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September 2022

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#99

Oil and Gas Resurgence In Turbulent Times



- ▶ Building the Future of Tengizchevroil
- ▶ The Chevron Direct Investment Fund
- ▶ Launching the Low Carbon Solutions Business
- ▶ Halliburton Collaboration and Innovation
- ▶ Sustainability - Focused Solutions for Central Asia
- ▶ Sustainability Transition in the Oil and Gas Industry
- ▶ The Vital Step Towards a Net Zero Carbon Footprint
- ▶ Technologies at the Heart of Kazakhstan's Evolving Energy Sector

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EDITOR'S NOTE



Dear Readers,

The autumn business season in Kazakhstan is always dominated by the oil and gas industry, the country's economic powerhouse. This year the oil industry has surged back but with new approaches to the industry's development in response to the many challenges inherent in the technical side of the industry itself and in today's complex global geopolitical environment. The year 2022 has been a year of surprises that have required a quick turnaround worldwide. We may not have yet seen the end to these surprises that have affected Kazakhstan, Central Asia, the CIS, Europe, and virtually every other part of our planet.

Nonetheless, for those companies that have been able to weather the storm – and the oil industry has always been able to weather every twist and turn of fate wherever its operations are conducted throughout the world – 2022 has been a good, though turbulent year marked by the resurgent price of oil and innovative technology to meet every challenge. Resilience is the watchword, and AmCham members have shown the ability to adapt quickly and to identify solutions enabling them to overcome all obstacles. Energy transition will continue to be a strong theme in the industry's program as it plans for a future in which new and abundant sources of energy will benefit a rapidly changing world. Decarbonization and sustainability are the guiding lights in today's challenging environment in which climate and economic needs are paramount alongside many other urgent challenges.

The companies that have contributed articles outlining their current projects and thoughts and plans for the future in the current *Autumn 2022 Oil & Gas Investors' Voice* are all leaders in their fields – oil and gas industry leaders known the world over, oilfield service providers, and engineering companies whose hallmark is innovation and energy transition. These global leaders are moving at the speed of light towards solutions that only a few years ago were considered unattainable: *Chevron, Tengizchevroil, Exxon, NCOC, KPO, ENI, TotalEnergies, Halliburton, Schlumberger, Fluor, Vysus Group, GE, Honeywell, Microsoft, BASF, and NOVUS-Bolashak.*

The global leaders that have historically led the way in traditional fossil fuel energy development are now creating new sources of energy driven and supported by digitalization and abundant new applications of technology. AmCham invites the readers of this *2022 Autumn Oil & Gas Issue* to study and absorb the many visionary approaches bringing the world ever closer to a new and richer energy industry.

Doris Bradbury
Executive Director



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Larisa Guro, Sustainability Ambassador, BASF Russia/ CIS

Larisa Guro is the BASF Sustainability Ambassador and Head of Business Development for Russia and CIS region. She joined BASF in 2008 and was appointed head of the company's regional office in Sochi in 2010, overseeing BASF projects in preparation for the 2014 Olympic Games. Her range of interests extends over oil and gas, petrochemical, mining, food industries, and innovative solutions for current challenges.

Larisa Guro graduated from the Faculty of Chemistry, Moscow Lomonosov State University with a degree in Physical Chemistry in 1999. After graduation, she completed an internship in the United States and in ChemRAR as a research chemist.



Vladimir Melnikov, Senior Sales Manager, Catalysts and Adsorbents, BASF

Vladimir Melnikov has more than 14 years of experience in industries related to gas processing, petrochemical production and other types of chemical processes, including research on catalysts and adsorbents and technology evaluation. He holds a Ph.D. degree from the Chemical Department, Moscow Lomonosov State University.

Chevron



Zhanar Gilimova, Reinvestment Manager, Chevron Eurasia Business Unit

Zhanar Gilimova joined Tengizchevroil in 2010. She is the Reinvestment Manager of Chevron's Eurasia Business Unit based in Almaty with responsibility for the Chevron Direct Investment Fund (CDIF) since January 2021. Previously she held a number of commercial and strategy positions at TCO and Chevron Corporation, including Strategy Consultant, Mergers and Acquisitions Advisor, Trading and Commercial Manager for TCO products, and other positions in Kazakhstan, the UK and the United States.

Zhanar Gilimova holds a Bachelor of Science degree from Manchester University and an Executive Master's degree from the London School of Economics and Political Science. She has received government awards for her contribution to development of Kazakhstan's oil and gas industry and an international award from the World LPG Association.

Fluor



Robert Moore, General Manager, Fluor Kazakhstan

Robert Moore has been based in Kazakhstan for the last 5 years. Initially supporting Fluor's construction effort on the TCO Future Growth Project, he took over the role of Fluor General Manager in Atyrau in January 2019. Before arriving in Kazakhstan he undertook a number of project management roles in the UK, Saudi Arabia and Kuwait, having joined Fluor in 2008. Prior to joining Fluor he worked for Bechtel in various roles including project control, construction management, and project management. He has worked in locations as diverse as the UK, USA, Tunisia, India, Qatar, Oman and Equatorial Guinea.

Grata



Almat Daumov, Partner, Head of Natural Resources, Grata International

Almat Daumov is a Partner at Grata International and Head of the Natural Resources Department. He focuses on energy and natural resources, M&A, tax law and dispute resolution. For more than 13 years, Almat has advised domestic and multinational corporations and built an impressive oil and gas and mining practice. He has solid experience in undertaking and supervising legal matters for oil and gas, oilfield services providers, and mining companies. His legal work extends to the Korean National Oil Corporation (KNOC), North Caspian Operating Company (NCOC), operator of Kashagan, Sinopec, Rosneft, Baker Hughes, Enka, Polyus Gold International, Severstal, Nord Gold, and Polymetal.

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Deepak Khurana, Senior Area Manager, Halliburton Caspian East Operations

Deepak Khurana is responsible for Halliburton service lines and cross-functional teams in Kazakhstan, Turkmenistan, and Uzbekistan. Prior to this appointment, he served as Senior Area Manager for Halliburton Eastern Europe. He began his career in 2003 as a Field Engineer in Canada. During his time with Halliburton, he has held a number of positions of increasing responsibility including Senior PSL Area Manager for Central Asia, Global Account Manager in France, and Senior Business Development Manager for the UK and Continental Europe.

Deepak Khurana holds a Bachelor's degree in Mechanical Engineering from the University of Alberta. His international experience includes technical, operational and management roles in North America, Asia Pacific, Middle East, Europe and Africa.

Honeywell



Uygar Doyuran, President, Honeywell Turkey, Israel & Central Asia

Uygar Doyuran is responsible for developing Honeywell's business across Turkey and Central Asia. Honeywell provides advanced solutions in Aerospace, Petrochemical Industry, Building Technologies and Safety and Productivity Technologies.

Uygar Doyuran brings extensive experience to transforming large enterprises and industrial companies by leveraging digital technologies and new business models. He has hands-on leadership experience in commercial business and service delivery in various vertical industries across healthcare, manufacturing, energy, finance, retail, education and consumer electronics. Prior to joining Honeywell, he served as General Manager of GE Digital Turkey, where he led the transformation of large enterprises and industrial companies through digital technologies and new business models.

Uygar Doyuran holds undergraduate and Master's degrees in Electrical and Electronics Engineering from the Middle East Technical University.

Microsoft



Gumyrbek Sandibekov, Head of Energy Sector, Microsoft Kazakhstan

Gumyrbek Sandibekov is an experienced Business Development Manager and a certified Project Manager with over fifteen years of experience in the Oil & Gas industry in South East Asia, Europe, North Africa and the Former Soviet Union. He joined Microsoft in 2019 where he leads projects in Oil and Gas, Telco, Mining, and Transportation. Before Microsoft he worked with Expro International Group as Executive Director and Head of the Moscow Branch.

Gumyrbek Sandibekov holds a Bachelors degree in Petroleum Engineering from Kazakh National Technical University in Almaty.

Schlumberger



Marina Trinca Vespan, Managing Director, Schlumberger Kazakhstan and Uzbekistan

Marina Trinca Vespan has more than twenty years of experience in technical, sales, and managerial positions for the Oil & Gas industry. She has held a variety of professional assignments covering different management positions for Schlumberger in a broad geography that includes Europe, Africa and North America.

Prior to her current position Marina Vespan served as Digital Vice President for the Western Hemisphere and led significant digital transformation projects around the region as well as being actively involved in implementing programs to develop the digital capabilities of her various teams.

Marina Trinca Vespan holds an MBA degree (2005) from the Open University in the United Kingdom and an Economics degree (1997) from the Academy of Economics in Bucharest, Romania.



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BUILDING THE FUTURE OF TCO

Since 1993, Tengizchevroil (TCO) has been on a continuous journey of growth and progress, creating value for Kazakhstan, the communities where we work and our shareholders. In 2022, the company continues to achieve significant business milestones on our journey to build the future of TCO.

Although the year began with an uncertain outlook amid geopolitical events, TCO has continued to maintain an unwavering commitment to the safety and security of our base business operations while achieving new milestones in the *Future Growth Project-Wellhead Pressure Management Project (FGP/WPMP)* and advancing work to support TCO's lower carbon future.

Executing with Excellence in the Base Business and Achieving Key Milestones in the FGP/WPMP Project

Each year, as part of our commitment to deliver safe and reliable operations, TCO conducts maintenance activities at production facilities in Tengiz. These turnaround events support the future performance of our plants and this year's turnaround will help ensure the integrity and reliability of the impacted facility for the next 5 year-run cycle. With peak headcount for the turnaround approximately 3,900 people from a total of 35 Business Partner companies, TCO recently delivered the turnaround safely.

As one of the largest major capital projects in the global energy industry, *FGP/WPMP* is 93 percent complete. Upon completion, the project is set to deliver an incremental 12 million tonnes per year of production from TCO's assets in Tengiz. However, expanded production is only one part of the project. *FGP/WPMP* is also modernizing TCO's operations and marks a true transition point for our business. Project works include upgrading the entire power and control systems along with many of our field gathering systems in Tengiz, as well as building a new *Integrated Operations Control Center (IOCC)*.

On June 3, TCO hosted the official opening ceremony of the IOCC in Tengiz. IOCC provides centralized management of all production facilities. It is a state-of-the-art facility that enables TCO to apply new work processes and manage operations faster, safer and more efficiently. The IOCC changes TCO's approach to production management at Tengiz, combining all control rooms into one modern centralized facility equipped with advanced technologies and new workflows to optimize production operations and support TCO's ability to expand future production when *FGP/WPMP* is fully online.

On July 26, TCO celebrated another key *FGP/WPMP* milestone when teams successfully transitioned the last of the project's four production clusters to base business operations. This final production cluster

consisted of 10 new wells from two new multi-well pads, a new meter station and 9 new pipelines spanning 25 kilometers. *FGP* teams previously completed the first production cluster in 2019 and the second and third clusters earlier in 2021, each adding over 5,000 tonnes per day of oil production. The handover of the final cluster completes the scope of the *Third Generation Oil Gathering System*.

For the remainder of the year, TCO remains focused on safely completing other key milestones that will continue to advance the project to completion. In parallel, TCO is working to apply the latest technologies to unlock new opportunities and secure high value carbon reductions that support the company's lower carbon future.

Advancing a Lower Carbon Future

TCO is proud of its contributions to Kazakhstan's oil and gas industry. We believe that oil and natural gas will continue to be a critical part of the energy mix for Kazakhstan, supporting the country's future economic and social progress. Improving emissions performance is not new to the company and we believe that operating our facilities in a safe and reliable manner as well as improving our operational performance are key enablers to minimizing our environmental footprint.

Prudent, practical, and cost-effective actions have already been taken to reduce TCO's environmental footprint. Since 2000, over \$3 billion in projects has been invested to reduce total emissions. Since 2000 the company has reduced its air emissions intensity by 65% and at the end of 2021, TCO's total flaring volumes were 59% less compared with 2017. In addition, TCO is currently focused on securing the highest value carbon reductions, including driving energy efficiency, eliminating routine flaring, reducing fugitive methane emissions, and integrating low carbon technologies in our operations.

Kazakhstan's national strategies, roadmaps, and the implementation of the *Ecology Code* will be important enablers to achieving the country's net zero by 2060 aspiration and supporting a transition to a lower carbon future in Kazakhstan. TCO is encouraged by the Government's position that achieving substantial progress toward reducing GHG emissions requires constructive engagement with private sector players. We continue to be supportive of Kazakhstan's development of transparent, fair, and internationally aligned policy and regulation to enable the country's decarbonization objectives.

TCO has a proven track record in successfully applying global technology, expertise and best practices to increase production and solve technical challenges specific to the Tengiz field. It is truly an exciting time to be at TCO with all the activities underway to build the company's future.



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WHAT IS THE CHEVRON DIRECT INVESTMENT FUND AND HOW DOES IT FUNCTION?

by Zhanar Gilimova
Reinvestment Manager
Chevron Eurasia Business Unit

In October 2021 Chevron and the Ministry of Energy of Kazakhstan signed a Memorandum of Understanding establishing the *Chevron Direct Investment Fund Ltd. (CDIF)* in the amount of \$248.5 million.

Later in December 2021, Chevron announced the launch of a website – www.cdif.kz – created with the purpose of informing the Kazakhstani business community about CDIF and ensuring transparency of the application process for funding and selecting investment projects. The website enables potential project companies to apply and submit the required project documentation for funding online.

In June 2022, Chevron officially presented the *Chevron Direct Investment Fund* during the *Astana Finance Days* with the participation of the Deputy Minister of Energy, Chevron, and AIFC management.



Zhanat Zhakhmetova, Deputy Minister of Energy, at the CDIF presentation

CDIF was established as a private company at the *Astana International Finance Center (AIFC)* for direct equity investments. AIFC's independent regulatory framework and legal system, simple tax regime, arbitration procedures, international expert availability, and common objective of stimulating Kazakhstan's economic growth provides the most efficient financial platform for Chevron to invest into local enterprises.

The company's focus is to enhance economic development by investing in commercially attractive local enterprises across various industries, including,

but not limited to environmental stewardship, digital technologies, and manufacturing and services in the oil and gas industry.

CDIF's mission is to significantly impact Kazakhstan's economic development through investment in attractive commercial enterprises, job creation, transfer of skills and technologies, growth in sales and purchases, support of strategic initiatives, multiplying direct, indirect & induced impacts, and other positive results.



Damon Thornburg, Chevron Finance General Manager, at the CDIF presentation

"Chevron is seeking profitable investment projects in Kazakhstan that meet the key criteria," said Damon Thornburg, Finance General Manager, Chevron Eurasia Business Unit, at the Fund's presentation. "These include reasonable profitability, a positive impact on the Kazakhstan economy, and projects that meet the country's strategic expectations and Chevron's commercial and technical requirements."

How does the CDIF work?

The process from proposal submission to release of funds is likely to be close to 6 months or longer, depending on the complexity of the project. The investment process starts with evaluation of applications submitted via the website. All applications should meet the eligibility criteria as described on the CDIF website.

The Investment Team conducts the first assessment of the project and contacts the applicant for more details, if necessary. If the application passes the initial screening, it is submitted to the Advisory Board for review.

The Investment Team will conduct in-depth due diligence on projects that successfully pass the Advisory Board's review, including commercial, financial, tax, legal, and compliance checks.

If the Investment Team decides to proceed based on the results of enhanced due diligence, the preliminary term sheet with the parameters of the deal will be agreed with the applicant.

The project will then be presented to the *CDIF Investment Committee* for approval. After the Committee's approval, the final agreement will be signed and funds released. The diagram below presents a summary of the investment process.

There are few things that potential applicants should keep in mind. It is important to emphasize that *CDIF* is not an organization that deals with social projects. This money will be invested in commercially attractive enterprises and businesses only. Potential projects for funding will be selected by *CDIF* based on their strong profitability, robust ESG characteristics, value-creation potential, portfolio diversification, and financial and non-financial risks.

CDIF's equity ownership in any project will not exceed 49%. This means that the potential applicant should have a solid idea about where to acquire the remaining 51% of funding.

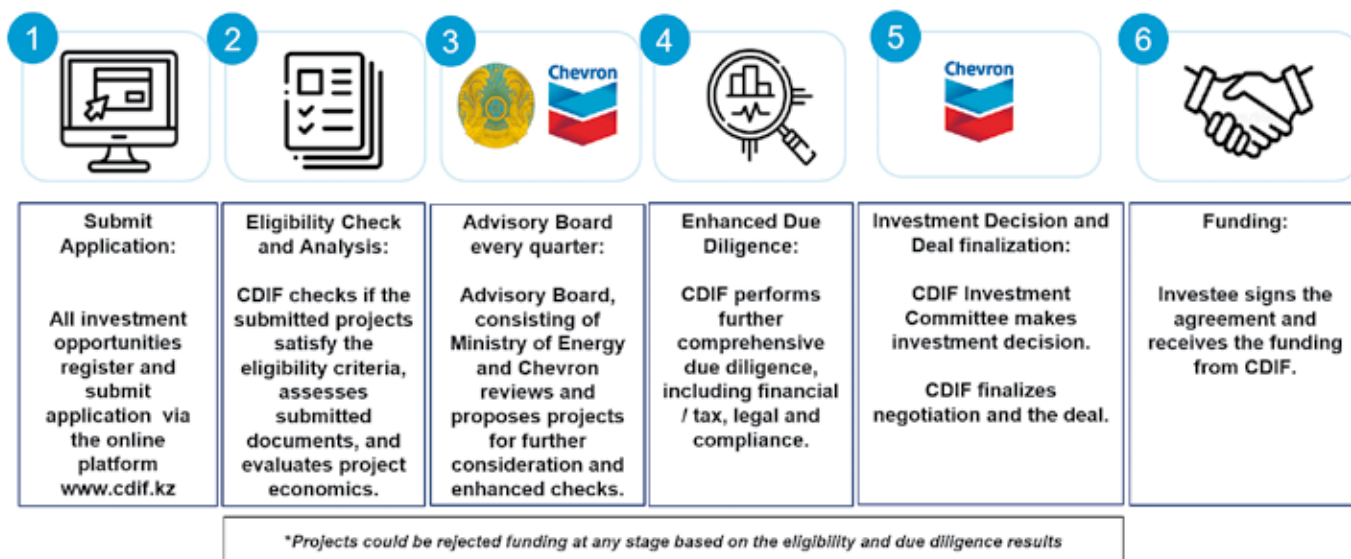
CDIF is eligible to invest only in companies registered in Kazakhstan and if the business is conducted primarily in Kazakhstan. *CDIF* aims to invest in medium- to large-scale projects, with ticket size from \$2M to \$30M.

In line with the principles of typical private equity funds, *CDIF's* intention is to exit investments within 10 years following their launch. This does not preclude exploring earlier exit opportunities should such opportunity arise.

CDIF highly encourages potential applicants to provide a detailed description of the investment proposal and an accompanying business plan, as well as financial and economic models.

All potential applicants are encouraged to carefully read the eligibility and selection criteria on the www.cdif.kz website before submitting their applications. Should there be any questions, send a query to the *CDIF* team via the website contacts.

Chevron Direct Investment Fund Ltd investment decision making process





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Prime Aviation has an EASA Part 145 certified division for maintenance and repair works. The company has great experience in business aviation and safety is always key priority without compromising top level of service.

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LAUNCHING THE LOW CARBON SOLUTIONS BUSINESS



ExxonMobil established its Low Carbon Solutions business in early 2021, leveraging its unique combination of capabilities such as geophysics expertise and complex project management to establish a new business in carbon capture and storage, hydrogen and biofuels to accelerate emission reductions for customers and in its existing businesses.

CARBON CAPTURE AND STORAGE

Carbon capture and storage is the process of capturing CO₂ emissions from industrial activity or power plants at the source and injecting it into deep underground geologic formations for safe, secure and permanent storage.

Carbon capture and storage on its own, or in combination with hydrogen production, is among the few proven technologies that could enable reduced CO₂ emissions

from high-emitting and hard-to-decarbonize sectors, such as power generation and heavy industries, including manufacturing, refining and petrochemicals. According to the Center for Climate and Energy Solutions, carbon capture and storage can capture more than 90% of emissions from power plants and industrial facilities.

The International Energy Agency's NZE report concluded that more than 7.6 billion metric tons per year of CO₂ will need to be captured and stored by 2050. By comparison, the world's current capture capacity is

about 40 million metric tons of CO₂ per year. The agency has also said "reaching net-zero [emissions] will be virtually impossible" without carbon capture and storage.

The U.N.'s Intergovernmental Panel on Climate Change estimated in its Fifth Assessment Report that the cost of achieving a 2°C outcome would more than double if carbon capture and storage was not among the decarbonization solutions. Carbon capture and storage is also recognized as one of the only technologies that can enable negative CO₂ emissions when combined with bio-energy or direct air capture.

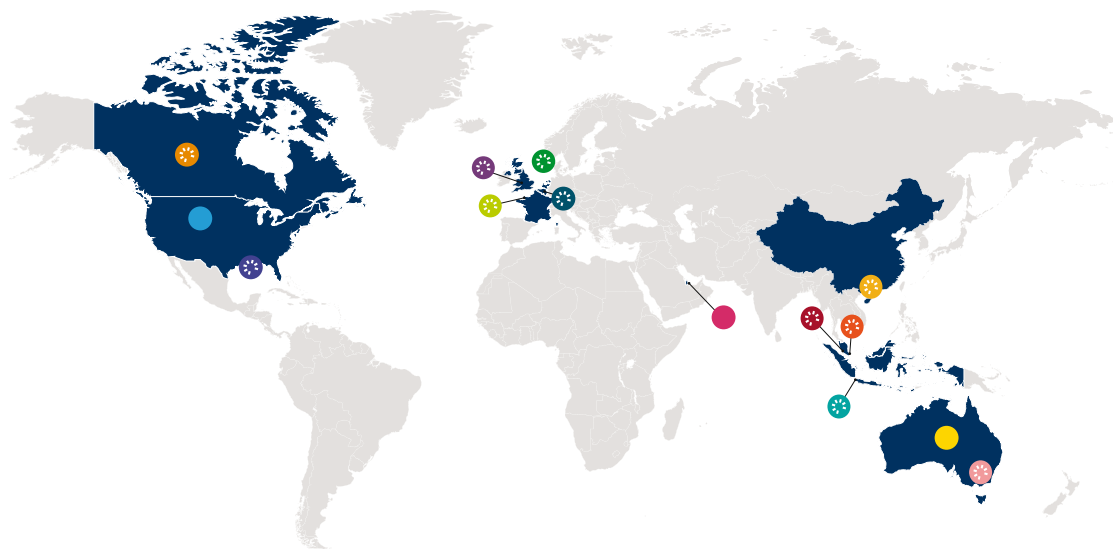
ExxonMobil has more than 30 years of experience capturing and permanently storing CO₂, and has cumulatively captured more anthropogenic CO₂ than any other company. It has an equity share of about one-fifth of the world's carbon capture and storage capacity at about 9 million metric tons per year, which is the equivalent of approximately 2 million passenger vehicles per year.

ExxonMobil has announced progress on multiple carbon capture and storage opportunities since establishing its Low Carbon Solutions business, including

Houston; LaBarge, Wyoming; Edmonton, Canada; St. Fergus, U.K.; Southampton, U.K.; Fife, U.K.; Normandy, France; Malaysia; Indonesia; Singapore; Australia; and China. These are in addition to previously announced projects in Qatar; Antwerp, Belgium; Rotterdam, Netherlands; and Australia.

ExxonMobil is working with FuelCell Energy to substantially improve the efficiency, effectiveness and affordability of carbon capture through fundamental research into a novel technology that uses proprietary carbonate fuel cells to concentrate carbon dioxide from large-scale industrial and power plants.

The Company is exploring options to conduct a pilot test of next-generation fuel cell carbon capture solution at one of its operating sites.



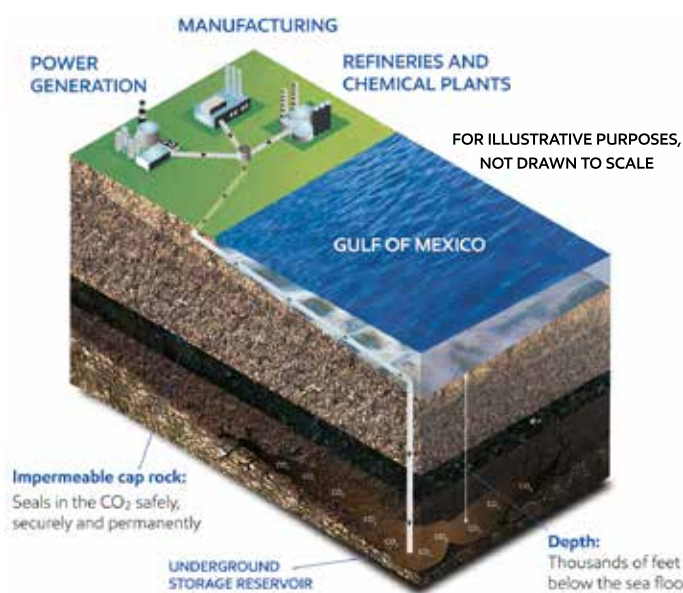
CCS locations currently in service:

● WYOMING ● QATAR ● AUSTRALIA

Prospective CCS locations:

● U.S. GULF COAST ● SINGAPORE ● MALAYSIA ● INDONESIA ● CANADA ● BELGIUM ● FRANCE ● GIPPSLAND ● NETHERLANDS ● UNITED KINGDOM ● CHINA

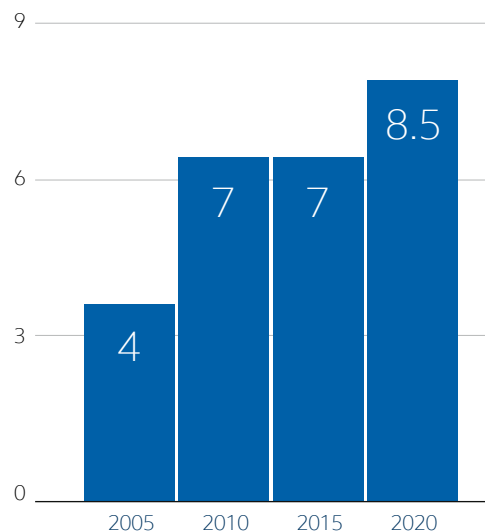
Houston CCS Innovation Zone



ExxonMobil and 13 other companies have announced their interest in supporting the large-scale deployment of CCS technology in Houston, with the potential to capture CO₂ emissions from industrial facilities located there. The CO₂ would be piped into natural geologic formations for safe, secure and permanent storage.

ExxonMobil carbon capture capacity

(Equity, million metric tons CO₂e per year)



Note: These highlights are a portion of ExxonMobil's Advancing Climate Solutions 2022 Progress Report. For additional important information on this subject, please read the Advancing Climate Solutions Report including Cautionary Statements and footnotes.

DIGITALIZATION IN THE NORTH CASPIAN OPERATING COMPANY (NCOC)

In the current digital age, successful companies value data and understand the importance of measuring business KPIs that enable cost control, productivity and overall efficiency. They perform data mining and analyse data to identify trends to make better business decisions and improve processes.

As one of Kazakhstan's leading oil and gas producing companies, NCOC understands the value and importance of data, and has launched a digitalization journey to move from a document-centric to a data-centric world in every aspect of its activities. The main objective of the NCOC digital strategy is to ensure that we can extract as much value from our business as we can. It is about making work more efficient and more effective and enabling the company to deliver its objectives in a better way.

Data is at the heart of digital. Access to quality-assured data and building analytics capabilities is key to enable any digital transformation. The *enterprise Data Platform*, *Operator Task Management*, *Foundation* and *SmartPlant Instrumentation* systems, and the *AQMS* management system are some examples of successful projects with clean data sets for specific use cases to support business process automation and extract value for the business.



1. **The Enterprise Data Platform (EDP)** is one of the first projects in NCOC's journey of digital transformation to build a "single source of truth" that helps to enable easy access, high quality, and consistency of data.

The EDP project focuses on the business value of reliable, integrated and automated data for informed decision-making available at the right time. The platform enables development of digital products to support NCOC business objectives to improve safety, reliability, production, and cost performance, and eliminates human error and non-productive time in data manipulating, searching, and producing data analytics, dashboards, and reports.



2. **Operator Task Management (OTM)** is a tool developed by the *NCOC IT/IM* team to perform routine round checklists on mobile devices to improve reporting capabilities of the Operations team, and to increase operational awareness of performed tasks in the field. The program has come to replace the paperwork of operators as an effective system for managing operational processes. It helps the Operations department ensure that best operating and regulatory procedures are consistently followed, collect data from non-instrumented assets, and conduct critical plant environmental and safety audits.
3. **SmartPlant Foundation** and **SmartPlant Instrumentation** systems were developed to manage abundant, dynamic and complex engineering data and to keep this data current, synchronized, and readily accessible throughout the lifecycle, whether used concurrently by multiple projects during plant design, by engineers during plant construction and commissioning, or by maintenance and operations teams at the plant.

SmartPlant Instrumentation (SPI) is a powerful smart system, combining elements of data management and graphical design features. SPI is able to handle instrumentation-related tasks across the entire plant life cycle when all instrumentation data is consolidated and managed in one database. SPI shortens the design cycle, because even a single change in design which affects many different deliverables, can be executed at once, without manual repetitive data re-entry.

Thus, design iterations costs and hours are reduced or avoided, workforce efficiency improved by reducing data review cycles and easily retrieval of a trusted data. SPI helps to reach single standard in requirements provision and deliverables issuance.

SmartPlant Foundation (SPF) is a tool for plant information management to keep engineering information current and accessible throughout the lifecycle (engineering designs, vendor data, specification sheets, process data and all other relevant documentation relationship). It allows access to data anywhere, anytime, and on any device with just a web browser and without software installation. SPF reduces the cost and time spent to search and validate the data, thereby reducing the non-productive time by having the accurate, complete and up-to-date information that can be trusted and making the quick business decisions based on available data.

4. A new continuous air quality monitoring and data management solution was developed for the continuous emissions monitoring project conducted by NCOC Environmental Protection department. The core requirement of the data management software was to provide a unified system, which contributes to transparency and confidence in the reliability of sensitive data both for the company and state agencies.

A solution for the new **AQMS management system** was implemented in-house on the platform of the **Plant Information (PI) System**, a corporate system that allows to collect, store, view, analyze, and share operational data with users within and beyond the enterprise. Prime users of the AQMS system are environmental engineers, whose experience in the field helped to define right patterns of data abnormalities (e.g. analyzer drifts during calibration, etc.). Such collaboration allows automation of the data

validation algorithm resulting in reduced human-system interaction. The system is self-monitored and provides warnings via e-mails.

The newly built workflow reduced single reporting dashboard generated everyday for all stakeholders, from the station maintenance operator to senior management. Additionally, the data from NCOC air quality monitoring stations is available for Atyrau community. The air quality data from 8 AQMS stations located in the main microdistricts of Atyrau (*Zhilgorodok, Avangard, Vostok* and others) is available on "Kazhydromet" RSE interactive map and in the *AirKz* application that can be installed via App Store or Play Market and also can be found on public LED screens in Atyrau.

Over the years NCOC has established a solid digital foundation striking the right balance between on-premise and cloud computing, reliable and secure operations for field telecoms, IT infrastructure components and user computing services, professional information data analytics services and capabilities, mature application and platform services to support business process automation.

At NCOC, our goal is to get extra value from our data, unlock it from papers, save our time, work together with core business teams and feel their needs. All these digital analytics products contribute to data driven decisions from different angles for efficient management of the assets. NCOC continues to grow, develop, learn and implement more effective and efficient ways of working to support its operations on a global level and to benefit the economy of Kazakhstan.





INNOVATION AND COHESIVE PLANNING TO DELIVER A SUSTAINABLE AND RESILIENT ENERGY SYSTEM

By GE

ARTICLES

Global growth in electricity demand is expected to double through 2050, as household consumption rises, and industries ranging from transportation to steelmaking boost electrification to reduce their emissions profiles. This will only be effective if we can decarbonize the system producing the underlying electricity in a way that maintains both reliable and affordable access. Amid a global energy crisis, the resiliency and efficiency of baseload power generation will be foundational to energy security.

Kazakhstan is making strong progress defining the vector of this energy transition, based on the nation's Green Economy Concept which targets 50% of power generation from alternative and renewable sources and a 40% reduction in harmful emissions by 2050. Nearer term, the Republic has devised an Energy Balance until 2035 to set a pathway to success, including an interim phase down of coal generation from ~70% to 40% in favor of highly efficient, sustainable sources that will meet the varied needs of power consumers across Kazakhstan's regions. This includes additions of over 5 GW of dependable and flexible gas power, 6.5 GW of renewable energy, and at least 2.4 GW of carbon-free nuclear power.

Kazakhstan is already making purposeful strides forward, with selection of critical gas power and nuclear power technologies underway to ensure energy security in the decades to come. Renewable energy is building momentum, with capacity standing at 2 GW and a further 300 MW of additions expected by year-end. Action is being taken to plan modernization of key grid infrastructure, enhance legislation and technology selection, and to approve the overall strategy and roadmap for achieving carbon neutrality by 2060.

It is essential that Kazakhstan selects partners and technologies to support a holistic and cohesive transformation of its energy system - with efficiency and sustainability at core. Over the past decades, GE's energy technologies have made a substantial contribution to global decarbonization efforts, delivering an estimated 22% reduction in the carbon-intensity of our installed base between 2010-2021. While global coal generation increased by 6%, our installed base of coal power declined by 44%. Our installed base of key energy transition technologies soared during this period, with gas power installations growing 17% and wind, hydro and nuclear power up 16%.



GE's Energy Transition Steering Committee and Center for Decarbonization have developed cohesive strategies to safeguard energy security and deliver decarbonization, using the full breadth of products and capabilities across our portfolio. This includes the world's most efficient gas turbines operating in combined-cycle for increased power with lower lifecycle costs, alongside our proven low-speed Arabelle nuclear steam turbines for base load generation. These technologies also serve as a force multiplier for renewable energy — including wind and hydro-power, where GE also holds a leadership position — by ensuring overall system reliability for deployment as quickly and affordably as possible to keep carbon neutrality goals within reach. It will also be essential to incentivize industrial customers and household consumers to adopt energy efficiency practices through appropriate pricing policy and support for developing the right behaviors. Kazakhstan has made a solid start through the launch of an emissions trading system, and GE can help deliver the digital transformation of the power system needed to meaningfully boost energy efficiency today — and in the decades to come.

In 2021, GE announced our aim to extend the company's emissions goal to achieving net zero for sold products (scope 3) by 2050 — the most impactful and relevant category given the nature of our businesses. This commitment will help us deliver the sustainable, breakthrough technologies that our partners will rely on to achieve their own net zero ambitions. For 130 years, people have counted on GE to “find out what the world needs... and try to invent it,” as our founder Thomas Edison famously said, and today innovation remains our North Star.

The achievement of deep decarbonization goals over the coming decades is likely to depend in part on technologies which are still being developed and have yet to be deployed or widely adopted. The company invested \$3.7B on R&D in 2021, with



a focus on innovation in pre-combustion and post-combustion decarbonization of gas power, as well as breakthrough nuclear, renewable energy and advanced digital solutions.



Carbon-free hydrogen fuel and post-combustion carbon capture, utilization and storage will ensure gas power infrastructure plays a leading role through the energy transition — and ultimately as a destination technology. Today 100 GE turbines generate power using hydrogen and associated fuels. Our leading HA turbines can operate on up to 50% hydrogen blends, and we are working to extend this to pure hydrogen by the end of the decade. Projects in execution today that will run on hydrogen blends include landmark power plants in the U.S., Australia, and China, and we are collaborating with strategic partners on development of gas turbine carbon capture and sequestration systems — targeting a 95% reduction of carbon emissions compared to traditional gas power.

Nuclear energy will also continue to serve as a backbone carbon-free power generation source. GE's flexible and versatile small modular reactor technology will be well-positioned to meet the need for a simpler, safer and more cost-effective reactor. With completion of the first unit expected in Canada as early as 2028, the innovative GE Hitachi BWRX-300 stands to be a breakthrough contributor to the energy transition. GE Hitachi is also partnering with TerraPower on fourth-generation Sodium reactor technology. This cost-competitive, sodium fast reactor is coupled with a molten salt based integrated energy storage system, enabling it to integrate seamlessly with renewable resources for faster, more cost-effective decarbonization of electricity generation.

GE is also bringing our Lean mindset of continuous learning and improvement to drive enhancement of renewable energy technologies, including through

cutting-edge additive manufacturing techniques and expertise in materials science. Our flagship Haliade-X offshore wind turbine was launched in 2018 with a power rating of 12 MW — and by 2021 the turbine was already operating at 14 MW, making it able to save up to 52,000 metric tons of CO2 emissions per year. We have over 7 GW of Haliade-X commitments worldwide, and growth plans for the platform to reach 17 MW. GE Research is leveraging decades of experience scaling superconducting magnets for GE Healthcare's MRI scanners to help create superconducting generators for wind turbines without rare earth metals. This innovation will deliver 25% or more renewable electrons and 9% reduction in the Levelized Cost of Energy (LCOE). We also continue to innovate in hydropower technologies, in pursuit of true baseload renewable energy generation for countries blessed with the resource potential, such as Kazakhstan. This includes advanced pumped storage technologies, and our recent agreement to deliver the world's first fully fed variable speed technology for a plant in Austria will help provide the flexibility and response times to load changes needed.

Investment in the physical and digital grid will be vital to energy security, ensuring power transmission and distribution infrastructure cease to be a bottleneck for advanced generation technologies. Today Kazakhstan encounters frequent grid stability issues and estimated transmission losses as high as 18% due to grid wear and tear, exacerbated by power transmission distances, while supply imbalances are covered through power trades with neighboring countries. GE's network digital twin technologies such as our Advanced Distribution Management Solutions (ADMS) can unlock and leverage valuable data for greater situational awareness and actionable intelligence to optimize grid response to change. Digital transformation of the grid produces tangible outcomes — we are partnering with UK Power Networks on a world-first smart substation project that will release 1.4 GW of capacity for the country's power system. Our latest energy storage and High Voltage Direct Current (HVDC) technology, which moves renewable energy over greater distances, can greatly increase grid flexibility and help achieve power system independence.

Throughout our history GE has demonstrated a larger purpose of improving the quality of life for people around the globe. We remain focused on innovating and deploying the technologies that will deliver the energy transition for countries across the globe, in service of a more connected and sustainable future. GE is eager to build on our long-standing partnership with Kazakhstan — to bring our full lens of energy technologies to bear in pursuit of the Republic's energy security and sustainable development goals.

KARACHAGANAK PETROLEUM OPERATING (KPO) ANNOUNCES ITS PERFORMANCE RESULTS FOR THE FIRST HALF OF 2022

AKSAI, West Kazakhstan Oblast, 22 July 2022

- Karachaganak Petroleum Operating (KPO) announces its performance results for the first half-year period of 2022.

Over this period, KPO produced 71.4 million barrels of oil equivalent of stable and unstable liquid hydrocarbons, export raw gas and sweet fuel gas. In addition, 5.7 billion cubic meters of raw gas were injected into the reservoir, which accounts for 54.3 per cent out of the total gas produced in the field.

"In developing Karachaganak, KPO has been working closely with the West Kazakhstan Mayor's Office (Akimat) and the PSA Authority using the latest technologies to increase production and subsequent revenues to the regional and the national budgets. Our collaboration and synergy with Kazakhstan is based on mutual respect of the parties' interests and social responsibility", said Giancarlo Ruiu, KPO General Director.

"The entire oil and gas industry is currently undergoing significant changes to include the transition to renewable energy and targets for carbon neutrality. KPO is set to play an active role in this process. The KPO-365 strategy is based on a number of opportunities aimed to support the path to the CO2 emission abatement", he added.

KPO has been very diligent in following recommendations from the World Health

Organization and the Kazakhstan Ministry of Health with respect to preventing new cases of COVID in the continuing coronavirus healthcare situation. These recommendations include a set of robust measures to protect the health of employees and contractors, therefore maintaining production at the Karachaganak field and KPO progress with capital projects.

KPO has achieved a gas utilisation rate of 99.96 per cent for the first half-year period of 2022, demonstrating a worldclass performance. To date, KPO has invested \$446 million into implementing a wide range of environmental initiatives.

KPO is one of the first companies in Kazakhstan to launch and successfully implement a *Local Content Development Program*. For the first half-year period, the *Local Content* in KPO contracts for procurement of goods, works and services has achieved 54.8 per cent or \$205.9 million in monetary terms.

As for nationalization, for the same period KPO national employees accounted for as high as 98 per cent of all engineering and technical personnel and 85 per cent of managerial staff.

To date, KPO investment in development of social infrastructure in the region has totalled more than \$456 million.

As of today, KPO Partners have invested nearly \$29 billion into development of the Karachaganak project.





NOVUS
BOLASHAK

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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 has a large national recruitment office presence and processes in place in Kazakhstan, providing dedicated and experienced safety leadership. The company has 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's commitment to zero incidents, local experience, understanding of intercultural workplaces and worker engagement underscore its vision to being the benchmark in the providing world-class systems completions, commissioning and start-up solutions for the oil and gas as well as the mineral and mining industries.

BASF INTRODUCES SUSTAINABILITY-FOCUSED SOLUTIONS TO CENTRAL ASIA

by **Larisa Guro**
Business Development Manager, Russia & CIS

Myrat Annayev
Business Development Manager, Central Asia

Vladimir Melnikov PhD
Account Manager, Catalysts & Adsorbents

For its more than 150-year history, BASF has accumulated extensive expertise in the chemical industry and is actively applying it in creation of new products to make our partners' business more successful. Every year, the German chemical company invests several billion Euros in R&D and patenting. Let's look at an example of the complex and lengthy process of converting natural gas into different products, as well as oil and gas condensates production to their deep processing.

For this to occur, BASF offers a variety of technologies and solutions to achieve the required specifications with minimal capital and operating expenditures, providing high reliability and production flexibility to improve efficiency of all technological processes.

The BASF Catalysts division offers exceptional expertise in the development of technologies that protect the air we breathe, produce the fuels that power our world, and ensure efficient production of a wide variety of chemicals, plastics and other products, including advanced battery materials. By leveraging our industry-leading R&D platforms, passion for innovation, and deep knowledge of precious and base metals, BASF's Catalysts division develops unique, proprietary solutions that drive customer success.

BASF is well-positioned to ensure reliable supplies within the oil and gas industries offering a wide range of performance chemicals to every application sector within the oilfield: drilling, cementing, stimulation, and production. In oilfield operations, as well as in production of natural gas and gas condensate, BASF effective solutions act as enablers for our customers to achieve maximum results for their optimal preparation in accordance with the required parameters before transportation and storage,

BASF proven strengths are in innovative, sustainable solutions with consistent product quality. Best-in-class, well-site operations are essential to maximize recovery of oil and gas reserves while minimizing environmental impact. Specialty chemicals that bring unique capabilities and functionality are integral to this goal.



With nearly 50 years of experience, BASF also offers its customers efficient solutions for the treatment of various gases such as natural gas, synthesis gas, and biogas. Worldwide, these solutions have been proven and demonstrated in more than 400 reference plants. As one of the worldwide leading companies in the field of gas treatment, BASF is the preferred partner for complex new gas plants. BASF's proven gas treatment technologies boast 400 references around the globe, from North Africa to the Arctic Circle, and include the world's largest gas-treatment units. Under the *OASE®* and *Durasorb™* brands, BASF provides customized, technologically superior, gas-treatment technologies.

To support the full carbon capture workflow and reduce harmful greenhouse gas emissions, BASF offers special chemistry and knowledge. The conventional glycol (*TEG*) dehydration is commonly used for various applications but is less ideal than adsorbents for CO₂ capture. BASF's *Sorbead®* technology is a more sustainable alternative to traditional glycol units as it ensures zero *BTX/Acid Gas Emissions* and gives no chance for chemical spills.

Sorbead®: CO₂ Dehydration for Carbon Capture and Storage

For continuous control of the gas condition to optimize treatment agents and speed up processes by bringing the lab to the sample, BASF developed *trinamiX* – a mobile, affordable and user-friendly *Near Infrared (NIR) Spectroscopy Solution*. *trinamiX* provides industrial manufacturers with the ability to obtain fast and easy answers to their most pressing challenges: product and process safety, highest efficiency, and better sustainability.

It is a first application for OASE gas treatment that provides the highest data protection requirements ensuring a trustworthy data solution based on three pillars: *NIR Spectrometer* that brings spectroscopy directly to the point of analysis and replaces time-consuming collection and mailing of samples; *cloud-based analytics* that translate the raw spectroscopy measurements into meaningful results helping users make better decisions, and the *App* - the way the results are delivered by iPhones, as well as on Android phones.

trinamiX NIR Spectroscopy Solutions provides information such as type, quality or degree of degradation of solids and liquids. Easy product differentiation helps to prevent counterfeiting. Fast recognition of product mix-ups in the production process enables optimized waste streams and time-effective analyses to prevent production down times.

BASF with its expertise & innovative products is deeply involved in gas treatment projects in Turkmenistan. BASF products & solutions are used in such fields as gas treatment and dehydration, polymer production, oil processing and fuel production. *Sorbead®* has been successfully performing in Central Asia with the customers like *Turkmengaz*, the national gas company of Turkmenistan.

Turkmengaz's *Bagtyýarlyk* gas dehydration unit, which supplies gas to the strategic Turkmenistan-China gas pipeline, was designed to run on *Sorbead®*. Commissioned in 2010 the unit has been working non-stop up today showing excellent performance with regards to the natural gas specifications. Being totally satisfied with *Sorbead®* performance Turkmengaz in 2022 decided to have refill for all the trains at *Bagtyýarlyk*.

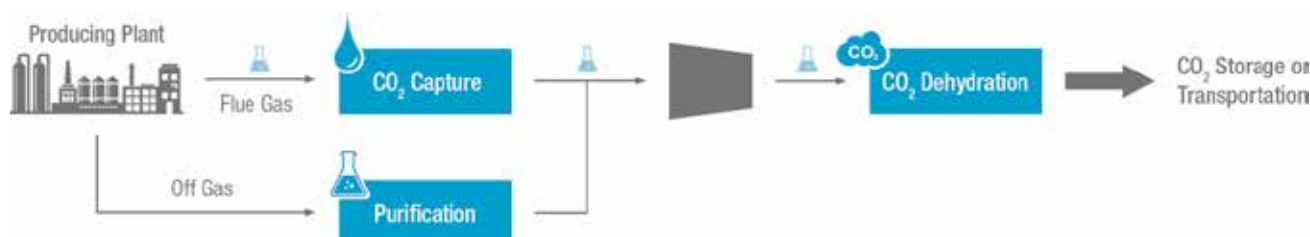
We are proud that BASF's innovative products and solutions are successfully used at the gas treatment facilities of Turkmengaz. Over the past years, BASF



has developed a strong technical partnership with Turkmengaz and provided comprehensive support in the development and implementation of various projects. All this collaboration has resulted in BASF receiving the *Gas Treatment Expert* title with the customer paving the way for a strategic technological partnership. We truly believe the exchange of expertise between the companies benefits the petrochemical industry in Central Asia.

Using innovative BASF technologies, you significantly reduce energy consumption and contribute to ecological sustainability on our planet. Manufacturing products for sustainable solutions, reducing emissions from our processes – all of these efforts help lead BASF on a continuing journey of sustainability.

Our scientific discoveries and achievements, our expertise help BASF's customers address current challenges and move towards new goals. The recent *Innovation Day* organized by BASF in July in Nur-Sultan not only served to celebrate the 30'th anniversary of BASF's presence in Central Asia, but also brought the most sustainable solutions to the attention of our customers and partners.



SUSTAINABILITY TRANSITION IN THE OIL AND GAS INDUSTRY

By Gumyrbek Sandibekov
Head of Energy Sector
Microsoft Kazakhstan

According to *Accenture*, today we're in the era of 'sustainable revolution' – just as the digital revolution transformed how we live and work, so too will sustainability, driving new value and growth and permeating everything that we do. The first edition of the *Net-Zero Industry Tracker* report by the *World Economic Forum* stated that industrial sectors account for nearly 40% of global energy consumption and more than 30% of global greenhouse gas emissions. The transformation of these sectors is pivotal to reaching net-zero emissions by 2050.

For the oil and gas industry, sustainability is a key priority to embrace new principles and processes to fight one of humanity's main challenges. The United Nations has adopted 17 *Sustainable Development Goals (SDGs)*, two of which have serious impact on the oil and gas industries: "*Affordable and clean energy*" and "*Climate action*". Due to the large volume of responsibilities borne by regulatory bodies, the financial community, investors and their clients, and civil society, many oil and gas companies have begun implementing these goals in their operational processes.

Worldwide, companies are responsibly moving forward to a net zero carbon future. Organizations across many industries are under increasing pressure from stakeholders, regulators, and customers to report and manage the environmental impact of their business. Technology has an important role to play in executing a sustainability strategy and helping the industry decarbonize.

For starters, the companies need to establish a true baseline — understanding holistically the environmental footprint of the organization and value chain across all scopes: emissions that directly result from the company's business activities; emissions from producing energy such as electricity or heating and cooling; and indirect value chain emissions as a result of other business activities, such as building, construction materials, or transport.

As a first step for building a successful sustainability strategy, **companies need better visibility to effectively drive sustainability reporting, sustainability efforts, and business transformation.** For example, collecting and connecting IoT data from devices using sensors —combined with rich services at the edge or in the cloud — provides the basis to monitor and measure activities at scale. And now, *Microsoft Sustainability Manager* is enabling

organizations to record emissions activities, report their impact, progress more efficiently, and reduce their environmental impact through increasingly automated data connections that deliver actionable insights to refine and scale sustainability initiatives.

Secondly, companies should **identify opportunities to replace tools, systems, or activities with more efficient options and add business value.**

A key place to begin is evaluating the company's computer resource utilization, storage, and networking efficiencies. Simply migrating from on-premises cloud services to a hyperscaler or to hybrid cloud have been shown to yield carbon and energy efficiency improvements. Transitioning workloads to *Microsoft Azure* can produce up to 98% more carbon efficiency and up to 93% more energy efficiency than on-premises options (depending on specific server usage, renewable energy purchases made, and other factors). How the company deploys and configures its IT tools can affect the environmental footprint of its systems.

The third step for sustainability strategy is **to minimize the environmental footprint of a company's operational systems and processes.** Integrated data solutions enable organizations to examine and manage the footprints of their facilities and production processes and shift the activities of their people to be responsive to the changing requirements of a sustainable economy. For example, the use of advanced technologies can enable autonomous operations that continuously maximize efficiencies of your building systems or manufacturing processes.

The fourth step is **to facilitate greater transparency and accountability through the value chain**, from raw materials to product creation to distribution. Up to 90 percent of an average organization's resource footprint occurs in the value chain — either upstream (through the supply chain) or downstream (in the product use phase) of its own operations. Without data, the companies can't know the full impact of each supplier in their supply chain or understand the cost and climate impacts entailed by changing suppliers.

Digital technologies such as *Microsoft Sustainability Manager* can help organizations break down data silos across emissions sources and use a publicly available *Microsoft Cloud for Sustainability* data model, which can be shared with value chain partners to centralize emissions data in a common format. Thus, organizations facilitate greater transparency and accountability through their value chain to drive efficiencies, reduce emissions, and design out waste. Pairing that record system with the *Enterprise Resource Planning (ERP)* platform can enable companies to populate data and manage the supply chain more efficiently.

Following the new requirements of the oil and gas industry, some energy companies have already started to pivot a huge part of their investment to production of renewables and have depreciated or divested some of their oil assets. Large corporations such as Shell, bp, and Chevron, and others operating in Kazakhstan, have launched ambitious action plans. With the right technology, innovative approach, and strategic planning in place, energy companies can pivot rapidly to meet changing market demands and circumstances and achieve their sustainability goals.

Shell is an outstanding example with their commitment to the *Goal Zero* ambition of “no harm and no leaks” that feeds into broader initiatives like the *U.N. Sustainable Development Goals*. Shell turned to a mobile-friendly, integrated ESG and risk management platform, powered by *Microsoft Azure*, to improve the company's already robust safety performance metrics. By leveraging the additional capabilities, Shell has advanced its safety initiatives

through a streamlined, intuitive event-management process that offers an efficient way to capture quality health, security, safety and environmental data to drive learnings and help prevent incidents.

Microsoft's Intelligent Data Platform that bp introduced as part of a strategic partnership with Microsoft, brings together data from multiple cloud and on-premises sources, with *Azure Synapse*, advanced analytics, and *IoT* services to accelerate production of data products and train AI and machine learning models at scale. These capabilities also help bp track and manage carbon emissions and support its ambition to become a net zero company by 2050 or sooner and help the world achieve a net zero status.

With the right technology in place, an innovative approach and strategic planning, energy companies can pivot rapidly to meet changing market demands and circumstances and achieve their sustainability goals.



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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.

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.



AN INNOVATIVE, COST EFFECTIVE AND ZERO FLARING SOLUTION TO CLEAN UP AND START UP NEW WELLS – THE VITAL STEP TOWARDS A NET ZERO CARBON FOOTPRINT

by Beibit Akbayev
Caspian Reservoir Domain
Schlumberger

Production and processing of hydrocarbons comes with significant responsibility regarding environmental protection. In line with the global commitment from most countries to reduce the overall carbon footprint, as per the *Paris Agreement*, oil and gas producers have made it one of their top priorities to minimize environmental impact while maintaining their status as a reliable source of energy for the world. Therefore, flaring has received significant attention recently and has become a major concern for many operators today. One of the main contributors to hydrocarbon flaring is well clean-up operations, where traditionally oil and gas are disposed by flaring at the wellsite.

In general, all the wells need to be clean-up or flowed-back – at least once after drilling and completion and potentially after some workover operations. Performing a clean-up involves removing unwanted fluids from the wellbore and the near-wellbore zone of the reservoir by utilizing a combination of direct mechanical displacement through completions (permanent or temporary), intervention with coil tubing or using gas lift valves, and formation fluids flow.

The main goal of clean-up operations is to achieve specified production criteria, such as solids and water content so the wells production can be directed to the production gathering system. Often, in the case of significant fluid losses into the formation, clean-up operations can also be performed after a work-over operation.

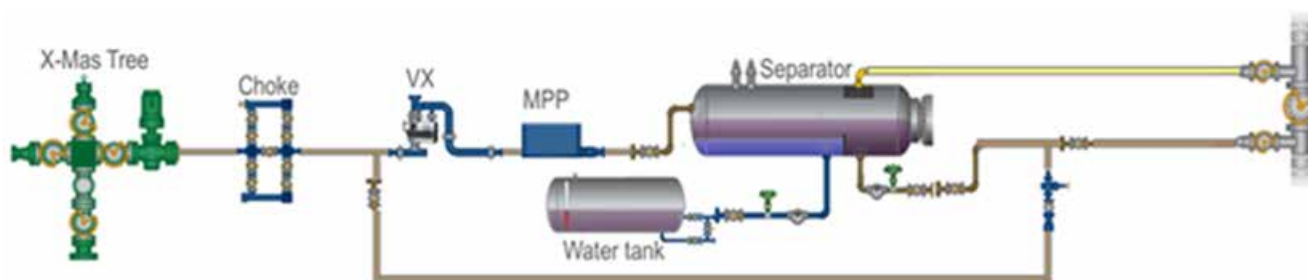
Quite often, the production facilities are not designed to handle fluids lost during drilling, completion and stimulation, meaning that wells cannot be cleaned-up to production plant. Therefore, wells are flowed to the

temporary surface well-test / clean-up equipment at the wellsite. This package can safely separate fluids, perform flowrate measurement, and direct unwanted fluids to disposal tanks and flare hydrocarbons until an acceptable clean up criteria are met.

A common alternative to flaring is to store the crude in tanks and/or pump crude into production lines, if available. However, the associated gas is typically flared off, as using gas compressors to inject gas into production line is extremely cost-intensive and operationally complex. As an alternative, fit for purpose solution, a specifically designed pump to handle clean-up operations and combined with a high-pressure surface well-testing package proved to be a successful, innovative and cost-effective solution to bring new wells to production without gas flaring.

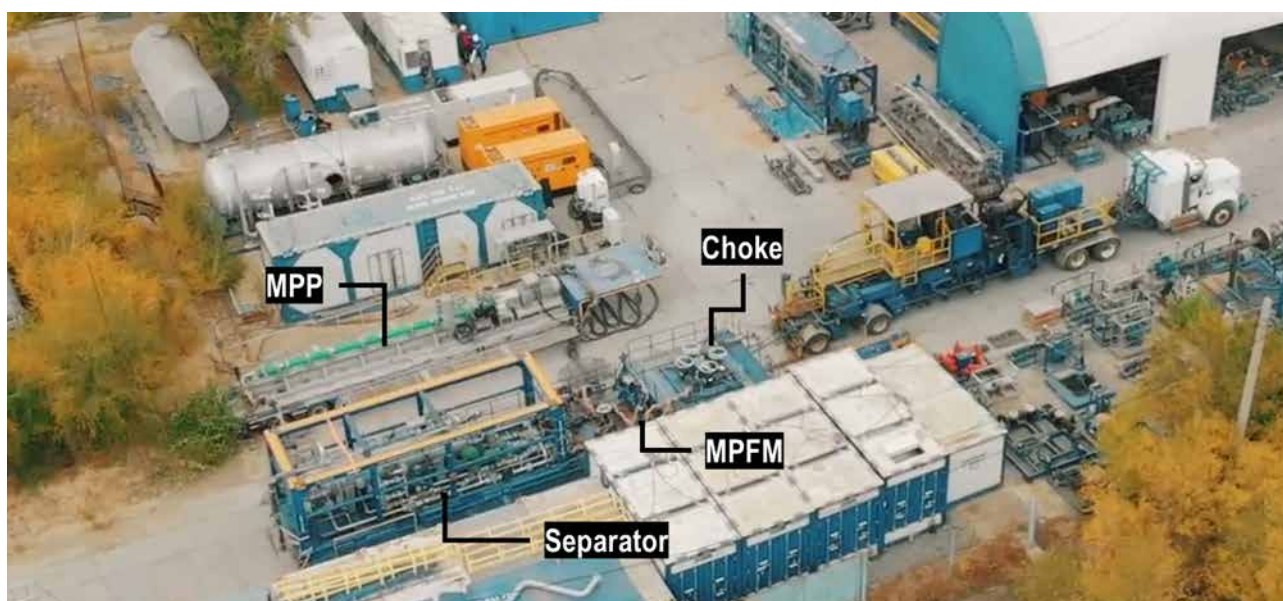
The solution for a zero-flaring package consisted of the choke manifold to control the well and the multiphase pump to boost the pressure by pushing the flow into 3-phase separator where fluids are separated. Water goes to water tank while oil and gas are recombined and flow into the production flowline thanks to elevated pressure inside the separator. The multiphase flowmeter (VX MPFM) is rigged up at the inlet of the multi-phase pump and measures flowrates with high accuracy and frequency up to every 10 seconds. It allows monitoring gas-volume-fraction at the inlet of the multi-phase pump in real time, thus ensuring the pump operates within the optimum operating range.

The liquid re-circulation line from the separator oil outlet introduces additional liquid during gas slugs, reducing gas-volume-fraction at the inlet of the multiphase pump. This setup combining multiphase pump together with surface testing equipment extends the operating envelope of the pump and the operating range to handle up to 100% gas-volume-fraction at the surface. This ultimate solution did not require flaring even when wellhead pressures were lower than production flowline pressure.



This method does not require any hydrocarbon flaring, thereby drastically reducing emissions for well clean-up and start-up operations, resulting in a very significant and measurable positive environmental impact. The pumps proved reliable and fit for purpose, by tolerating high gas-volume-fraction (GVF) conditions and unstable flow, which is vital for clean-up operations. In addition, the setup proved an efficient pressure-boosting package to gain additional production by overcoming high backpressure from the production lines network.

This Zero flaring solution was implemented for the first time in the world in Kazakhstan. It has proven a cost-effective and reliable solution to clean up wells after acid stimulation without any flaring. This innovative technology was enabled due to integration of surface testing and artificial lift systems. It has become a vital step towards the *Net Zero Carbon Footprint* goal of our oil and gas industry.



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FLUOR – 30 YEARS' CONTRIBUTION TO KAZAKHSTAN'S DEVELOPMENT

by Robert Moore
General Manager
Fluor Kazakhstan

For more than thirty years, Fluor has been active in Kazakhstan, working on projects that have shaped the oil and gas industry and in turn shaped the economic development of the country. Since emerging as an independent nation in 1991, the development of Kazakhstan has been underpinned by the growth of the oil sector. Fluor is proud to have made a contribution to that development.

As far back as 1989 and through the early nineties, Fluor worked with Chevron on a number of studies focused on establishing the viability of new field development in the North-East Caspian basin and also of the Tengiz field. As the nineties progressed Fluor continued to work on a number of studies, pre-FEEDs and FEEDs, covering various field developments and crude oil export facilities.

In the late nineties Fluor was awarded and subsequently executed the *Program 12 Project* by Tengizchevroil (TCO) that targeted the enhancement of the *Tengiz LPG* processing facilities. As the *EPCM* contractor, Fluor continued the ongoing development of its in-country knowledge. Around the same time, Fluor also performed detailed design and management services for the CPC pipeline project, which is critical for the export of crude oil from the main Kazakh oil fields. To this day, Fluor still retains national employees who worked on these projects.

With the completion of these projects in 2001, another chapter in Fluor's contribution to Kazakhstan's development drew to a close. The next chapter would represent a significant expansion in Fluor's presence in Kazakhstan with the commencement of Fluor's involvement in TCO's *Second Generation Project (SGP/SGI)* in 2002. Representing a substantial expansion in capacity at Tengiz the *SGP/SGI* project provided a major opportunity for Fluor to develop a cadre of national employees that would be key for Kazakhstan to reduce its use of foreign workers. While engineers were provided training and development in Atyrau and Fluor's international offices, craft workers were supported through the establishment of a craft training center in Atyrau.

Following completion of the *SGP/SGI* project in 2008 there was a recognition within Fluor of the vast potential Kazakhstan had both in terms of skilled personnel and potential work. The appreciation that a permanent presence was essential, led to the establishment of Fluor Kazakhstan in 2009.



In 2011, Fluor as lead for the *PJV/KPJV* was awarded the FEED for the FGP WPMP mega project. This mega project, which subsequently moved into the *EPCm* phase and continues to this day, has provided a substantial platform to grow and develop Fluor's in-country capabilities. At the time of writing, Fluor has around 180 Kazakh personnel working on this project between Atyrau and the site in Tengiz. Spread across engineering, procurement, contracts, construction, project controls and other support disciplines, these individuals have gained valuable experience working in an international environment with which to grow their careers.

2013 saw the establishment of Fluor's first permanent office in Atyrau with the opening of a purpose-built facility for 500 people. Since that point Fluor has continued to participate in major projects that have defined development of the oil and gas sector in Kazakhstan. Over the last ten years Fluor has held engineering service contracts with three of the major operators in Kazakhstan. *TCO*, *NCOC*, and *Karachaganak Petroleum Operations (KPO)* are all run from the Atyrau office. Major work scopes have also been executed for TCO on the *SGR* and *CAR* projects.

Being a long-standing and established member of Kazakhstan's oil and gas sector now for many years as discussed above, brings with it a responsibility to make a contribution to the community at large and not just to the development of our client's assets. This is about creating a sustainable future and being a responsible citizen. Fluor has a clear understanding of this responsibility and takes this seriously. This requires a clear approach to skills and knowledge transfer, while ensuring those who cannot benefit from this are not forgotten. Fluor has taken a multi-faceted approach to this looking to engage with as many people as possible.

Fluor seeks to reach people be they:

- *Children progressing through school education*
- *University students*
- *Craft labour supporting the construction industry*
- *Professional engineers growing their careers*

- *Less fortunate members of society unable to directly benefit from the prosperity the oil and gas industry has brought to Kazakhstan*

It is often said that a nation's greatest asset is its children, and children once they have a passion awakened for something, will often pursue that for many years, through school, university and into a career.

Working with schools in the Atyrau region, Fluor has had senior engineers go into local schools and provide an overview and information, not only on what is being done in Kazakhstan but also on the role of an engineer. Fluor has also brought school children into the Atyrau office to have them gain an understanding of exactly what a day in the life of an engineer is like and to see the capabilities of 3D design tools.

Over the years that Fluor has been active in Kazakhstan, Fluor has found a tremendous benefit in working with leading academic institutes to build on this passion, to encourage prospective engineers and support these institutions in their work. Since 2006 Fluor has enjoyed a close relationship with *Satbayev University* in Almaty, commencing with establishment of the *Fluor Chemical Technology Centre* in the same year. This Center was fully upgraded in 2013 with new software, hardware and laboratory equipment. Since then there has continued to be mutual co-operation. Since 2013, bursaries have been provided to three students each year. Regular donations of further laboratory equipment and software upgrades have continued. This year an additional donation was made by Fluor to support refurbishment of a training camp and laboratory at *Kapshagay Lake*.

Closer to Fluor's base in Atyrau, since 2010 Fluor has enjoyed a similar relationship with Atyrau's prestigious university, the *Atyrau Oil and Gas University*. Following a similar pattern to that with *Satbayev University*, Fluor has provided bursaries and donations of equipment.

As these relationships have developed, Fluor has recognized that contributions to the development of Kazakhs through the educational system should be more than just financial. Of equal, if not greater importance is the contribution by experienced, qualified experts from within Fluor through delivering lectures and being available to discuss a career in the oil and gas industry with prospective entrants. Over the years, a number of Fluor's senior staff have visited these universities to deliver lectures on a variety of relevant subjects including *LNG Technology, Process Technology* and *Project Development*.

One such example is Nick Amott who, until his recent retirement, was one of only twenty Senior Technical Fellows in Fluor and a visiting lecturer at the *University of Surrey* in the UK. Nick had a great passion for support of Fluor's university program in Kazakhstan. As Nick said "*One of my continuing passions is involvement with universities in Kazakhstan. Facilities that are part and parcel of a UK university were not available to them. We've been able to provide chemical technology students with additional skill and exposure to the tools (such as computer aided design) required to secure jobs with western oil and gas companies operating in Kazakhstan.*"

Linking companies such as Fluor with the university system in Kazakhstan brings other benefits to the universities. The universities gain a fuller understanding of the type of graduates needed in industry and the skills required. Fluor has found the universities very proactive in trying to shape their students for industry needs. The success of this is demonstrated by an internship program in which more than one hundred students have participated, resulting in nearly fifty graduates currently working for Fluor.

In 2003 with the start of the *SGP/SGI Program* in Tengiz under Fluor's construction management it was recognized by all parties that the success of the project would in part be dictated by the ability of the contractors to mobilize sufficient Kazakh workers and have them work safely and productively. During the project more than 3,500 workers were trained at the *Atyrau Craft Training Facility*. This became a critical factor in delivering the project. Many of the craft and site teams went on to be valued and in demand resources throughout Kazakhstan.

With the *Future Growth Project* the demand for craft labour would be even higher and even more important than on SGP. Within a TCO integrated team, Fluor provided the planning and systems to support the roll-out of an aggressive training program. The key statistics of this program since its creation in 2018 are impressive:

- *19 craft training centres have been established and assured to a common standard*
- *Over three million safe training hours have been completed*
- *29,327 people have successfully completed their skills assessment*
- *23,780 people have successfully completed training courses*

- *1,902 unemployed citizens have been found suitable training courses and of these, 1060 have successfully found employment*

This training program will provide a legacy for the future development of Kazakhstan, increasing the capacity of in-country skilled labor while reducing the need for expatriate labor.

Equally important as the training and development of craft labor has been the training, growth and development of Kazakh employees within Fluor. Fluor has seen it as an imperative to develop a cadre of national engineers and personnel. A testimony to the success of this has been the continued nationalization of positions within Fluor Kazakhstan and also on the *Future Growth Project* as mentioned above. As of today, all but one of Fluor's Kazakhstan department managers are Kazakh, while on the *Future Growth Project* in excess of 30 Fluor nationals have replaced expatriate employees.

With training and development opportunities recognized as a key factor in employee retention, the significant numbers of employees who have been with Fluor Kazakhstan for over five years speaks for the success of this effort. Over the last 8 years, more than 31,000 hours of formal training has been completed by Fluor Kazakhstan employees. Over and above these hours there have been a number of assignments to Fluor offices outside of Kazakhstan to strengthen technical skills and gain international experience.

At the heart of the training made available to Fluor's Kazakh employees, is *Fluor University*. Comprising over 34,000 courses covering a mixture of technical and support disciplines, this online tool provides employees with the resources to progress in and take ownership of their career development. In addition to the online training, all Kazakh employees have access to Fluor's global training allowing them to participate in overseas training courses with employees from other Fluor offices. These include courses such as a *5-Day Project Management Bootcamp* and *Fluor Leadership Summit*.

Fluor annually nominates Kazakh employees to a 12-month distance learning program developed by the *Harvard Business School* entitled *Harvard New Leaders*. Since its introduction six years ago, thirty-two Kazakh employees have taken the course. Fluor seeks to provide training opportunities to all our employees irrespective of their role, location, or nationality.

Over the years since Fluor has become established in Kazakhstan. Through our corporate-wide program



"FluorCares" Fluor has sought to engage with the local community to provide support and contribute to a sustainable future. Specifically, *"FluorCares"* provides funding to support local community projects and initiatives independent of specific projects or clients. Fluor works closely with the *Atyrau Department of Employment and Social Programs* to ensure support goes to those in most need. In the past Fluor has focused on four main areas: support for the disabled; support for low-income families; education and the environment.

In addition to supporting specific causes, Fluor has regularly contributed to a number of causes such as:

- *Meal provision for low-income families*
- *New Year gifts to children from low-income families*
- *Backpacks with essential school materials*
- *Walking Harnesses for the Atyrau Rehabilitation Centre for children suffering from cerebral palsy*
- *Playground for disabled children at the Kulsary Rehabilitation Centre*
- *Atyrau Blind Society*
- *Provision of logistical assistance to Atyrau's medical services during the CV-19 Pandemic*

All of these are undertaken with a genuine commitment to put back into society for those that need it most.

After more than twenty years of near full-time presence in Kazakhstan supporting the development of our clients, employees and society in which we live and work, Fluor looks forward to maintaining this presence and continuing the work of supporting Kazakhstan to sustainably develop its country and its most valuable asset, its people.

COLLABORATION AND INNOVATION WITH HALLIBURTON IN KAZAKHSTAN

By Deepak Khurana
Senior Area Manager
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 Deepak Khurana, Halliburton senior 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.

VYSUS GROUP SUPPORTS ENERGY TRANSITION AND EFFICIENCY

The foundations for growth in Kazakhstan

As an organisation with a worldwide presence, Vysus Group is well-versed in assisting leading energy names to navigate the current turbulent landscape. Taking an integrated and holistic view, Vysus Group utilises decades of collective experience drawn from its Lloyd's Register (LR) heritage and its enviable track record of finding solutions to complex engineering challenges around the globe.

In recent years, Vysus Group has been prominent within Kazakhstan's evolving energy sector and has been a significant contributor to the foundations of economic and industrial development within the region.

Like most countries, Kazakhstan is looking to the future. A future where its policymakers can be confident that domestic and industrial consumers have enough power to meet their needs, where energy can be supplied by friendly allies, and where the environment is not left to suffer at the hands of climate change. That future is a work-in-progress, but one that is far from being unattainable.

Traditionally one of the world's significant producers and exporters of fossil fuels, Kazakhstan is evolving quickly into a renewable energy producer of electricity. A review by the *International Energy Agency* earlier this year noted Kazakhstan's "ambitious" renewable energy plans, but warned that its historic reliance on coal coupled with limited opportunities for generation may put those aspirations at risk. Add in the invasion of Ukraine by its neighbour, Russia, and caution about the future of Kazakhstan's energy landscape appears to be warranted.

But major strides have been taken.

Just days ago, on 22 August, the *Eurasian Resources Group (ERG)* announced plans to invest around 230million USD in a new wind farm near the town of Khromtau in the Aktobe region, where *ERG* itself originates from. According to *Energy Global*, the facility is *ERG*'s first proprietary wind farm and a cornerstone of its sustainability ambitions.

In many ways, the *ERG* project draws parallels with the Vysus Group story. Formed in 2020 after a strategic carve-out of LR, which itself held a prosperous working partnership with Kazakhstan for several years, Vysus Group leverages its heritage and progressive methodology to deliver innovative solutions to a whole range of complex challenges. Whilst still operating under the LR brand, Vysus



Group's technical team supported renewable energy specialist 3E in its plan to construct a new 50MW onshore wind facility, Shevchenko, near the town of Aktau in Eastern Kazakhstan.

Detailed analysis of wind data gathered from the site was used to inform decisions on the range of technical characteristics that Shevchenko would require if 3E was to maximise output potential and, indeed, its return on investment. From the analysis, it was possible to determine the recommended turbine type and layout, in order to minimise the likelihood of turbulence-induced fatigue and, latterly, mechanical failures. It was also possible to calculate energy production over Shevchenko's entire lifecycle and an accompanying confidence level for that figure.

A strong base to build from would prove to be essential if Kazakhstan's renewable energy ambitions were to be successfully reached. This has meant examining what is already in place and how it can be utilised to its full potential.

Vysus Group's asset integrity management capabilities have been essential in providing the clearest possible picture as to what Kazakhstan and other territories can accomplish with the tools and technologies already at their disposal. A case point is the long-standing relationship the company has forged with a major local operator.

The local operator, one of the leading energy producers in Kazakhstan, first started working with Vysus Group to support the installation of *risk-based inspection (RBI)* software at its existing facility along the northeastern shores of the Caspian Sea. As the relationship flourished, the operator explored the potential of using the same *RBI* tool as part of its new-build facility, which aims to increase daily oil production and, crucially, improve the efficiency of resource recovery.

Additionally, Vysus Group is heavily involved, even expanding its involvement with local operators significantly since 2018, with two teams delivering a detailed *damage mechanism identification (DMI)* project. The teams – one offsite at Vysus Group's hub in Rotterdam, Netherlands, and one onsite in Kazakhstan – consist of integrity engineers, inspectors, corrosion engineers, *AutoCAD* service operations and project management professionals. As the project has expanded, so has the size of both these groups to suit the need to deliver as per requirements.

Tied in with practical advancements is the need for a skilled workforce. International companies like Vysus Group have been actively developing the engineering and management capabilities of the local population, ensuring that as the energy ambitions grow, the people of Kazakhstan can grow with it.

In the last seven years Vysus Group has significantly invested in balancing the workforce, resulting in an increase from 70% of local positions being held by Kazakhstani nationals to 92%. While support for the new-build facility significant work is delivered remotely due to specific engineering knowledge requirements, following the hand-over activities from new-build to normal operations, engineering positions will be fulfilled by local Kazakhstanis. This is particularly important to note.

As the oil market began to recover from the Covid-19 crash, Vysus Group noted a pattern of facility crew competency levels hindering drilling campaigns. Traditionally, the oil & gas workforce has, for want of a better word, been transitional as a result of evolving market conditions, acquisitional activity, and regulatory changes. Within such a turbulent environment, it is often the case that management systems used by drilling contractors soon get left behind, resulting in critical job functions being filled without the necessary levels of competence or training.

For Kazakhstan (and indeed the rest of the world) to be confident in transitioning from fossil fuels to renewable sources, there needs to be a support network with the relevant technical knowhow in place. Financial investment in developing facilities like Shevchenko and the *ERG* facility, while important, needs to filter down to training operatives and engineers, at a local grassroots level.

Shevchenko also highlights the critical role of optimization modeling in building confidence within the investor community itself. Being able to provide tangible data and other critical information has always been fundamental in energy production – now it can

be used to secure a place for renewables in regions like Kazakhstan, which had previously relied almost entirely on fossil fuels.

Even more importantly, a strong renewable energy sector is set to provide Kazakhstan with a vital export resource. Having already forged links through coal, Kazakhstan has an opportunity to use these as its renewable energy output grows. Economic growth here can then be harnessed in maintaining asset integrity and devising rigorous inspection and safety protocols.

Many of the capabilities within oil & gas, for example, also exist to some degree within renewables. That's not to say that an engineer who has spent the past 20 years within the former will adapt quickly to the requirements at, say, a wind farm. If Kazakhstan's bold ambitions are to come to fruition, developing people has become a top priority. Skills are essential, of course, but there is the need for wider education surrounding safe operations and the reams of legislation that renewable energy will be subject to as growth continues.

This has been demonstrated through the expertise *Vysus Group's ModuSpec* division introduces. As assets are redeployed and reconfigured for the new energy make-up, compliance requirements will also change. As an example, an offshore rig operating on the UK Continental Shelf in the North Sea has a different, but no less important, set of regulations than in, say, the US, Africa, or the Caspian Sea. Workers that will follow the asset, themselves, will need to be fully up to speed with these regulations.



As renewable energy evolves, the need for efficient processes increases. It is a challenge that all countries will face to one degree or another, particularly when economic development is a factor. As Vysus Group has witnessed on numerous occasions, even the slightest improvement in efficiency can go a long way, all the way through to the consumer.

The *IEA's World Energy Investment Report* reveals that investment is set to pick up by around 8% in 2022, equivalent to some 2.4trillion USD, as efforts to curtail the global energy crisis continue. The report also references that end-use efficiency is one area that has seen a particular investment upturn in recent years.

A separate report by the *IEA*, in partnership with the European Union, examined Kazakhstan's energy landscape against a 2015 benchmark, in line with the Paris Agreement. It referenced the need for Kazakhstan to "raise awareness of available mechanisms and incentives for energy savings, with particular emphasis on the buildings, residential and transport sectors."

The report goes on to praise Kazakhstan's efforts in reaching its 2020 goal of renewables accounting for 3% of its electricity production. However, there is a risk of higher economic growth leading to a rise in energy related CO2 emissions.

Getting this most precarious of balances right will be the result of significant collaboration between industry, policymakers, and technical professionals. Drawing on its expertise in other areas of the world, Vysus Group is in a prime position to lead that conversation, particularly when it comes to maintaining the longevity of renewable energy facilities.

It is here where Kazakhstan can build a reputation as a country that prides itself on the quality of its future energy framework; one that operates efficiently and maintains output even amidst market turbulence. Consequentially, maintaining integrity of the assets will be essential components for demonstrating the potential for clean energy within Kazakhstan's territory.

Once seen as one of the leaders in the fossil fuel arena, Kazakhstan has every opportunity to forge a new path in clean energy. A clear commitment by policymakers and the backing from organisations such as Vysus Group are two critical elements of that formula for success. Developing the skill and ambition of the Kazakhstani population is the third, and most important element for success.



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GRATA INTERNATIONAL CELEBRATES ITS 30TH ANNIVERSARY IN 2022 INTERVIEW WITH ALMAT DAUMOV, GRATA PARTNER (KAZAKHSTAN)

This year you are participating in the KIOGE international conference. The conference program is rich and the topics are crucial. In particular, new scenarios for the development of Kazakhstan's oil and gas industry will be discussed. What issues do you plan to cover in your speech?

Grata has been actively cooperating with KIOGE since its launch in Kazakhstan. This year is KIOGE's 28th conference and GRATA is celebrating its 30th anniversary.

I am participating as a moderator of the session dedicated to identifying new opportunities for exploration and production. All countries have been struggling for investment for a long time. While earlier investors waited in line to invest in countries rich in natural resources, now the governments and presidents of these countries are fighting to attract investment.

Both local and foreign investors regard the stability of the legal regime and government policy as a crucial indicator of a favourable investment climate. This is what my speech will address at the conference.

What issues are of most interest to Grata clients?

As a rule, we work with foreign investors and large local companies whose plans and investments are always long-term. After all, a truly high-quality investor comes to Kazakhstan with a project not for a year or two, but for 10-20-30 years or more. The financial model of any investment project of this duration is calculated on the assumption that the government will act consistently and predictably towards the investor.

Therefore, we feel like investors are most concerned about the stability of government regulation in the oil and gas industry. The most vital issues are the stability of tax policy and environmental regulation, as well as relations between the government and investors within the framework of subsoil use contracts.

Can you present an example for a better understanding of the issues that may arise for investors?

The topical issues can be conditionally divided into two blocks. The first block is the policy of government and investment legislation. The second block covers law enforcement.

We need predictability for legislative issues. However, unfortunately the practice in Kazakhstan of so-called 'urgent' bills is considered standard. The government can present legislative amendments unexpectedly. Amendments are rarely discussed with investors whose interests will be affected. Moreover, Parliament often adopts them quickly.

A vivid example is the recent amendments to the Tax Code increasing the rates of the *mineral extraction tax (MET)* for the mining sector. The amendments to increase the MET by 50% were adopted by the Government and the Parliament within 3 months. The 50% tax rate increase itself will be felt by investors as a 'dramatic' change. Moreover, when this is done within 2-3 months without a detailed analysis of the consequences,

investors who expect consistency and predictability from Kazakhstan are concerned.

There are also questions regarding law enforcement. There are often cases when subsoil users have been negotiating their new investment obligations, work programs, and related additions to subsoil use contracts for years, attending working groups, and receiving approvals from various government agencies. This prevents investors from fulfilling the licensing and contractual requirements on time because it may take one-two years before all the final approvals are received. On the one hand, as a party to a subsoil use contract, the competent authority understands perfectly well the reasons for the subsoil user's failure to perform contractual obligations. On the other hand, as a regulator, the competent authority may collect fines from subsoil users for their failure to perform contractual obligations.

What measures would help solve the problems you've mentioned?

We need systemic change that will not only solve investors' current difficulties, but also prevent difficulties in future.

First, we need to change the approach to investors. The subsoil belongs to the people of Kazakhstan. This was clarified in the latest amendments to the Constitution. The *Ministry of Energy*, on behalf of the people of Kazakhstan, provides the subsoil for use by investors (subsoil users). The investor mines natural resources as the government's contractor - not only in the investors' own interests, but also in the interests of the people of Kazakhstan. Therefore, when investors spend months, even years negotiating work programs with the government, not only the investor loses, but the country's citizens do as well. For this reason, each ministry, committee or other government agency should aim to provide maximum assistance to investors without needless bureaucracy.

Second, clear rules should be created to stabilise investment legislation or at least to protect it from frequent ill-conceived changes and amendments. The procedure for amending any laws affecting the rights of investors needs to be tightened. Significant changes in taxation must undergo a detailed approval process similar to the *Regulatory Impact Assessment (RIA)* process. This should be required in Kazakhstan's Business Code. Business associations and other business bodies should be able to actively participate in this assessment.

Third, interdepartmental coordination between government agencies must be perfected, both in working with investors and in legislative initiatives. For instance, tax changes in a particular industry cannot be developed and adopted without involving this industry's competent authority. This means tax increase for the mining sector shouldn't be introduced without involving Kazakhstan's *Ministry of Industry and Infrastructure Development*. Similarly, taxation changes in the oil and gas sector should not be adopted without the *Ministry of Energy*. It is the sectoral ministries that best understand the problems, risks, and nuances of a particular industry and can help avoid negative impact on the industry.

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U.S. CONSUL GENERAL CAROLINE SAVAGE - AMCHAM SEPTEMBER BRT LUNCHEON GUEST SPEAKER

When we last spoke about sanctions at an AmCham lunch on March 15 the scale of Ukraine's resistance was just becoming evident. I am heartened by the continuing bravery of the Ukrainian people and congratulate them on their Independence Day last week. Russia's war on Ukraine is a stark reminder for all of us that independence is hard won and never guaranteed, and the world must stand together to oppose those who seek to upend our global order.

We understand that many remain concerned about the impact of sanctions here in Kazakhstan, so I want to reiterate: the United States' sanctions are in response to Russia's unjustified and unprovoked war against Ukraine. These economic sanctions and export controls are specifically designed to minimize negative impacts on allies and partners, including Kazakhstan. We recognize that Kazakhstan remains economically intertwined with Russia and as a result, the U.S. government has taken many steps to help minimize the impact of these sanctions on the U.S. and partner economies.

Kazakhstan may be unique in the amount of positive attention it has received from the U.S. government in this area. The U.S. Treasury has issued multiple licenses for *Sberbank/Kazakhstan*; it also removed *Alfa-Bank's Kazakhstani* subsidiary from its list of *Specially Designated Nationals* (aka the "SDN List") in June following its purchase and rebranding by *Bank Center Credit*. Perhaps most importantly for many AmCham members here today, Treasury issued a *Frequently Asked Question* clarifying that the *Caspian Pipeline Consortium*, and its oil of Kazakhstani origin, are not sanctioned.

We also continue to work hard with our Kazakhstani partners to ensure that both the government and businesses understand what our sanctions are...and what they are not. I know that export controls can be very complicated, and so U.S. government experts are making a series of intensive outreach efforts to provide Kazakhstan, its businesses, and its people, with the tools to help guide it through these rough waters.

Sanctions are constantly changing, and I would encourage you and your companies to remain vigilant and conduct due diligence when engaging in trade and transactions with Russia and Belarus. The United States, in close coordination with Allies and partners, will seek out those who finance, significantly support, or carry out malign activities that support Russia's pre-meditated and unprovoked war against Ukraine. This includes those who assist sanctioned persons and entities in efforts to evade sanctions. We remain similarly committed to countering those who illegally export controlled items to Russia and Belarus.

However, while our export controls are expansive, they do not include every U.S. origin product nor every destination. Similarly, while our Treasury has added almost 1,200 individuals and entities to its SDN, only a few of those entities are Kazakhstani—such as *VTB* and *Sberbank's* local subsidiaries and *Sber Vostok*. Millions of Russian businesses and citizens are not sanctioned. As a result, while we urge you to be cautious in your dealings with Russia, we discourage businesses from practicing "over-compliance" or "self-sanctioning" legitimate trade and transactions with Kazakhstan. You can do business in Kazakhstan with little sanctions risk.



AMCHAM SEPTEMBER AKTAU SUNDOWNER SPONSORED BY NVENT (RAYCHEM)

Continuing this year's resumption of AmCham Sundowners in the Caspian region, following on the Almaty and Nur-Sultan Sundowners held earlier this year, AmCham organized an Aktau Sundowner together with nVent (RAYCHEM), an active member providing services to a broad range of industries, but above all to the Oil & Gas industry in Kazakhstan. The Sundowner was held on Friday evening, September 16, at the Renaissance Aktau Hotel – always an AmCham favorite together with the Renaissance Atyrau Hotel - for all AmCham events in the Caspian region.

The Sundowner had the largest and most diverse registration and attendance to date over the 15 years AmCham has held Sundowners at the Renaissance Hotel – 75 registered members and guests who enjoyed themselves immensely, as well as networking for future business collaboration. The Hotel's new General Manager, Valery Egorkin, also attended the Sundowner, mixing with the guests and ensuring an excellent dinner and drinks for as long as the guests wished to stay.

nVent was represented by Ilya Krotikov, who heads the regional nVent office in Moscow, and Peter Butterworth, the regional business development director based in Aktau. Both regional leaders delivered an overview of nVent's history beginning with its creation from RAYCHEM.

American in origin, nVent is a global manufacturer of RAYCHEM heat tracing products and leads in thermal management. It does business predominantly in the industrial sector, specifically petrochemical, oil and gas, and mining and marine. Some examples of their services include pipe freezing protections, maintenance of process temperatures, pipeline heating, and tank and vessel heating. They also provide heat tracing products in building and infrastructure solutions for hotels, civil buildings, and homes. This year, nVent is celebrating its 50th anniversary of inventing their self-regulating heating technology.

nVent RAYCHEM has a global network that includes 9 major operating locations, 40 sales, distribution, engineering and project service locations, and 4 Regional Headquarters, with the Caspian HQ located in Atyrau. The Caspian HQ manages cross-border projects in Azerbaijan, Kyrgyzstan and Uzbekistan. In Kazakhstan, nVent has expanded since 2004 to include 3 support offices in Aksai, Karaganda, and Almaty to cope with increasing demand.

nVent products focus on electrical heating cables, advanced control and monitoring of systems, and engineered and specialty solutions for the company's two markets: industrial and building/ infrastructure solutions. Additionally, nVent offers 4 levels of services in engineering procurement, construction and management, and manufacturing/supply. Locally, nVent RAYCHEM has completed over 150 industrial projects since 2005.



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.

Honeywell



Uygar Doyuran Appointed President, Honeywell Turkey, Israel & Central Asia

Uygar Doyuran was appointed President of the High Growth Regions, Israel, Turkey & Central Asia (Kazakhstan, Azerbaijan, Georgia, Tajikistan, Turkmenistan Uzbekistan), effective April 19, 2021. He is responsible for developing Honeywell's business across Turkey and Central Asia. Honeywell provides advanced solutions in Aerospace, the Petrochemical Industry, Building Technologies, and Safety and Productivity Technologies.

Uygar Doyuran brings extensive experience to transforming large enterprises and industrial companies by leveraging digital technologies and new business models. He has hands-on leadership experience in commercial business and service delivery in various vertical industries across healthcare, manufacturing, energy, finance, retail, education and consumer electronics. Prior to joining Honeywell, he served as General Manager of GE Digital Turkey, where he led the transformation of large enterprises and industrial companies through digital technologies and new business models.

Uygar Doyuran holds undergraduate and Master's degrees in Electrical and Electronics Engineering from the Middle East Technical University.

MEMBER NEWS

Schlumberger



Marina Trinca Vespan Appointed Schlumberger Director for Kazakhstan and Uzbekistan

Marina Trinca Vespan was appointed Managing Director for Schlumberger Kazakhstan and Uzbekistan in May 2022. She has more than twenty years of experience in technical, sales, and managerial positions for the Oil & Gas industry. She has held a variety of professional assignments covering different management positions for Schlumberger in a broad geography that includes Europe, Africa and North America.

Prior to her current position Marina Vespan served as Digital Vice President for the Western Hemisphere and led significant digital transformation projects around the region as well as being actively involved in implementing programs to develop the digital capabilities of her various teams.

Marina Trinca Vespan holds an MBA degree (2005) from the Open University in the United Kingdom and an Economics degree (1997) from the Academy of Economics in Bucharest, Romania.

HALLIBURTON



Deepak Khurana Appointed Senior Area Manager, Halliburton Caspian East Operations

Deepak Khurana has been appointed Senior Area Manager for Halliburton Caspian East Operations based in Atyrau, Kazakhstan. In this role, he will be responsible for Halliburton service lines and cross-functional teams in Kazakhstan, Turkmenistan, and Uzbekistan. Prior to this appointment, he served as Senior Area Manager for Halliburton Eastern Europe.

Deepak Khurana began his career in 2003 as a Field Engineer in Canada. During his time with Halliburton, he has held a number of positions of increasing responsibility including Senior PSL Area Manager for Central Asia, Global Account Manager in France, and Senior Business Development Manager for the UK and Continental Europe.

Deepak Khurana holds a Bachelor's degree in Mechanical Engineering from the University of Alberta. His international experience includes technical, operational and management roles in North America, Asia Pacific, Middle East, Europe and Africa.

ADVOCACY UPDATE

AUGUST – SEPTEMBER 2022

The AmCham autumn advocacy plan is still in a preliminary stage, but events move quickly these days and there is no shortage of challenges to tackle for AmCham members.

The summer AmCham Council session (*the AmCham-Prime Minister's Council to Improve the Investment Climate*) was devoted to an examination of the impact of the secondary (spillover) sanctions on Kazakhstan's business operations and investment climate. The major focus by the Council's diplomatic speakers, international financial institutions, and corporate speakers was on cross-border trade complications and the obstacles to logistics and traditional transport routes. A search for new trade corridors to receive and deliver products east and west through Europe and Asia was the priority.

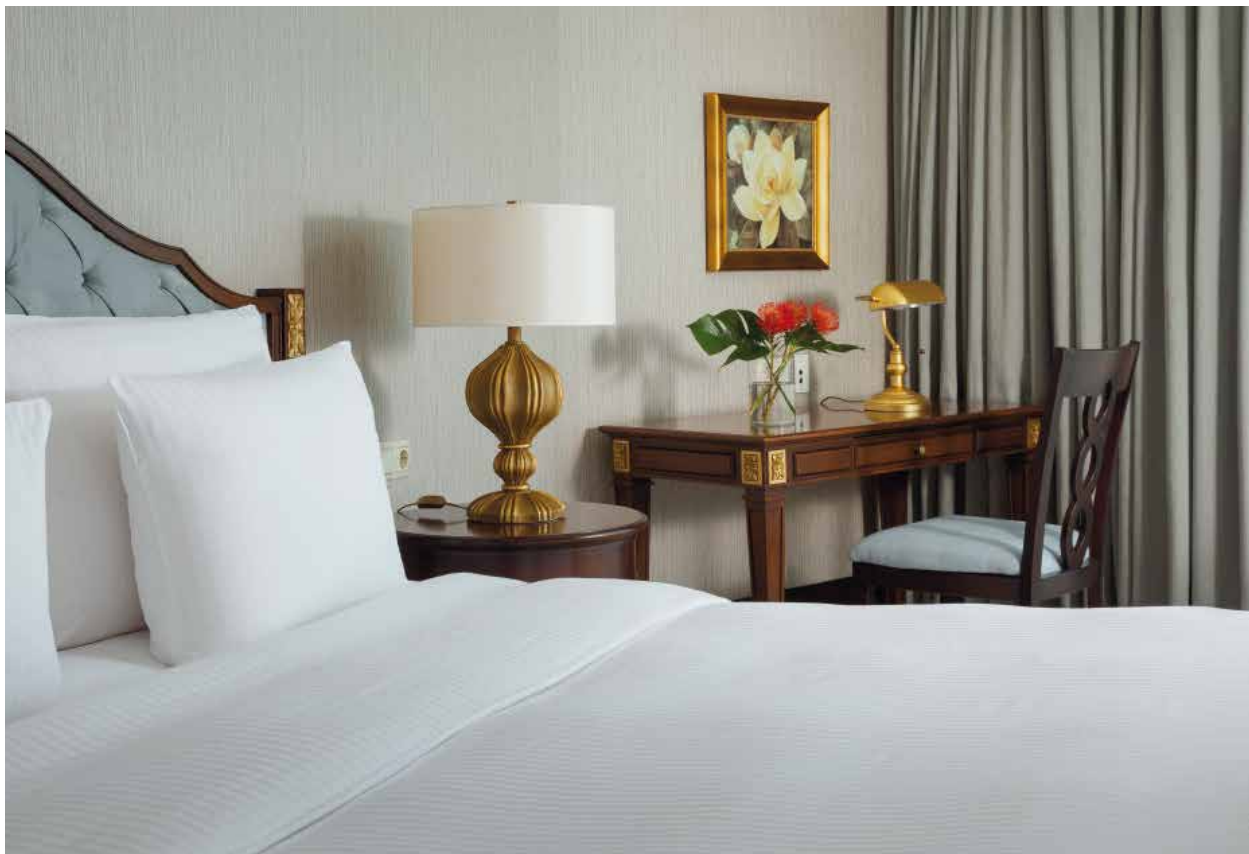
Since then, new global risks have emerged requiring urgent solutions as energy and food security are threatened worldwide. Inflation has also struck a painful blow globally and, despite central banking efforts to tame galloping inflation, rising costs hitting all parts of the economy continues apace. However, international resilience has confronted Europe's energy and economic challenges and has shown the world's neediest countries that their needs are recognized and will be met to the fullest extent

possible. And last but not least, climate change and energy transition – high on last autumn's agenda during COP26 - remains a priority to be confronted as COP27 prepares to meet in early November.

AmCham will also seek to address these urgent needs. At the Autumn U.N. General Assembly, U.N. Secretary-General Antonio Guterres spoke of the world as 'gridlocked in colossal global dysfunction' and urged greater cooperation in facing global challenges. Although AmCham cannot hope to resolve the world's problems at this crucial juncture in history, we will articulate Kazakhstan's need to also seek solutions for its own economy, investment climate, food security, energy needs, and its population struggling under daily inflation.

The above issues will be placed front and center by AmCham in its upcoming Council sessions with the Prime Minister and Government of Kazakhstan. In the meantime, however, we continue addressing difficult economic and legal challenges confronting AmCham members with judicial issues in the courts from the lowest levels to the Supreme Court. These challenges are in progress and, with AmCham's support, AmCham members may be successful as so many important cases actively supported by AmCham have been in the past.





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WORKING GROUPS UPDATE AUGUST – SEPTEMBER 2022

Intellectual Property Rights - Inter-Ministerial Working Group - 7 September

The Intellectual Property Rights (Pharmaceuticals) Inter-Ministerial Working Group met on September 7, chaired by *Adilet Nazarbayev, CIS Cluster Lead, Johnson & Johnson* with Group Advisor *Donald Townsend, Senior Commercial Officer, U.S. Consulate*.

The Group reviewed the June meeting with *Deputy Health Minister Burkitbayev* at which the availability, accessibility, and registration issues of new drugs and data exclusivity were discussed. Recommendations to be presented to the Health Ministry were formulated:

- *Difficulties in the lengthy and complex processes of launching advanced and innovative medicines*
- *Organization and procurement of medicines within the guaranteed volume of free medical care within the compulsory social health insurance system*

The prices of medicines were one of the most crucial topics. Maintaining the mandatory availability of a marginal cost for a trading name will also allow carrying a fair rather than selective approach to meeting the legislative requirements.

The Group also discussed the difference between the EAEU and Kazakhstan policy regarding pharmaceuticals. The EAEU uses classifiers and reference books, which may differ from those used in Kazakhstan in terms of drug dosages. The updating process must be adjusted to eliminate discrepancies between procurement lists and forms in Kazakhstan.

Intellectual Property Rights - Inter-Ministerial Working Group - 14 September

The IP Rights (Pharmaceuticals) Inter-Ministerial Working Group met on September 14, chaired by *Adilet Nazarbayev, CIS Cluster Lead, Johnson & Johnson*, with Group Advisor *Donald Townsend, Senior Commercial Officer, U.S. Consulate in Almaty*. The meeting was held at the Ministry of Health, with the *Deputy Minister, Chairman of the Medical and Pharmaceutical Control Committee*.

The Working Group proposed improving legislation to protect intellectual property rights. In particular, registration of medicines and purchase of drugs under free medical care and in the *Mandatory Social Health Insurance (MSHI)* system were discussed. Also on the agenda were differing interpretations of legislation governing Kazakhstan's participation in the EAEU.

The participants were invited to a Working Group meeting on amendments concerning patent protection. It was decided to send an appeal to the Eurasian Economic Commission regarding intellectual property rights. In addition, organizing a roundtable with the Ministry of Health and Ministry of Justice were discussed.

Combined AmCham Tax Working Group - September 26

The joint meeting (5 cities combined on virtual platform) of the Combined AmCham Tax Working Group, chaired by *Anthony Mahon, Deloitte Partner and Tax & Legal Lead*, was held on September 26. The speakers were *Bakhytzhan Kadyrov, Morgan Lewis Partner*, *Yeldos Syzdykov, Director Deloitte Tax & Legal*, and *Aidana Abdaliyeva, Director Deloitte Tax Legal*.

The meeting agenda focused on:

- *Taxation of dividends for listed companies*
- *New rules prohibiting deductibility of costs for services purchased from related party non-residents enacted on from Jan 1, 2023*
- *Update on taxation of non-residents with PE in Kazakhstan.*
- *Draft amendments to application of DTT upon payment of indirect income to non-residents.*
- *Statute of limitation rules and retrospective application*

The rules for taxation of dividends in respect of shares included in the official stock exchange listing in Kazakhstan will significantly change as of 1 January 2023. The Amendment uses the plural for the term “exchange,” i.e., it refers to “the official listing of the stock exchanges functioning in Kazakhstan”. There are two stock exchanges in Kazakhstan: the *Kazakhstan Stock Exchange (KASE)* and the *Astana International Exchange (AIX)*.

The Amendment introduced other changes to the dividend taxation regime; in particular, it abolished the complete dividend tax exemption rule when holding shares for more than three years (a 10% flat rate was introduced instead). Non-residents that do not operate through a PE in Kazakhstan are subject to withholding tax at source (WHT) applied to income from Kazakhstani sources. Kazakhstan currently has a network of double taxation treaties (DTT) with 55 countries.



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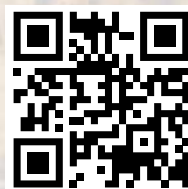


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Toyota is a leading multinational automotive manufacturer headquartered in Toyota City, Aichi, Japan. It was founded by Kiichiro Toyoda and incorporated in 1937 and is one of the largest automobile manufacturers in the world, producing about 10 million vehicles per year.

Toyota Motor Kazakhstan is a subsidiary of Toyota Motor Europe. The company was founded on May 20, 2008 in Almaty and began operating January 1, 2009. As an official distributor, Toyota Motor Kazakhstan is responsible for Toyota and Lexus national brand marketing in Kazakhstan and Kyrgyzstan. To date, the official Toyota and Lexus dealer network includes twenty dealerships in more than 16 cities.

As of 2022, Toyota produces vehicles under four brands: the namesake *Toyota*, *Lexus*, *Daihatsu*, and *Hino*. The most popular Toyota fleet models in Kazakhstan and Kyrgyzstan are *Toyota Corolla*, *Toyota Hilux* and *Toyota Land Cruiser Prado*.



HEWLETT PACKARD CORPORATE A

Svetlana Vyrypaeva
Head of Kazakhstan Branch

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Hewlett Packard Enterprise (HPE) was founded on November 1, 2015 in Palo Alto, California as part of the splitting of the Hewlett Packard Company. It was ranked #107 in the 2018 Fortune 500 list of the largest U.S. Corporations by total revenue.

Hewlett Packard Enterprise is an industry-leading technology company that enables customers to go further, faster. With the industry's most comprehensive portfolio that spans the Cloud to data centers to workplace applications, HPE technology and services help customers around the world make IT more efficient, more productive, and more secure.

HPE commits to reduce total CO2 emissions by 55% by 2025, aligned with the Paris Agreement to limit global warming to 1.5 °C above pre-industrial levels.



NOVUS-BOLASHAK CORPORATE A

Michael Murphy
CEO

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Atyrau, Kazakhstan

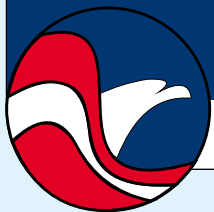
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In 2016, *Novus Technical Services Kazakhstan* and *Bolashak Atyrau* jointly established Novus Bolashak to provide specialist solutions for the oil and gas industry in Kazakhstan. Based in Atyrau, the company has recently secured the *3GP Systems Completion 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.





AMERICAN CHAMBER OF COMMERCE IN KAZAKHSTAN

MEMBERSHIP APPLICATION

ABOUT AMCHAM

Registered in Kazakhstan as a non-profit organization in March of 1999 with 36 charter members, the American Chamber of Commerce in Kazakhstan currently represents over 200 member companies including US, multinational, and local businesses in 30 industry sectors. Their collective investment in Kazakhstan's economy is several billion USD. The American Chamber in Kazakhstan is a member of the US American Chamber of Commerce in Washington D.C. and has working relationships with many regional business associations.

BENEFITS OF MEMBERSHIP

- ✓ AmCham members participate in an organization existing solely to serve members
- ✓ AmCham actively advocates for reform of the business environment with the Kazakhstan Government at senior levels
- ✓ AmCham members may attend 20 Working Groups in 5 cities plus 3 Inter-Ministerial Working Groups
- ✓ Monthly speaker luncheons with senior government and business leaders are reserved for AmCham members
- ✓ Seminars, conferences, and monthly social networking events are organized for AmCham members
- ✓ AmCham membership contact lists are available exclusively to AmCham members
- ✓ Economic, political, legal, social, and business development information is distributed to AmCham members
- ✓ Member companies provide exclusive discounts on products and services to other AmCham members
- ✓ Access to the Members' Only section on the AmCham Website
- ✓ Publishing opportunities are available in *Investors' Voice*, the *Annual Membership Directory*, and Special Publications

MEMBERSHIP APPLICATION

Company Name:

Industry Area:

CEO Name, Signature, Email:

Contact Individual:

Title(s):

Address:

Tel.: Fax: E-mail:

Please include us in the following Working Groups:

Almaty (7)

- | | |
|--|--|
| ☐ Foreign Investment | ☐ Healthcare Reform |
| ☐ Human Resources | ☐ Trade and Customs |
| ☐ Tax | |
| ☐ Technology and Innovation | |
| ☐ Corporate Social Responsibility | |

Atyrau (4)

- | |
|--|
| ☐ Tax |
| ☐ Human Resources |
| ☐ Trade and Customs |
| ☐ Corporate Social Responsibility |

Aktau (3)

- | |
|--|
| ☐ Human Resources |
| ☐ Tax |
| ☐ Trade and Customs |

Nur-Sultan (4)

- | |
|---|
| ☐ Foreign Investment |
| ☐ Tax |
| ☐ Trade and Customs |
| ☐ Human Resources |

Shymkent (1)

- | |
|---|
| ☐ Foreign Investment |
|---|

AMCHAM WORKING GROUPS

Working Groups made up of representatives from Amcham member companies provide comment, discussion and submission of positions and represent the united interests of the business community in Kazakhstan by identifying challenges faced by investors and proactively addressing them. Each group meets regularly, providing a forum for networking and the exchange of information. Groups are formed on an as-needed basis at the request of the AmCham membership.

GOVERNANCE

The AmCham is governed by a Board of Directors elected annually from and by the membership. Directors currently and in the past have included individuals from the following company members:

AES	HSBC
AIG Insurance	Hyatt Hotel
Baker & McKenzie	Honeywell
BASF Central Asia	Intercontinental Hotel
BG Group	KIMEP
Bracewell and Giuliani	KPMG
Capital Bank	LeBoeuf, Lamb, Greene
Chevron	Nestle
Citibank	Philip Morris Kazakhstan
Conoco Phillips	Philips Kazakhstan
Coca-Cola	PricewaterhouseCoopers
Dechert	Procter & Gamble
Deloitte	Raytheon
EBRD	Scot Holland CBRE
Ernst & Young	Tengizchevroil
GE International	Visor Capital
Halliburton	White & Case

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Oksana Kostyrina
Administrative Assistant
info@amcham.kz

Teresa Reilly
Administrative Assistant

REGIONAL REPRESENTATIVES

Bela Ferenczi
CEO General Electric
Resident Representative, Nur-Sultan
Bela.Ferenczi@ge.com

Maxim Gubashev
General Director, NES Fircroft
Resident Representative, Caspian Region
Maxim.Gubashev@fircroft.com

Wojciech Halat
CEO, HeidelbergCement
Resident Representative, Shymkent
Wojciech.Halat@heidelbergcement.kz

MEMBERSHIP CATEGORIES AND ANNUAL FEES

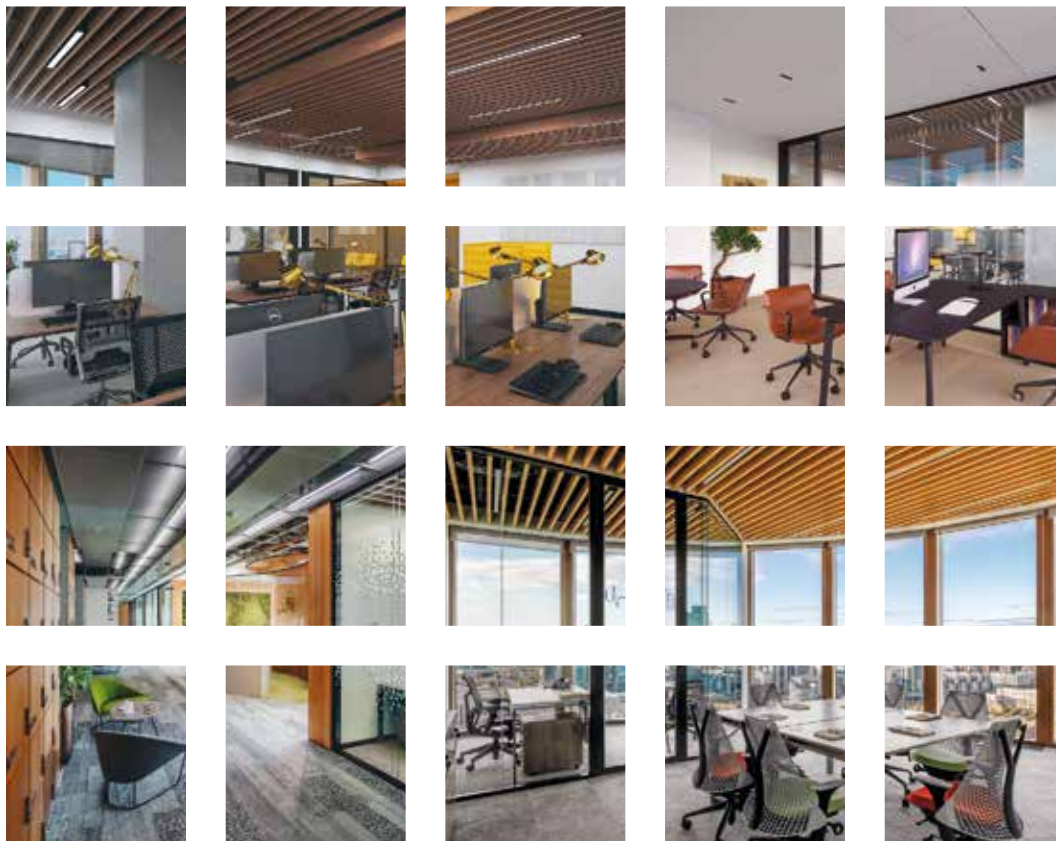
Corporate A	(Worldwide revenues in excess of 100 million USD)	\$5,000 USD
Corporate B	(Worldwide revenues between 2-100 million USD)	\$3,800 USD
Corporate C	(Worldwide revenues not exceeding 2 million USD)	\$2,700 USD
Non-Profit		\$1,500 USD
Individual**		\$500 USD

***Individual memberships are available only under special circumstances for persons not associated with a company.*

Corporate membership entitles a company to delegate 3 individuals as AmCham voting members. The number of persons from each company participating in working groups, forums, and business roundtables is usually not limited.

All applications for membership must be approved by the Board of Directors of the American Chamber of Commerce in Kazakhstan. For further information about membership benefits, the application process, or Investors' Voice magazine, please contact: info@amcham.kz

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