalleled commitment and dedication of the company's people beginning with everyone who has worked for the North Caspian Project since its early days. The NCOC teams have managed to deliver more than 80 mln tons of oil and 50 bscmf of gas since the restart of the project in 2016. Today NCOC is one of the leading oil and gas development companies.



NCOC's people have managed to build offshore islands with an impressive number of drilling and maintenance wells, and one of these islands, called *D-island*, is where oil is extracted and gas is re-injected back into the reservoir. Kashagan's technological challenges have been overcome with unique solutions applied in a harsh environment with extreme temperatures and very shallow waters.



The NCOC Bolashak Onshore Processing Facility (OPF) is utilized for highly sulphurous oil and gas processing at 3 parallel technological oil trains and 2 parallel technological gas trains. In order to service OPF, 17 km of road infrastructure, 25 km of train line, and 2 train stations were put in place.

In 2023 the 25th anniversary of the *Bautino Base*, the Kashagan logistical base supporting marine operations in the Mangystau region will be celebrated. The Base also coordinates the NCOC fleet of marine vessels, supply and storage of materials, equipment and fuels. At the same time, one of the most important functions of the Base is liquidation of oil spills resulting from accidents on the territory of the offshore operations. Visiting the Base is impressive, given the technology available there and the stringent training incident relief teams undergo regularly.

Since the beginning of the North Caspian Project, NCOC has invested in its employees' training and professional development. In 2002, NCOC launched a unique development program within the framework of 'special projects' aimed at theoretical and practical training of graduates followed by employment in future production operations. This program lasted 14 years, and over one thousand people benefited from it. Almost 600 people - then interns - still work with NCOC, 107 of them holding managerial roles.

Thanks to the investment in people in the course of the project's 30 years, a whole generation of Kazakhstani oil employees with experience in the development and operation of offshore oilfields has emerged. Considering the North Caspian Project's complexity, NCOC takes pride in the fact that 95% out of 3000 NCOC staff are Kazakhstani nationals and 85% of all senior roles are also held by Kazakhstani

nationals. Speaking of nationalization, in the course of 2022 alone, we have replaced over 30 foreign staff by Kazakhstan specialists.

Local content, or in-country value, needs additional mention. Since 2004, \$16bn has been spent on works, goods and services within the NCP. NCOC has long been providing support to local companies, including in obtaining international certification that would significantly improve their competitiveness. Overall, 225 local companies have obtained international certification (ASME, ISO). NCOC continues to provide support to the local companies in obtaining international certification.

Moreover, in the past 20 years, NCOC has conducted close to 500 technological qualification audits of local companies and visited production facilities in order to ascertain their ability to conform to stringent technical standards and international norms for goods and services that are then allowed to participate in the companies' tender processes. The company has additionally organized specialized vocational training for over 5300 employees of local companies in such areas as working in confined space, safety during welding operations, working at heights, electrical works and other areas.

NCOC's Contribution to the Region's Socio-Economic Development and to Kazakhstan as a Whole

NCOC support to the communities of Atyrau and Mangystau regions is delivered through the *Social Infrastructure Projects Program (SIPs)* and the projects that are intended to support locally based community organizations. Through *SIPs*, NCOC has invested over \$860mln since 1998 into 226 infrastructural projects, including construction of schools, kindergartens, hospitals, sports facilities, roads and other utilities projects (power, gas, and water supply lines). Many of these projects are located in the various districts of the Atyrau and Mangystau regions and thanks to them local residents have access to quality education, healthcare services, sports facilities, and have access to water, gas and electricity.

NCOC has built 18 healthcare facilities, 11 of these in Atyrau and Atyrau region. One of the most awaited projects was the *Infectious Diseases Hospital* in the Zheruyik district of Atyrau. For many years, the *Regional Infectious Diseases Hospital* was based in the building of a kindergarten in the city centre. The new Hospital was built in accordance with the relevant standards. One of the projects in which NCOC

takes most pride is capacity-building for the medical emergency staff at the *Atyrau Regional Hospital*.

NCOC brought in international doctors and medical staff, purchased medical equipment for the intensive care unit, and arranged training of local doctors. NCOC also provided significant support during the COVID-19 pandemic in 2020 and 2021, financing construction of 2 modular Infectious Hospitals and purchasing modern equipment for these hospitals including specialized oxygen lines for patients with severe breathing difficulties. In addition, NCOC implemented over 30 gasification projects in remote villages with a total gas pipeline length of 1130 km. These projects enabled access to gas to local residents.

Visitors to Aktau should make sure to visit the Rocky Trail and the River Walk by the Caspian. In Atyrau, NCOC also completed the Central square and the River Walk by the Ural river. In both Aktau and Atyrau these locations have become major local resident and tourist attractions. During the recent Nauryz celebrations, NCOC contributed to the residents' spirit of unity in these two cities.

The NCOC social investment program has delivered close to 1500 projects totaling over \$25mln since 1998. These projects mainly support vulnerable groups of the regional fenceline communities.



Olivier Lazare, NCOC Managing Director, accepts *Paryz Grand Prix Award* from Kazakhstan President Tokayev

At the end of 2022, *President Tokayev* awarded the national *Paryz Grand-Prix Award* to NCOC, recognizing the company and all its employees as the most socially responsible business in Kazakhstan. NCOC will most certainly continue its work on its business goals to support Kazakhstan's further development and to improve the social wellbeing of the Kazakhstani people.

KARACHAGANAK PETROLEUM OPERATING (KPO) REPORTS 2022 PERFORMANCE RESULTS

AKSAI, West Kazakhstan Oblast

On 24 February 2023, Karachaganak Petroleum Operating (KPO) announced its performance results for 2022. Over this period, KPO produced nearly 129 million barrels of oil equivalent of stable and unstable liquid hydrocarbons, export raw gas and sweet fuel gas.

As of today, KPO Partners have invested nearly \$30 billion into development of the Karachaganak field.

In 2022 KPO celebrated its 25th Anniversary since signing the *FPSA*, a document regulating the basic principles of partnership between Kazakhstan and an international consortium of investors. Over the past quarter of a century, Karachaganak has become the flagship of Kazakhstan's oil and gas industry and the driving force behind the socio-economic development of West Kazakhstan Oblast. Numerous KPO achievements became possible thanks to state support represented by the authorized bodies and the Oblast Akimat.

In 2022 KPO Partners and the Authorized body (*PSA LLP*) supported by the Kazakhstan Ministry of Energy signed the agreement sanctioning the *Karachaganak Expansion Project-1B (KEP-1B Project)*. Aimed at extending the duration of the liquid production plateau, the project will make a significant contribution and bring additional value to Kazakhstan and the Karachaganak Partners.



As for nationalization, during 2022 the ratio percentage-wise of KPO local employees has been as high as 98% of overall engineering and technical personnel and 86% of managerial staff.



KPO maintains its highest focus on the environment, achieving a gas utilisation rate of 99.93% for 2022 and performing at a world-class level. To date, KPO has invested a total of nearly \$450 million into environmental activities.

KPO has actively contributed to the involvement of Kazakhstani suppliers and manufacturers of goods in the development of the Karachaganak field. For 2022, the Local Content share in KPO contracts for procurement of goods, works and services exceeded 56.4%, or more than \$511.6 million in monetary terms.

To date, KPO investment in the development of social infrastructure in West Kazakhstan region has totalled \$754 million.

KPO General Director Giancarlo Ruii states: *"KPO has tremendous creative potential thanks to well-coordinated teamwork of world-class professionals and unrelenting aspiration to attain new heights. Our priorities remain the same – maintaining the highest production levels in compliance with safety performance and creating favourable conditions for the development of the local community".*

Background

Karachaganak Petroleum Operating (KPO) is a joint venture between *Eni SpA* (29.25%), *Shell* (29.25%), *Chevron* (18%), *Lukoil* (13.5%), and *KazMunayGas* (10%).

KPO oversees the expansion and development of the Karachaganak field – one of the world's largest oil and gas condensate fields.



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HONEYWELL TECHNOLOGIES AT THE HEART OF KAZAKHSTAN'S EVOLVING ENERGY SECTOR

by **Uygar Doyuran**

President

Honeywell Turkey, Israel and Central Asia

Kazakhstan is a star of the Central Asian region, underlined by its consistently strong economic growth, structural reforms, abundant natural resources, established domestic demand and foreign direct investment.

For Honeywell, the country remains a key part of our growth region strategy and a key market in our Turkey and Central Asia region. Honeywell has been physically present in Kazakhstan for more than two decades, although our history of doing business here goes back more than 40 years. The first Honeywell office was opened in Almaty in 1998, and since then more offices, automation centers, training facilities and assembly plants have opened in Almaty, Atyrau, and Nur-Sultan.

Most recently Honeywell opened a new assembly facility in Almaty in July 2022 to produce advanced automation and safety equipment for domestic industrial enterprises such as refineries, petrochemical, energy, mining and other processing facilities as part of the Honeywell commitment to Kazakh localization.

Honeywell also partnered with Borkit Safety to open a new gas detector manufacturing facility in Atyrau. The new facility is the first Honeywell gas detector production line in Kazakhstan and supports the country's objectives for localization of advanced industrial technologies and increase of local content.

The oil and gas industry is one of Honeywell's core sectors, and our technological leadership in this area, combined with Kazakhstan's vast oil and gas resources and broad and experienced local workforce, creates an excellent synergy.

Honeywell is proud to count many of Kazakhstan's largest enterprises within its customer base, providing them with solutions for industrial automation and security, advanced process control and optimization technologies, and enterprise automation systems.

Technologies for an increasingly digital sector

The global energy sector is in a period of unprecedented evolution, driven by a combination of macro factors including a changing workforce, a new approach to operations accelerated by the Covid-19 pandemic, complex geopolitical challenges, and a pressing need for transition towards more sustainable energy alternatives.



Kazakhstan's energy sector is of course very much part of this transition, and domestic producers are in the process of adapting to a new future state. At the heart of this transition is technology, which is where Honeywell comes in. Our technologies span sustainability, software and automation solutions for an increasingly digital, efficient energy sector.

The energy sector is a natural fit for digital transformation, where vast quantities of data are generated at processing plants every minute. Honeywell helps them operate more efficiently and profitably through digital solutions that enable them to run at their peak performance through better measurement, analysis and execution of operations.

Industrial companies, particularly those in oil and gas, are very asset intensive organizations and have thousands of frontline workers. They also have complex OT systems controlling their operations. They seek help with asset maintenance, process control, data management, process alarms, worker tools and energy usage.

Additionally, many rely on complex spreadsheets to make decisions on data to run operations. Overall, their OT systems may not have been designed to run an integrated end-to-end operation.

We are seeing more companies in the oil and gas sector searching for technologies that can enable them to sunset legacy systems and replace them with an OT system of record that includes enterprise analytics to help them make sense of the vast quantities of data they are generating across operations.

This has been made possible thanks to ever-larger connectivity pipes that today support the transfer of huge quantities of operational data from virtually any infrastructure, in real-time. To turn that data into insight, we have our *Honeywell Forge* portfolio, which is an enterprise performance management solution for the digital transformation of operations.

Honeywell Forge includes a mix of software products and enabling services that help companies use operational data to drive insights that improve processes, enhance productivity, support sustainability initiatives, and even empower a new and very different generation of industrial workers.

Training a new generation of workforce

There has been much discussion about the skills gap faced by the global energy sector. Kazakhstan benefits from a strong pipeline of talent but its talent has a new way of working – one that is digitized, always-on and highly connected. To attract and retain this talent, operators must adapt.

Workforce excellence and resilience is not a new concept, but it's a concept that has traditionally been applied to deskbound employees rather than industrial field workers. The working tempo of industrial workers has changed little over the years. Existing development tools tend to be antiquated or limited in scope, focused on upskilling for specific tasks rather than holistic education that puts them in the driving seat of change.

This is why Honeywell invests heavily in automation training in countries like Kazakhstan, where there is the demand for solutions that can automate routine processes and offer operators a greater level of real-time control and management across complex industrial plants.

And this is also the main reason Honeywell launched the *Honeywell Workforce Excellence* program -- a technology-enabled, role-based service program that boosts productivity and competency of the industrial workforce. It empowers each worker with insights and advice to make better decisions faster, work more effectively, and help increase plant performance. It establishes continuous, robust and repeatable processes that drive performance and productivity across the enterprise.

Connected technologies to reduce the skills gap

Emerging workforces expect highly connected and heavily automated technologies to help them work more efficiently and productively. This is not a factor that is in any way exclusive to the oil and gas sectors, but it is one that has left them, in some instances, playing catch-up.

Honeywell has, however, seen a growing trend towards broader adoption of automation technologies

in recent years as the productivity benefits they offer, and the ways in which they can be deployed within an industrial operation, have become better understood.

A good example of this is in remote operations, which have become even more beneficial over the past couple of years in an era where supply chains and labor can be easily disrupted, and the potential impact resulting from manual errors in process-intensive operations is high. Honeywell provides digital twins that allow operators to scale up and monitor operations in real-time and quickly implement changes (such as predictive maintenance) to respond to external changes – from anywhere in the world.

Another trend we see accelerating is the widespread use of virtual and augmented reality-based technologies across energy-based operations.

There are many commonalities between these two technologies. Virtual reality (VR) creates digital replica of the physical world (or simulated world) and completely immerses end users into the digitally created alternate world – which is not real. In other words, VR transports the users into a digitally simulated world, hence eliminating any interaction with the real world. But augmented reality, or AR, blends the digital and physical world together – digital insights superimposed on real world equipment helps to better understand and analyze any situation. Ultimately, it enhances the physical world with relevant digital content in real-time.

In fact, VR and AR complement each other –important information and insights (like what-if scenarios or predictions) that can be simulated in the VR world, can be brought into AR space to improve situational awareness.

One example of AR closing the skills gap is providing step-by-step digitally simulated procedures on the real equipment while the employee is undertaking operations or maintenance tasks – the user can see the actions they need to perform through digital modeling and animations through AR and ensure the procedure is done right. The digitally simulated procedure can be created by the expert for use in the field by newer workers or trainees. It is effectively digital training, on the job.

Honeywell leverages AR in solutions like our *Connected Worker* application, which uses data to enhance human performance while running safe, reliable operations on tasks such as inspection rounds. Our *Connected Worker* Intelligent wearables

combine a heads-up display and voice control with sophisticated workflow software and deep integration of plant and process data. Customers use this to digitize processes such as end-to-end inspection workflows, bringing greater efficiency and effectiveness to operator rounds.

Digital technologies like these are available today and are transforming the way complex industrial sectors such as oil and gas operate, bringing unprecedented levels of operational efficiency and performance while simultaneously meeting the expectations of a new generation of always-on industrial worker.

Automating the sustainability agenda

Yet digital transformation is not the only area that oil and gas is experiencing within its broad evolution.

Across all industries, sustainability has become one of, if not the, top priority for companies looking to maximize long-term growth and competitiveness while ensuring they play their part in a coordinated global effort to protect the future of our planet.

Oil and gas naturally has a huge role to play here and in the context of digital transformation, software and cloud-based solutions are already playing a big role in developing the refineries of the future to become more sustainable and efficient.

Sustainability solutions for the energy transition

The biggest sustainability trends right now center around challenges related to energy (both supply and cost), emissions (the need to lower them) and investor demands from an ESG perspective.

But while there are many promising innovations being discussed that have the potential to improve the sustainability credentials of complex industrial companies, the key challenge is developing and producing those technologies at scale, and with the right economics to ensure they deliver financial benefit and make sense for the balance sheet.

One great example of a 'ready now' technology that is playing a pivotal role in the energy transition is our *Honeywell UOP Ecofining* technology, which is used to produce alternative fuels such as *Honeywell Green Jet Fuel* and *Honeywell Green Diesel*.

This single-stage technology is a fast-to-market, low-capital-cost solution that produces higher yields of renewable fuel than other single-stage technologies.

Honeywell Green Diesel emits 85% fewer greenhouse gases, is chemically identical to petroleum-based diesel and can be used as a drop-in replacement in vehicles with no modifications. As a ready-now technology, *Honeywell Green Jet Fuel* requires no changes to aircraft technology and meets all critical specifications for flight when used in up to a 50-percent blend with petroleum-based jet fuel. *Green Jet Fuel* offers an up to 65-85% lifecycle reduction in greenhouse gas emissions too.

Can hydrogen become the new oil?

In the next few years, we expect to see the excitement around hydrogen increasingly translating into tangible returns for operators. Hydrogen is a promising fuel because it generates no greenhouse gas emissions at the point of use.

While there has been a lot of buzz domestically around the potential role that green hydrogen, which is generated from electrolysis powered by renewable sources such as wind and solar, can play in Kazakhstan's future, in the near-term we also see a lot of potential in *blue hydrogen* – produced using natural gas.

Today, *blue hydrogen* can be implemented today at significantly larger scale and lower cost than green hydrogen, and with carbon capture rates above 90% possible, *blue hydrogen* offers a promising foray into the harnessing of hydrogen as 'the new oil'.

Right now, Honeywell is bringing technologies to market that can efficiently capture and sequester carbon dioxide to create hydrogen as a low-carbon energy source. In fact, at this point of time, we have 1100+ installations of hydrogen purification technologies and we are seeing this number rise all the time.

Energy storage key to unlocking the renewables challenge

While Kazakhstan's traditional energy sector will inevitably have an important role to play in the long-term, there will also be a growing opportunity to leverage a greater range of renewable energy sources across the country. Its abundance of coal has made the country heavily dependent on this particular fossil fuel but despite this, the government has set ambitious targets to source at least 50% of its power from other sources by 2050 to reduce greenhouse gas emissions to 15% below their 1990 levels by 2030 and of reaching carbon neutrality by 2060.



Solar, wind, gas and hydro are all opportunities for Kazakhstan to meet these goals, but like other countries exploring the transition to renewables, success will rely on next-generation energy storage that is needed to ensure a transition from intermittent generation to 24/7 renewable power. Battery storage will play a crucial role in grid stability and resilience as organizations transition to clean power generation.

Industry data states that the long duration energy storage market will grow to \$13.7B by 2030. Responding to this trend, Honeywell offers full turnkey end-to-end solutions for energy storage from energy storage system, all installation and electrical work, site controls, SCADA, remote monitoring/operation system for customers. For example, our new flow battery can be combined with our smart energy

management system, *Experion*, and the *Honeywell Forge* suite for remote monitoring.

This combination of technologies represents a complete integrated energy storage solution for utilities and independent power producers to meet carbon goals and is helping establish Honeywell as one of the first vertically integrated end-to-end energy storage solution providers from battery manufacturing to integration, controls, energy management system and performance contract.

The good news for Kazakhstan is that it has all the ingredients to become a world leader in investment attraction in, and production of, cleaner energy in the coming decades. Its depth of industrial talent, abundance of natural resources and appetite to transform is paving the way for the future of its domestic energy sector to become safer, smarter, more productive and efficient.

For our part, Honeywell remains fully committed to advancing the localization ambitions of Kazakhstan in sectors like energy. It is an exciting time to be innovating in Kazakhstan, and Honeywell will continue to provide fast and easy access to advanced automation and sustainability solutions that will help our customers in the country meet their digital transformation and sustainability objectives as part of a wider evolution of this critical economic sector.



COLLABORATION AND INNOVATION WITH HALLIBURTON IN KAZAKHSTAN

By Zhandos Tasmagambetov
Area Manager, Caspian East
Halliburton

Founded in 1919, Halliburton celebrates over 100 years of service as one of the world's largest providers of products and services to the energy industry. With approximately 45,000 employees representing 130 nationalities in more than 70 countries, the company helps its customers maximize value throughout the lifecycle of the reservoir — from locating hydrocarbons and managing geological data, to drilling and formation evaluation, well construction and completion, and optimizing production throughout the life of the asset.

"Halliburton has worked closely with operators in Kazakhstan for almost 30 years to responsibly develop its oil and gas reserves," said Zhandos Tasmagambetov, Halliburton Area Manager, Caspian East. "Whether increasing production in unconventional reservoirs or maximizing recovery in mature fields, our technical experts bring extensive basin knowledge and advanced technologies with one common goal – to lower the cost per BOE for our customers."

Present since 1993, Halliburton has a long-term commitment to Kazakhstan and its oil industry. The company performs well interventions onshore and offshore including well diagnosis, well repair and production improvements through the lifecycle of the well. In addition, Halliburton has successfully implemented completions and cementing solutions to produce exceptional results for its Kazakhstan customers. Through innovation and collaboration, Halliburton business lines work together to provide exceptional service delivery in Kazakhstan.

Completions

Halliburton Completion Tools installed the first eRED® valve in the Caspian East region, successfully replacing the conventional ball-drop method.

A customer approached the Halliburton team for a solution to set a liner hanger within the lower completion, without the risks associated with pumping a ball to seat through a highly deviated ~5,249-foot-long (~1600-meter-long) horizontal section of a well. This was the first horizontal well a crew drilled and completed in the Tengiz field.

The *Remote Open Close Technology (ROCT)* team accomplished the feat by using the electronic remote equalizing device (eRED) as a completion



toe shutoff valve, which allowed them to set the liner hanger. Before shipping eRED to the rig site, a ROCT specialist programmed and tested the valve. Then the team deployed the valve in the open position at the rig site, which allowed the completion to self-fill and reduced the risk of swabbing of the well.

At total depth, hydrostatic pressure triggered the valve to close, initiating a timer closing delay to allow for setting of the liner hanger. After the crew set the liner hanger and pressure tested the liner hanger packer and lower completion, they locked the valve in a closed position. Through continuous collaboration and engineering solutions, the *Global Well Services* team in Aberdeen collaborated with the local Kazakhstan team to deliver best-in-class services throughout the pre-planning and execution stages of the project – maximizing asset value and minimizing operational risks.

Additionally, the eRED valve saved the operator rig time and associated costs. The customer credited the Halliburton team's professionalism, prompt responsiveness, proactivity, and commitment to service quality (SQ) and health, safety, and environmental (HSE), marking the completion as a milestone and potential gateway to future development opportunities.

Integrated Well Intervention

Halliburton collaborates and engineers solutions to maximize asset value for its customers, which in the well intervention market means the company optimizes production as efficiently as possible to extend well production and provide an effective plug and abandonment solution at the end of the economically productive life of the well.

Historically, the oil industry splits well intervention into various small specialist workgroups such as slickline, electric line, coiled tubing, hydraulic workover,

stimulation, pressure pumping and well testing. Each group provided an engineered solution for the individual work scope that they performed on the well. These components required individual crews and equipment packages, which created opportunities to make the well intervention process more efficient.

Halliburton's goal is to have these specialist workgroups collaborate in a single cross-discipline unit, so the company implemented a local *integrated well interventions (IWI)* team to drive greater efficiency across operations. This is important to minimize rig time and equipment spread costs, and to minimize delayed production revenue caused by shutting in the well.

A typical well intervention and stimulation campaign involves up to six individual specialist work groups and their equipment, all working concurrently. In the offshore environment where the equipment is skid-based, the swap over between services involves multiple crane lifts and is weather dependent. Through cross-training of personnel across multiple disciplines, the team reduces wellsite personnel by 25 percent.

Additionally, the separate workgroup approach can lead to the well not producing for 12 days. This affects the operator and partners who base their investment decisions on asset payback, and it affects shareholders focused on financial performance.

In 2017, Halliburton started well interventions with an operator in the Caspian Sea and built a local *IWI* team to minimize deferred production and reduce the amount of time to shut-in wells for intervention operations. By doing this, Halliburton saved up to 40 percent of the time required to perform the well intervention against the *AFE* and reduced the time to complete the operation from 12 days to seven. Overall, this reduced the deferred production revenue by over 35 percent.

Halliburton continues to work with the customer to implement new technologies for improved diagnostics and to increase efficiencies. Over the years, Halliburton has worked with its customers to optimize and increase production in a more efficient way than historically possible through implementation of the *IWI* model and our new technologies. The result is less deferred production revenue and increased well intervention efficiency, which means the operator can do more to maximize their asset value by increasing production in less time. This has a substantial impact in the Caspian Sea where there are seasonal work constraints.

Cementing

When an operator planned to drill its first horizontal project in Kazakhstan, their team knew cementing the production casing would be a challenge. Knowing this, they called on the *Halliburton Cementing team* in Caspian East to design and deliver a dependable barrier tailored to their well conditions.

The Halliburton team collaborated to provide the optimum solution by performing extensive engineering work and laboratory testing at their facility in Atyrau, which included implementing a material plan to accommodate a low *equivalent circulating density (ECD)* scenario. The Halliburton teams in Kazakhstan along with the *remote operating center (ROC)* in Aberdeen, Scotland worked closely with the customer throughout the process.

"The Halliburton team in Kazakhstan executed these horizontal cementing jobs without any HSE or SQ incidents and achieved outstanding results," said Aibar Uandykov, Caspian East Cementing Country Manager. *"This was possible because of excellent collaboration with the local team, our customer, and the Halliburton remote operations team in Aberdeen."*

The team in Kazakhstan successfully completed the horizontal cementing project for the customer. The engineering teams completed the jobs without incidents, pumping over 2,000 bbls successfully.



Conclusion

For 30 years, Halliburton has supported Kazakhstan's energy needs, and the country remains an important part of the company's business and focus. Every day, Halliburton delivers innovative solutions, efficiencies, and service quality in Kazakhstan that brings value to customers. Halliburton's teams are based throughout Kazakhstan and are ready to collaborate and engineer solutions to maximize asset value.



Powering a sustainable future

An energy transition investment of

\$5.8 trillion is required to achieve global net zero by 2050, tripling current investments (BloombergNEF)¹

A **50%** increase in global energy demand is expected over the next 30 years (EIA)²

¹Getting on track for Net-Zero by 2050, BloombergNEF, July 2021

²EIA projects nearly 50% increase in world energy usage by 2050, US Energy Information Administration, 2019



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businesses

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– Darryl Willis,
CVP Energy & Resources Industry,
Microsoft



INNOVATIVE MICROSOFT TECHNOLOGIES FOR KAZAKHSTAN'S SUSTAINABLE, CLEAN ENERGY FUTURE

By Sergey Leschenko
Country Manager, Microsoft Kazakhstan

Gumyrbek Sandibekov
Energy Sector Lead, Microsoft Kazakhstan

Energy organizations continue to face the complex challenge of meeting the world's growing demand for energy while reducing emissions. But they're not facing these challenges alone. Innovators across industry, government, and technology are joining forces and collaborating to find answers. Today, the energy industry has unprecedented opportunities to design low-carbon systems and ensure equitable, affordable access to clean energy.

To move toward a secure and sustainable future, the world needs holistic solutions that optimize operational efficiency and accelerate the transition to cleaner energy. Energy leaders are turning to Microsoft for technologies that power transformation including the *Microsoft Cloud*, *AI*, *Machine Learning*, the *Internet of Things (IoT)*, *Microsoft Cloud for Sustainability* and mixed reality.

Around the world, leading organizations are leveraging digital technologies to transform their workforce, operate for the future, and create new business models with intelligent, data-driven, environmental, social, and governance (ESG) first solutions that improve performance and sustainability.

As a regional player on a global Energy map, Kazakhstan also set a goal to achieve carbon neutrality by 2060. By exploring new opportunities for growth, building a technological roadmap, and acting upon it, Microsoft will maintain a leading regional role in the Energy sector opening an opportunity to achieve this goal earlier and leveraging the learnings along this journey with technological innovations discussed in this article.

The familiar phrase “do more with less” has taken on a new and different meaning in recent years. In the past, we often prioritized the ability to do more in less time with fewer resources and people. The world is uncertain, and the energy industry needs to change to deal with it. There are worries about the environment, jobs, and politics, and things like remote work are becoming more common. The solution is to use technology like digital twins, augmented reality, the *IoT*, and *AI* to create a metaverse under the industrial platform. This digital world can help the energy sector solve some of its biggest problems.



Transform your workforce

Attract, train, and retain employees by equipping your workforce with the skills and technologies to drive your company's transformation into a sustainable energy operator and service provider.

Organizations doing more with less are using digital innovation to transform business outcomes. Transformative innovation isn't about replacing people with technology or asking them to do more. In a new era, innovators use technology to turn what you already have and do into a superpower.

Innovative energy organizations are leveraging the *Microsoft Cloud* and the transformative technologies that come with it. Technologies like *IoT*, *AI*, and Digital Twins with drive augmented and virtual realities to provide immersive, 3D experiences of modeled data. Digital representations and the above technologies are used not only for entertainment but to transform real-world business scenarios in multiple industries.

Advancing operational excellence

The ability to manipulate 3D digital replicas of the physical world enables virtual product design and improves production and supply chain processes. Engineers and designers can collaborate in a digital space to test new concepts and processes or identify new efficiencies. For example, *Equinor*, a leader in the energy transition and floating offshore wind business, designs, operates, and maintains wind farms remotely before they're even built. Wind farm developers face significant challenges including remote, harsh environments, the integration of diverse complex systems, and not least of all transmitting energy from offshore locations. By creating a virtual wind farm, *Equinor* simplifies and accelerates the design-build process by bringing data sets together and testing wind farm concepts based on digital simulations.

Improving workplace safety and productivity

The industrial platform isn't just for engineers and business strategists. Interactive simulations and mixed reality tools can also be used to transform workforce with improved training, support, and safety for field workers and frontline employees. Approximately 80 percent of employees worldwide do not sit behind a desk to do their jobs, especially in sectors like energy, manufacturing, healthcare, and agriculture. This workforce is also historically under-equipped with digital technology, while job roles and skill requirements rapidly evolve as companies struggle to fill even their current positions. Innovative companies are empowering their workforce and ensuring that frontline employees are digitally equipped to acquire new skills, serve customers, and solve problems.

The energy industry has a long history of innovating with Microsoft technologies to improve insights and operations. Energy businesses are already using advanced analytics, connected devices, and AI to make better decisions, monitor diverse operations, and optimize performance. Today, energy leaders are turning to the industrial platform to not only increase efficiency and reduce risk but also to accelerate the transition to cleaner energy.

Innovating for a more sustainable future

The energy industry is using Microsoft technologies to do more with less in new ways. Today, the industrial platform is creating more opportunities for companies and workers alike and increasing the adoption of greener practices and renewable energy. By enabling energy companies to more efficiently and affordably design new solutions like offshore wind farms, the industrial platform helps accelerate the energy transition and our collective path to net zero. With the help of the *Microsoft Data Platform* and *Digital Twin* technology, bp is identifying areas to reduce carbon emissions and model complex new energy solutions. Immersive digital technologies can also help people stay safe and make a bigger impact at work—whether it's an engineer testing a new design, or a frontline maintenance worker detecting and repairing power lines.



From the earliest days of industrial automation to the modern era of connected devices and edge computing, technology has helped increase operations efficiency and improve productivity, collaboration, and economic growth. Today, technology is more important than ever as we reimagine the world and our roles in more sustainable ways. With the industrial platform, energy companies can more efficiently scale data and real-time insights through simulation models and digital twins they have been using for many years. Microsoft, alongside our customers and partners, are innovating together to accelerate the creation and adoption of new, virtual solutions for a cleaner energy future.

To meet their net-zero goals, companies need support across their energy transition journeys to reduce CO2 emissions, capture and store carbon, generate green hydrogen, repower coal, and optimize wind turbines. To support customers across their decarbonization journeys, Microsoft is excited to announce the grand opening of the *Energy Transition Center of Excellence* at the *Houston Microsoft Technology Center (MTC)*. The new Microsoft Center of Excellence will showcase leading energy transition solutions and give customers an opportunity to learn first-hand the solutions offered by Microsoft and our global partner ecosystem.

Customers can experience a new energy future through immersive, interactive exhibits on leading energy solutions built by our partners and powered by Microsoft. These solutions are innovative, transformational, and pivotal to companies achieving their sustainability goals and are also grounded in the urgent priority of providing secure and reliable energy access and equity for all.

This year Microsoft marks 20 years of contribution to Kazakhstani society. During last two decades the company, together with the partner ecosystem, played a significant role in country's technology sector by providing innovative solutions and services, supporting government and people in digital innovations, technology skilling agenda and national strategy to strengthen Kazakhstan's aspirations for regional leadership.

Microsoft will continue supporting Kazakhstan's journey towards a greener, sustainable and more competitive future by sharing its Energy sector expertise and facilitating digital transformations through collaborations like the Foreign Investment Council, in which Microsoft actively participates.

SCHLUMBERGER AIMS FOR U.N. SUSTAINABLE GOALS: RESPONSIBLE CONSUMPTION, PRODUCTIONS, CLIMATE ACTION

By Hans Kumar
Gas Technology Manager, Schlumberger

Ed Mahley
CO₂ Membrane Domain Expert, Schlumberger

Introduction

Schlumberger has always used innovative technology to aim for sustainability, and has followed the *U.N. Sustainable Development Goals* as its guiding light. In this connection, Cynara™ H₂S and CO₂ separation membranes are used in natural gas processing plants with upstream dehydration. They sweeten feed gas at pressures up to 1,050 psi [72 bar] via bulk separation of H₂S and CO₂ and can also recover natural gas liquids (NGLs) from rich gases. The CO₂ can be used for enhanced oil recovery (EOR) operations or carbon capture and sequestration (CCS), with the membranes significantly lowering the cost of CO₂ capture. Cynara membranes can withstand heavy-hydrocarbon condensing environments, varying feed gas mixtures, H₂S, or a combination of these conditions, which are unsuitable for some other polymeric membranes.

Summing up, the results from Schlumberger's development and use of Cynara membranes are the following, first taking the U.N. Sustainable Development Goals into account, then as will be discussed in detail below, using the membranes for their specific industry-targeted purposes:

- align with United Nations Sustainable Development Goals 12 and 13: Responsible Consumption and Production and Climate Action
- reduce embodied carbon by up to 50% compared with alternative acid gas removal technologies
- reduce CO₂e emissions by 30%–50% compared with amine sweetening and by up to 18 percentage points compared with other membrane materials.



Horizontally oriented Cynara membranes are available with 8-in and 8¼-in diameters, suitable for retrofitting existing membrane installations.

Cynara Membrane Specifications

	Horizontal	Vertical			
Nominal OD, in [cm]	8 [20.3], 8 1/4 [21]	5 [12.7]	12 [30.5]	16 [40.6]	30 [76.2]
Nominal length, in [cm]	54 [137.2]	41 [104.1]	41 [104.1]	72 [182.9]	72 [182.9]
Weight, lbm [kg]	65 [29.5]	20 [9.1]	75 [34]	225 [102.1]	720 [326.6]
Flow configuration	Counterflow	Crossflow	Crossflow	Crossflow	Crossflow

Designs for both new installations and retrofitting of existing plants

Cynara membrane elements can be oriented vertically or horizontally. Vertically oriented elements are available with diameters up to 30 in, enabling significant acid gas treatment capacity. They can be part of the initial design of a natural gas treatment plant. They can also be used to debottleneck an existing amine-based acid gas removal system—or reduce the size of a new one—by introducing a hybrid natural gas sweetening process.

Horizontally oriented Cynara membrane elements are designed to fit in 8-in and 8¼-in tubes built to ASME B31.3 specifications. Designed for retrofitting existing membrane installations to improve separation performance, they have been operationalized in packaging that enables simple

plug-and-play replacement of flat-sheet cellulose acetate, hollow-fiber polyimide, and other polymeric membrane elements without infrastructure modifications. They have delivered consistent improvement in production capacity and hydrocarbon retention versus other CO₂ removal membranes during competitive trials and full membrane replacement in existing systems.

How they improve performance compared with alternative polymeric membranes

The asymmetric hollow-fiber membranes enable natural gas treatment facility operators to

- increase feed gas throughput because of the larger surface area per membrane, without increasing infrastructure size, weight, or cost
- improve CO₂ and H₂S removal because the membranes are highly selective for acid gases
- enhance hydrocarbon retention and recover condensing NGLs, boosting profitability

• reduce membrane replacement frequency and further improve profitability because the membranes exhibit stable separation performance over a long period

• pursue CCS for the high-purity CO₂ outlet stream or use it for EOR

• can be used for bulk H₂S removal for debottlenecking the existing amine/Claus units or lower the cost of new build Membrane + Amine hybrid systems. Refer SPE-202984 for a case study about bulk H₂S removal using Cynara membranes.

How they work

Cynara membrane fibers are made of a cellulose triacetate (CTA) base material, which—unlike filters—interacts with gas molecules to transport them through the membrane wall, a process called permeation. Each gas component has a specific permeation rate, determined by its ability to dissolve and diffuse through the membrane material. Highly soluble and small molecules (CO₂ and H₂S) permeate faster than large molecules (N₂, C₁, C₂, and heavier hydrocarbons). The pressure difference between the higher-pressure feed gas and the low-pressure permeate provides the “driving force” for the membrane separation.

Thousands of these individual asymmetric, hollow fibers are packaged within each cylindrical membrane element. As pressurized feed gas flows along the fiber bundle, the more soluble acid gas components (CO₂ and H₂S) preferentially permeate to the bore side of each fiber, where they are combined. The low-pressure permeate flows out at the end of the fiber and is collected for CCS, CO₂ EOR, or additional processing. The hydrocarbon-rich nonpermeate gas continues through the plant for further processing and sale or direct use.

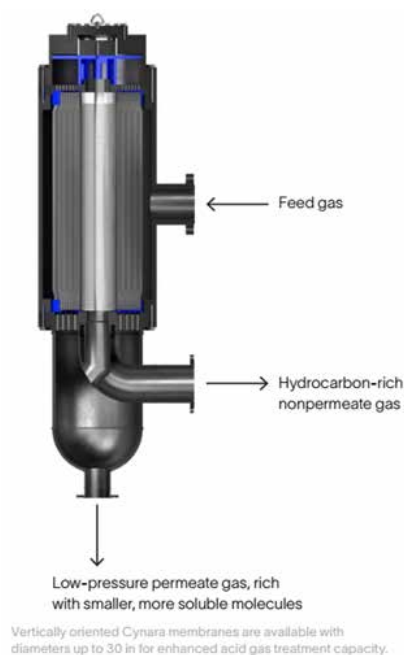
Using multiple stages and optimized arrangements enables the bulk acid gas removal unit to efficiently handle a wide range of feed gas compositions, flow rates, and operating parameters, such as pressure and temperature. Operation is fully automatic, and the modular system enables operators to add capacity incrementally as well as provide a large turndown capacity.

How Cynara membranes support industry carbon intensity reduction goals

Large-diameter, vertically oriented Cynara membrane elements enable a greatly reduced footprint, which is especially beneficial offshore, where space is at a premium. As a result, embodied carbon decreases by up to 50% compared with alternative acid gas removal technologies.

Using Cynara membranes to replace amine-based acid gas removal units or reduce their size decreases the energy necessary to heat and circulate amine solvents. When combining membranes for bulk removal of acid gases with amine-based acid gas removal for the final polishing stage, a 30%–50% reduction in emissions can be achieved.

Lastly, the higher hydrocarbon retention provided by Cynara membranes versus alternative membrane materials enables pursuit of CCS for the high-purity



CO₂ outlet stream (instead of thermal oxidation of the permeate gas), further reducing emissions intensity.

Conclusion

Since the first installation in 1983, Cynara membranes have established an impressive track record of reliability, operating with minimal downtime and average availabilities up to 99% since startup. SLB designs and provides custom membrane pretreatment equipment, membrane systems, and field operation and support services for energy companies' operating facilities onshore and offshore worldwide. Solutions can address turnkey projects, gas dehydration, liquid hydrocarbons recovery, and acid gas separation. High-capacity projects exceeding 1,200 MMcf/d, with inlet CO₂ concentrations from 5% to 85% and outlet concentrations from 50% to 1.5%, can also be engineered. SLB's ongoing experience enables recommending the most economical and reliable long-term solution, whether it is a stand-alone membrane system or a hybrid system with other gas processing technologies.

By centralizing related services, such as membrane manufacturing, R&D, testing, quality control, and engineering, SLB achieves quality, product availability, economies of scale, and a level of product responsibility that are impossible with an outside supplier or multiple suppliers. Operators benefit from full control of scheduling, continuous quality upgrades, performance enhancements, rapid implementation of new designs, state-of-the-art manufacturing facilities, field-proven expertise, and digital services to assure performance.

PARKER WELLBORE: AT THE FOREFRONT OF INNOVATION AND EFFICIENCY

by **Brian Thomson**
Business Development Director
Parker Wellbore

As the energy industry continues to evolve, Parker Wellbore has remained at the forefront of innovation and efficiency for almost a century. With a commitment to sustainability and operational excellence, we have become a trusted partner to energy producers worldwide.

Since 1993, we have been operating in the Kazakhstan energy industry, where we were the first international drilling contractor. Our successful projects in the Tengiz field, Western Kazakhstan, the North Caspian Sea, and the Dunga Field in Mangistau Oblast region have established us as an important and reliable partner to our customers worldwide.

At Parker Wellbore, we believe in embracing digitalization and innovation to find the best solutions to operational challenges. Our team is dedicated to operational excellence combined with localization, which means we understand the unique challenges of the areas we operate in. We take pride in our strong culture of operational discipline, ensuring our products and services are in line with our *Integrated Management System (IMS)* and our *Operational Discipline Playbook*. This methodical approach leads to precise execution on our jobs and for our customers, and we prioritize safety tools, procedural discipline, competency, audit and assessment, and key performance indicators.

We are committed to supporting our customers in meeting their *Environmental, Social and Governance (ESG)* goals, which means we take our responsibility to operate in an environmentally responsible way seriously. We reduce our ecological footprint, lower energy consumption, and are mindful of *GHG* emissions. At Parker Wellbore, our focus on energy transition and energy security means embracing traditional hydrocarbons, geothermal, and well repurposing.

For traditional hydrocarbons, we work to support our customers' *ESG* and energy transition goals. Our technical services engineering group, along with our operational capabilities, is deploying technologies that reduce emissions. Our upgraded rigs can use dual fuel or natural gas in their operations, and



we also have low emission rigs that use highline power instead of diesel to run the engines on the rig, significantly reducing carbon output. We work to monitor, reduce, or eliminate carbon emissions where possible.

Geothermal energy is the most reliable source of renewable energy, and conventional geothermal drilling is core to our business. With nearly 50 years of geothermal experience, we have developed a strong understanding of the unique challenges faced in geothermal operations. We have created customized drilling solutions to meet even the toughest environmental requirements for some of the world's largest energy companies around the globe.

At Parker Wellbore, our integrated tubular running services (*iTRS™*) can be provided through our global drilling rig operations, resulting in a reduction of 3rd party services along with gains in efficiency. This coordination in rig operations means shorter casing running times on a customer's well along with fewer people on board the rig.

As we forge ahead, Parker Wellbore remains steadfast in our commitment to being a trusted partner in the Kazakhstan market. We will continue to align our operations to meet the evolving needs and goals of our customers, while keeping innovation, sustainability, and operational excellence at the forefront of our approach. We are eager to embrace the future and collaborate with our customers to achieve our shared aspirations.

NOVUS BOLASHAK: COMMITMENTS AND SERVICES TO KAZAKHSTAN

Introduction to Novus Bolashak

Novus Bolashak was established in 2016. It is a 100% Kazakhstan company, jointly owned by Bolashak Atyrau and Novus Technical Services Kazakhstan. The Joint Venture combines Bolashak's extensive local experience, resources, and commitment to Kazakh Content with the international experience and technical capabilities of Novus.

The Novus Bolashak Mission is to enhance the knowledge, experience and expertise of our people, our clients, and the communities where we work, delivering safe and efficient systems completions and commissioning, and start-up programs on our projects.

The Novus Bolashak Vision is to be accepted as the benchmark in the provision of world class systems completions and commissioning and start-up solutions for process and infrastructure facilities in the oil and gas industry.

Novus Bolashak Values are safety in leadership and partnering, quality in delivery, training in development, and knowledge management in building sustainable differentiation.

Scope of Services

Novus Bolashak provides a *Total Service Solution* including *Systems Completion* and *Long Term Maintenance and Operations (including Procurement, Subcontracting, Punch Identification and Clearing, Pre-Commissioning, Commissioning, Operations, Maintenance, Shutdown, Turnaround and General Technical Services)* to the *Oil & Gas, Petrochemical, Chemical & Process Plant Sectors*.

Corporate Social Responsibility

At Novus Bolashak, business operations and processes are designed so that they do not become an obstacle or a burden to people's wellbeing and the environment's wellbeing. At the same time, these processes and designs boost business growth. The systematic design of operations at Novus Bolashak enables management to ensure the organization achieves sustainable business growth by reducing attached risk factors, as well as through community-building goals.

Novus Bolashak strives to increase its social impact and influence on the environment and in people's lives by focusing on three big goals, as follows:

- *Improving living standards for communities through increasing employment opportunities*
- *Enhancing the health and wellbeing of communities engaging with Novus Bolashak*
- *Reducing the environmental footprint*

Novus Bolashak works hard to create value for not only its shareholders, but also for the society at large. This approach of creating shared value has enabled impressive business growth for Novus Bolashak, as well as allowing its expansion regionally, as well as in its product portfolio. Through creating shared value, Novus Bolashak brings value to the lives of communities where it operates, by influencing those aspects of the society which intersect and coincide with the business offerings and business operations.

Novus Bolashak is currently involved in initiatives in Education, through the sponsorship of scholarship programs for local students, and internships for local graduates. Novus Bolashak is committed to creating a legacy of technically trained and qualified local personnel that can contribute to the future of Kazakhstan's industry across multiple sectors.

Novus Bolashak is involved in initiatives in Employment and has been working closely with the Labor Departments across 11 of the 14 Regions, conducting validation of competence testing and training across all trades and disciplines. Novus Bolashak is actively involved in initiatives in Social Welfare, through providing support to disabled people, low income families, and supporting the *Childrens' Rehabilitation Center*.

Case Study

The *3GP Systems Completion and Commissioning* contract is the largest of its kind in the world today. Below are listed three areas, complete with benchmark statistics to illustrate the scale of the scope of work.

HSE. Safety is a core value for Novus Bolashak. We strive for flawless performance with respect to the safety of our employees and contractors. Our health and safety performance goal is simply stated "*nobody gets hurt*." Each of our crews start each and every day with a *Toolbox Talk*. To date, we have completed in excess of 10 million manhours without a lost time incident. Our vehicles have driven more than 2.5 million kilometers without a road traffic accident.

Training. Our current workforce comprises more than 4,500 persons. In order to achieve that number, we have recruited from 11 out of the 14 regions in Kazakhstan. We have reviewed nearly 30,000 resumes. More than 9,000 people have attended validation of competence training, amounting to more than 300,000 training hours.

Kazakh Content. We are committed to maximizing the percentage of Kazakh Content. At the beginning of the project, we set ourselves a target of 72%. To date, Novus Bolashak has achieved a cumulative average in excess of 80% Kazakh Content.

Delivering specialist solutions for the oil and gas industry
Предоставление специализированных решений для нефтегазовой отрасли



- *Delivering Specialist Engineering Solutions to Capital Programmes across the Global Energy Sector*
- *Pre-Commissioning, Systems Completion & Commissioning Services*
- *Short Term Shutdown & Turnaround Solutions*
- *Long Term Operations & Maintenance Solutions*
- *Through Investment in Safety Leadership & Multi Discipline Craft Training Programmes focussed on National Content*
- *Предоставление специализированных инженерных решений для капитальных программ в мировом энергетическом секторе*
- *Пред-пусконаладочные работы, завершение монтажа систем и ввод в эксплуатацию*
- *Краткосрочные решения по остановке и капитальному ремонту*
- *Долгосрочные решения по эксплуатации и техническому обслуживанию*
- *Инвестиции в лидерство в области безопасности и многопрофильные программы профессионального обучения, ориентированные на национальное содержание*

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NVENT ELECTRIC, GLOBAL LEADER IN ELECTRIC HEAT TRACING SOLUTIONS



nVent Electric is the inventor of self-regulating heating technology and is recognized as the global leader in electric heat tracing solutions. Its wide range of nVent RAYCHEM heat tracing solutions protects critical pipelines, instruments and other equipment against freezing and maintains the correct process temperatures in many industries.

nVent RAYCHEM self-regulating heating cables offer higher levels of safety in hazardous areas and became the first and, at times, the only choice in various critical settings within the energy and chemical process industries. They continue to be the most versatile option for many projects. Also, the technology is used in numerous solutions for commercial, residential, and infrastructure applications.

As the world is increasingly digitized, the demand for more intelligent, responsive systems will drive further innovation in the industry. nVent RAYCHEM control & monitoring systems provide full connectivity from the field installation to the central process control room (DCS) and enable real-time monitoring using intuitive User Interfaces and supervisory software tools. This allows for unprecedented levels of insight and control even in large, complex systems and minimizes the cost of ownership by reducing risks for downtime and unplanned field interventions

Hazardous Area Heat-Trace Panels (-55°C)

In 2021 nVent RAYCHEM launched a new range of hazardous area panels for the IEC market. Now we introduce a patented panel heater solution that allows for operation in regions down to -55°C. Designed, manufactured, and certified at nVent's panel manufacturing facility in Europe, this product seamlessly integrates with the existing nVent RAYCHEM Elexant network to provide a flexible, in-field heat-tracing control and monitoring solution.

Available in standard configurations or as an engineered solution, the new panels also help to optimize client operations, reducing total installed costs and project lead times.

- **A cost-effective, customizable solution**

The new control panels are designed for installation close to heat-tracing circuits in hazardous field locations, significantly reducing cabling infrastructure costs while delivering space savings within the power distribution substation. Via the intuitive touch-screen user interface, the panels enable quick and easy system inspections in the field.

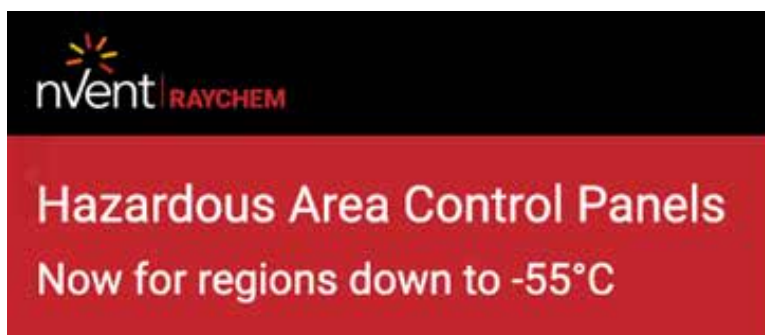
Users can also integrate wireless connectivity via the inclusion of the nVent RAYCHEM Elexant 9200i wireless communications interface. This simplifies heat tracing installation upgrades and further reduces wire infrastructure costs.

Jaap Nieuwenhuizen, nVent Vice President of EMEA comments: *"By combining local and centralized controls with advanced monitoring, we create the optimal control architecture for petrochemical production and other industrial operations. Our heat-trace solutions demonstrate our commitment to delivering the process integrity, real-time visibility, and reliability that plant owners and operators demand, alongside reduced cost of ownership."*

- **Enhanced protection for harsh winter conditions**

nVent also introduces an innovative winterization system with patented heaters, for regions down to -55°C.

Peter Butterworth, nVent Caspian Business Development Manager, explains: *"In harsh climates, the winterized heat-trace panels provide a reliable, energy-efficient solution to keep vital operations running smoothly. Via our patented panel heaters, we provide heat precisely where it's needed, helping to ensure delicate components are protected without excessive energy costs."*



- **Superior quality, delivered quickly**

nVent heat-trace panels are designed, manufactured and tested according to the highest quality standards, enhancing safety and reliability in every application. nVent's panel manufacturing process is fully UL-approved in compliance with *ATEX* and *IECEX* regulations, resulting in improved flexibility and shortened lead times. These in-house capabilities enable a fast response to panel specification changes, even in the later stages of the project, avoiding costly delays.

- **Optimizing operational efficiency**

The nVent Zone-2 panels can be centrally connected for real-time visibility over the heat tracing system and to help reduce the time needed for configuration, monitoring and maintenance activities. The data-driven insights allow site managers to optimize operational efficiency and safety fully.

nVent Thermal Kazakhstan – Kazakhstan Operations

nVent Thermal Kazakhstan has operated in Kazakhstan and the Caspian region since 2004, with headquarters in Atyrau and local offices in Aksai, Astana and Almaty. This enables nVent to work closely and fully support key Oil & Gas operators in the region by providing superior design & engineering solutions, project management, procurement and site services.

Since its opening, nVent has developed and significantly increased its local content. We cooperate with local producers to grow our local manufacturing (KZ-CT certified) and invest in local personnel to deliver customers' leading Electric Heat Tracing services.



MEMBER NEWS



Vladimir Yablonskiy is Appointed CEO of ArcelorMittal Temirtau

Vladimir Yablonskiy was appointed CEO of ArcelorMittal Temirtau on December 1, 2022, drawing on his 33 years of experience in the metallurgical industry.

After graduating from Karaganda Metallurgical Institute, he began his professional career in Karaganda Metallurgical Plant (now ArcelorMittal Temirtau) in 1989. Over the years he progressed through various operational positions, taking on the roles of Steelmaking Director and then Upstream Director.

Prior to his most current appointment, he served as Chief Steel Operating Officer at ArcelorMittal Temirtau and as General Manager of ArcelorMittal in May 2022.



Aman Shakenov is Appointed General Director of Borusan CAT Kazakhstan

Aman Shakenov was appointed Borusan CAT Kazakhstan General Director in December 2022. He is responsible for the further sustainable development of Borusan CAT business in Kazakhstan. Borusan CAT Kazakhstan provides solutions for customers in Mining, Construction, Energy and Transportation industries by continuous improvement approach on proactive customer service and digitalization.

Aman Shakenov began his career at Maersk Oil (2001-2004) in West Kazakhstan as production operator. In 2004 he joined Borusan CAT and held various positions in the Mining and Construction Divisions. Prior to his current position, Aman Shakenov served as General Director of Borusan CAT Kyrgyzstan and led the development of the Caterpillar dealership in Kyrgyzstan implementing various training and excellence programs to develop the customer support capabilities of his teams.

Aman Shakenov holds undergraduate and Master's degrees in Mechanical Engineering from the Satbayev University.



MEMBER NEWS



Wolfgang Koller Appointed General Manager of the Renaissance Atyrau Hotel

Wolfgang Koller has been a Hospitality professional in leading hotels for over 40 years. His career began as an apprentice cook and waiter in Austria in 1976 before rising to Executive Chef and in time to Director of Operations. He assumed his first General Manager position in 2008 when he opened the Courtyard by Marriott Hotel at Istanbul International Airport.

Wolfgang Koller has worked at the Marriott and Sheraton Hotels in Costa Rica, California, Germany, Austria, Norway, Macedonia, Hungary, Poland, and Russia before his present assignment beginning in April 2022 as General Manager for the Atyrau Renaissance Hotel and the Marriott Executive Apartments in Atyrau.



Valery Egorkin Appointed General Manager of the Renaissance Aktau Hotel

Valery Egorkin was appointed Hotel Manager of the Renaissance Aktau Hotel effective November 02, 2021. He began his career with the Marriott Hotel chain at the Renaissance Baltic Hotel (St Petersburg, Russia) in 2005. Having successfully mastered several Front Office positions (2005-2011), he worked for various 4- and 5-star brands of the Marriott International chain across Russia (Saint-Petersburg, Nizhny Novgorod, Saransk, Novosibirsk).

He has been involved in a broad range of special events such as international summits, forums, and the FIFA 2018 Football World Championship. He also had the good fortune to take part in opening two new hotels. In his current role, he is responsible for the overall operations of the Renaissance Aktau Hotel.

Valery Egorkin completed a professional training program in Hotel Management at the Russian State Humanitarian University followed by a number of Marriott International Executive Training programs.



MEMBER NEWS



Frode Ljones Appointed TotalEnergies Kazakhstan Country Chair and Managing Director of TotalEnergies EP Kazakhstan

Frode Ljones was appointed TotalEnergies Country Chair in Kazakhstan and Managing Director of TotalEnergies EP Kazakhstan on August 1 2022. He began his career at Total E&P Norge AS (2004-2009) based in Stavanger as a business analyst and budget coordinator. Between 2009-2016 he held various positions at Total E&P (Paris) and Total Gabon (Port-Gentil). Between 2016-2019 he served as Financial Director of Total E&P Norge AS, and in June 2019 he was appointed Deputy Vice-President of Group Budget and Financial Control,

Total began operating in Kazakhstan in 1992 and has a 16.81% interest in the giant Kashagan field, part of the Total stake in the NCSPSA consortium. Total also operates the Dunga field in the Mangystau region and is engaged in construction of two solar farms through cooperation with the Total affiliate Total Eren.

Frode Ljones graduated from the Université des Sciences Sociales Toulouse 1 with a degree in Economics and Finance in 2004.



Yerlan Mukay Appointed Deputy Managing Director of North Caspian Operating Company (NCOC)

Yerlan Mukay was appointed Deputy Managing Director of North Caspian Operating Company (NCOC) in October 2022. He has 13 years of extensive experience in leadership and management positions across the oil and gas industry in government agencies, quasi-governmental and international companies. His expertise in commerce and business strategy development, local and international stakeholder relations, and partnerships across CIS and Middle East markets is rich and unique.

Initially specialized in tax issues, Yerlan Mukay served as Chairman of the Interregional Tax Committee for the Oil and Gas Industry, Head of the Major Subsoil Users Department, and Acting Chairman of the Tax Committee of the Ministry of Finance. He also led the Finance Division Management of the second phase of Kashagan Field Engineering at Shell International. Prior to joining NCOC, he served as First Deputy Chairman of the QazaqGaz Management Board.

Yerlan Mukay holds a Candidate degree in Physics and Mathematics from Kazakhstan's Al-Farabi National University, as well as an Executive MBA from Rotterdam School of Management, Erasmus University in the Netherlands. He was awarded the Kurmet Order in 2008.

WELCOME ADDITIONS TO THE CHAMBER



NOVUS-BOLASHAK

CORPORATE A

Michael Murphy
CEO

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Email: peter.absalom@novus-bolashak.com
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In 2016, *Novus Technical Services Kazakhstan* and *Bolashak Atyrau* jointly established Novus Bolashak to provide specialist solutions for the oil and gas industry in Kazakhstan. Based in Atyrau, the company has recently secured the *3GP Systems Completion* and *Commissioning Scope* on the *Future Growth Project* in *Tengiz*.

The Bolashak Group, as the market leader in recruitment for Kazakhstani companies, combines its local experience and resources with the international background and technical strengths of Novus in order to deliver safe and efficient systems completions and commissioning, and start-up solutions for clients and facilities.

Novus-Bolashak provides dedicated and experienced safety leadership, having mobilized 30,000 people since its inception with over 4,000 currently employed. The company has a significant background in International Systems Completions and Commissioning in the oil and gas industry. Novus-Bolashak and a firm has zero incidents, strong local experience, understanding of intercultural workplaces and worker engagement.



RE/MAX KAZAKHSTAN

CORPORATE B

Batyr Bazar (Batjargal)
Regional Director

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RE/MAX is one of the largest real estate brokerage firms in the world, consistently ranked as one of the top real estate franchises in Franchise 500 rankings. The company operates in over 115 countries and territories, with a network of more than 140,000 agents. RE/MAX was founded in 1973 with an innovative, entrepreneurial culture affording our franchisees and their agents the flexibility to operate their businesses with great independence.

The RE/MAX Regional Office was opened in February 2022 in Kazakhstan and is now fully operational promoting RE/MAX franchises across the country. The Regional Office is planning to expand to over 100 real estate offices with over 1000 agents within the next 5 years, becoming the #1 real estate network in Kazakhstan by professionalizing the unregulated real estate market in Kazakhstan.

For any AMCHAM member who is searching for an efficient, streamlined way to give and receive property referrals on a worldwide scale, RE/MAX is offering its new world-wide *RE/MAX Global Referrals Platform*, a comprehensive tech hub that auto-translates referrals into more than 50 local languages. Login here <https://rem.ax/3TZyVh1>



XL MEDIA

CORPORATE B

Vitaliy Tyo
Chief Executive Officer

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XL Media is a full cycle advertising company. The company specializes in providing a full range of strategic marketing services: advertising placement, digital marketing, web development, strategic marketing, PR, Events, advertising production.

XL Media company has been operating for more than 10 years and cooperates with large enterprises in Kazakhstan such as: Shymbulak Mountain Resort, Ministry of Information and Public Development, Almaty City Administration, FedEx Express, RG Brands, KazMinerals, Kazaktelecom, Kcell and many others.

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