

IV Investors' Voice

The American Chamber of Commerce in Kazakhstan

Kazakhstan's Leading International Business Association



**October 2019
AUTUMN ISSUE**

www.amcham.kz

#85

Autumn Oil and Gas Review 2019 The Perspective of Industry Leaders



- ▶ **Chevron - Building Kazakhstan's Capacity Through Innovative Social Investments**
- ▶ **Shell - Developing Human Capital, Contributing to Kazakhstan's Prosperity**
- ▶ **NCOC - Environmental Regulation Reform in Kazakhstan**
- ▶ **Deloitte - Technology, Strategy, and People Align to Become a Digital Oil and Gas Company**
- ▶ **EY - Oil and Gas Technological Innovations: Their Effect on the Regional Industry**
- ▶ **Lloyd's Register - Production Optimization in the Oil Fields**
- ▶ **Fluor - TCO Oil and Gas Megaproject in Kazakhstan**



FUELING PROGRESS

**TCO's contribution to Kazakhstani economy
exceeded 141 billion US dollars**



PREMIUM SERVICED OFFICES

+7 (7172) 73 50 46
+7 (777) 777 01 21
sales@ttexecutivehub.com

ttexecutivehub.com

TALAN TOWERS EXECUTIVE HUB – state-of-the-art serviced offices designed in the club-format concept. We offer a new way of doing things: managed workspaces, which allow our customers to focus on business and to pay just for the space they occupy during the period of the lease, without having to worry about management or the other issues associated with leasing office space.

Ready-made flagship offices on a short-term lease provide the opportunity to work surrounded by Kazakhstan's business elite and to hold important meetings and presentations in the most prestigious complex in the capital.

 **TALAN TOWERS
EXECUTIVE HUB**

Almaty International School Success for all

Almaty International School (AIS), founded in 1993 by Quality Schools International (QSI), offers high-quality education in English with teachers certified in the field of Education.



- * Fully Accredited American Curriculum
- * Located on over 7 hectares of land
- * Broad Athletic and Extracurricular Programs
- * Newly constructed library with over 25,000 books in English
- * 55 highly qualified teachers from USA, Canada, UK, and Australia
- * Graduates admitted to top universities worldwide

Contact Admissions:
arzygul-baudinova@almaty.qsi.org
+7 727 381 87 04 ext. 202



ALMATY INTERNATIONAL
SCHOOL



[almatyinternationalschool](https://www.instagram.com/almatyinternationalschool)

[Almaty International School](https://www.facebook.com/AlmatyInternationalSchool)



EDITOR'S NOTE



Dear Readers,

As the autumn business season begins, September is always marked by intensive activity in the investment community after the summer. This is particularly true of the oil and gas industry, Kazakhstan's economic powerhouse which, although it never slows down, springs into view with exhibitions, conferences, and public events demonstrating the industry's achievements and issues scheduled for dialogue with the Government. *Investors' Voice* supports and contributes to this activity each autumn with its Oil & Gas Issue highlighting the many aspects of this powerful industry.

This year's *Autumn Investors' Voice* is the largest and most diverse of the AmCham publications on the oil and gas industry to date. The October 2019 Issue presents twenty articles from leaders of the world's largest oil companies operating in Kazakhstan – *Chevron, ExxonMobil, Shell, TCO, NCOC, KPO*, along with the leading oilfield services companies – *Fluor, Baker Hughes, Lloyd's Register*, global industrial companies supporting the oil industry – *Honeywell, GE, ABB, Borusan*, the most notable legal and financial services firms working with the industry – *Baker McKenzie, Kinstellar, Deloitte, EY*, along with several smaller local law firms providing valuable insights – *Integrites, Signum, and Devine & Severova*. An interesting perspective is provided by Nostrum Oil & Gas, an independent oil company operating successfully in north-western Kazakhstan.

The range of topics discussed by the above commentators is impressive: *social investment and local content, environmental regulatory reform, mergers and acquisitions, cybersecurity, intellectual property, digitalization and technological innovation, the legal regime of the Caspian Sea*, and many other thoughtful articles covering the broad sweep of progress in Kazakhstan's oil industry, as well as obstacles awaiting resolution. Over the thirty years since the country's independence, Kazakhstan has led the way together with global industry leaders to develop its oil industry in a complex landscape of rapid economic and technological transformation. The industry's successes have been notable, as has the country's economic and social development.

The *Autumn Investors' Voice* presents many perspectives and critical areas of enquiry to create a comprehensive picture of where the oil industry stands in Kazakhstan today, along with its path in the future. We hope our readers will find the variety of subject-matter and commentary from thoughtful AmCham members stimulating and informative as a guide to Kazakhstan's leading industry.

TABLE OF CONTENTS

Doris Bradbury
Executive Director

ARTICLES

Cover Art: Sterling Moss by
Sondra N. Arkin

Chevron - Building Kazakhstan's Capacity Through Innovative Social Investments.....	11	Honeywell - Cybersecurity for the Oil and Gas Industry.....	36
ExxonMobil - Our Commitment to Energy Innovation.....	13	Lloyd's Register - Production Optimization in the Oilfields....	40
Shell - Developing Human Capital, Contributing to Kazakhstan's Prosperity.....	16	Baker Hughes a GE Company - BHGE Develops Kazakhstan's Human Capital.....	42
KPO - 2019 First Half-Year Performance Results.....	18	Devine & Severova - Kazakhstan's Underground Gas Storage: Investment Challenges.....	43
NCOC - Environmental Regulation Reform in Kazakhstan.....	20	Deloitte - Technology, Strategy, and People Align to Become a Digital Oil and Gas Company.....	48
TCO - Mission Accomplished: Identify and Localize.....	24	EY- Oil and Gas Innovations: Their Effect on the Industry.....	51
Nostrum Oil & Gas - Leveraging Technology For the Oil and Gas Industry.....	26	Integrites Law - The Caspian Sea Legal Regime.....	54
ABB - The New Era for ABB: The Ability™ and Digital Solutions for Oil, Gas and Chemical Companies.....	28	Kinstellar - Government Consents for Oil & Gas Transactions....	56
Borusan - Borusan Condition Monitoring for the Oil Industry: Warning and Prevention.....	32	Signum Law - Oil and Gas Regulations in Practice.....	59
Fluor - TCO Oil and Gas Megaproject in Kazakhstan.....	34	Member News	64
		New Member Profiles	67

BOARD OF DIRECTORS

CREDITS

EDITOR IN CHIEF:

Doris Bradbury

PHOTOGRAPHER:

Danil Shidych

COVER ARTWORK:

Sterling Moss

CONTRIBUTORS:

Michael Allen

Ruslan Bekbayev

Denis Borisov

Mauro Emanuele Buongiovanni

Alan Evans

Rashid Gaissin

Laurent Abou Gebrayel

Casper Schytte Hemingsen

Kuanysh Kanlybayev

Kai-Uwe Kessel

Kenny Krogh Nielsen

Botagoz Seidakhmetova

Ana Severova

Meiirzhan Sheraliyev

Ruslan Stefanov

Gulmira Turmagambetova

PUBLISHER:

**American Chamber
of Commerce in Kazakhstan**

Tel.: +7 (727) 330 92 50

Fax: +7 (727) 330 92 51

EXECUTIVE COMMITTEE



Kenneth Mack
President
Principal
Mack Law



Bela Ferenczi
Vice-President
CEO
General Electric



Paul Cohn
Treasurer
Partner
EY



Ashley Clarke
Secretary
Chief Operating Officer
KPMG

BOARD MEMBERS



Doris Bradbury
Executive Director
AmCham



John Baltz
Managing Director
Eurasia Business Unit
Chevron



Tibor Kolejak
Country Manager
Microsoft Kazakhstan



Dean Matlack
Commercial Counselor
U.S. Consulate General
in Almaty



Olga Voronova
Country Manager
Procter and Gamble



Gani Uzbekov
Founder and CEO
SILK



Saule Zhakayeva
Deputy Chair
Corporate Banking Head
Citibank

For information about the AmCham, please email info@amcham.kz

For information about Investors' Voice and the Chamber's website,
please email Anar Zholdoshbek kyzy at Anar.Zholdoshbek.kyzy@amcham.kz

To enquire about financial issues,
please contact Rimma Kazhemyakina at Rimma.Kazhemyakina@amcham.kz

CONTRIBUTORS

Baker Hughes a GE Company



Meirzhan Sheraliyev, Senior Sales Lead, Baker Hughes a GE company

Meirzhan Sheraliyev is the Baker Hughes Senior Sales Lead for Oilfield Services in the Eastern Caspian region. He is responsible for business development and sales of drilling, evaluation, completion and production services and technologies. He previously held management positions for sales, engineering, optimization and repair/maintenance in Southeast Asia, Russia, the Caspian region, and Continental Europe.

Meirzhan Sheraliyev graduated with a degree in Petroleum Engineering from the University of Manchester in the UK.

Borusan Makina



Ruslan Bekpayev, Energy and Transportation Department, Borusan Makina

Ruslan Bekpayev is Product Support Sales Manager for the Energy and Transportation Department of Borusan Makina. He has held various positions over 10 years in the Caterpillar equipment and energy sector, starting in a workshop and gaining field experience including in Kazakhstan's offshore market. His most recent experience is in optimizing Caterpillar engine operating costs for Oil & Gas and Electric Power customers.

Ruslan Bekpayev graduated from Karaganda State Technical University and speaks Kazakh, Russian and English.

Chevron



Botagoz Seidakhmetova, Freelance Journalist, Chevron

Botagoz Seidakhmetova is a freelance journalist based in Almaty. For 16 years, she served as international politics editor of the *New Generation (Novoye Pokolenie)* newspaper in Almaty. She has written on terrorism, international conflicts, and the world's hot spots. Her experience extends to reporting for the London-based Institute for War and Peace, and she has had her own online radio program for the *Radiotekhnika.kz* Information Agency. Her training includes internships in the USA, Japan, Europe, Egypt, and Israel.

Deloitte



Mauro Emanuele Buongiovanni, Senior Manager Consulting, Deloitte

Mauro Emanuele Buongiovanni is a Senior Manager at Deloitte Consulting and leads the Consulting practice across Central Asia. He is a corporate and deal strategy specialist who has extensively advised principal investors and global private equity firms on pre-deal phases and post-acquisition transformational programs across a broad range of sectors. Energy and resources are among his areas of specialization.

Mauro Emanuele holds a B.S. in economics and a J.D. in international law from the University of Rome, a CertHE in geoeconomy and international studies from Oxford University, and an MBA in strategy and corporate finance from the Cheung Kong Graduate School of Business in Beijing.

Devine & Severova Law Firm



Ana Severova, Partner, Devine & Severova

Ana Severova is a partner at Devine & Severova LLC, a boutique oil and gas law firm based in the UAE. She has practised at leading international law firms and has extensive experience advising clients in the energy sector on projects and transactions in the Middle East, CIS and internationally. Ana is a Russian speaker and has advertised business clients in Kazakhstan, Azerbaijan and Turkmenistan.

EY



Denis Borisov, Director, Energy Center Leader, EY

Denis Borisov is the Director and EY Energy Center Leader for Central, Eastern and Southeastern Europe & Central Asia. He has over 15 years' experience in oil and gas and petrochemical companies, investment finance companies, and research departments of large Russian banks. At EY Denis is responsible for analytical materials for key aspects of fuel and energy operations that serve as the basis for EY Energy Center research. He is a member of government working groups on the growth of Kazakhstan's oil industry.

Denis Borisov graduated from the Gubkin Russian Oil and Gas University in 2001, and also holds a PhD degree.



Gulmira Turmagambetova, Assurance Partner, Energy Sector Leader, EY

Gulmira Turmagambetova serves as an Assurance Partner and Energy Sector Leader for EY in Kazakhstan and Central Asia. She has had a distinguished 20+ year career in professional services focused primarily on oil and gas, mining and construction. Her experience includes assurance and related services, including placement of Eurobonds and IPOs.

Gulmira Turmagambetova holds an advanced economic degree from the Kazakh Management Academy and is a Certified Public Accountant (USA). She is also a Qualified Auditor and a member of the Chamber of Auditors of Kazakhstan.

CONTRIBUTORS

FLUOR



Alan Evans, Sales Director, Fluor

Alan Evans is an Oxford-educated Chartered Engineer with wide experience in the Automotive, Aerospace and Process industries, after which he moved to the oil industry. His geographic experience ranges from Iraq to Michigan and Texas, with business development in Norway, Central Europe, the Caspian region, Africa, the Middle East, India and China. He leads Fluor's Sales activities in the UK, concentrating on Azerbaijan and Kazakhstan. Alan Evans graduated with an Honours degree in Physics, followed by an MA from Wadham College, Oxford

Honeywell



Ruslan Stefanov, Cybersecurity Consultant, Honeywell

Ruslan Stefanov is responsible for Honeywell Industrial Cyber Security (ICS) products, services and partnerships with local cyber security vendors and integrators. Ruslan has more than 20 years of experience in telecommunications and information security. Since 2011, he has been specializing in the ICS domain, especially in system architecture design and implementation. He has participated in the development of regulatory documents and industry standards in the field of ICS and Critical Information Infrastructure Protection and is the author of several papers on the topic.

Ruslan Stefanov graduated with honors from the Moscow Physics and Technology Institute.

Integrites



Rashid Gaissin, Co-Managing Partner, INTEGRITES Kazakhstan

Rashid Gaissin is an English and Kazakh lawyer whose practice focuses on transnational corporations, industry, and financial institutions. He regularly represents the interests of large international and Kazakhstan clients, and has extensive experience with complex cross-border transactions, mergers and acquisitions, and transactions involving several jurisdictions both inside and outside Kazakhstan. His clients are involved in multi-billion dollar transactions in the banking sector, oil and gas, mining, retail and consumer sectors, aviation and electronics.

Rashid Gaissin graduated from Kazakh State Law University with honors and holds a Master's degree in petroleum law and politics from the University of Dundee. He qualified as a solicitor of England and Wales, trained at the BPP law school in London, and articulated for two years at the Norton Rose London office.

Kinstellar



Kuanysh Kanlybayev, Managing Associate, Kinstellar

Kuanysh Kanlybayev is a Managing Associate in Kinstellar's Almaty office. Kuanysh has been practicing law since 1993. He has significant experience advising clients in M&A transactions and corporate, competition, aviation, real estate and labour law. He also advises oil & gas, engineering, aviation and pharmaceutical companies.

Kuanysh Kanlybayev is listed as one of the country's *Next Generation* lawyers in *Legal 500 EMEA 2018* in Corporate, Commercial and M&A. He holds a Bachelor's degree in law from Al-Farabi Kazakh National University.



Almas Zhaiyilgan, Counsel, Kinstellar

Almas Zhaiyilgan is a Counsel based in Kinstellar's Almaty office and heads the firm's local Energy and Natural Resources practice. He has 20 years' experience advising companies in the oil and gas and mining industries in Kazakhstan. He assists clients with upstream exploration and production projects, including drafting and negotiating host government contracts, joint-venture agreements, farm-out agreements and joint operating agreements. He also has broad experience in mergers and acquisitions and regularly advises clients on corporate, regulatory and compliance matters.

Almas Zhaiyilgan holds an LL.M. degree in Energy, Environment and Natural Resources Law from the University of Houston Law Centre, as well as a degree in International Law from Al-Farabi Kazakh National University and a B.S. in Business Law from Indiana University.

Lloyd's Register



Laurent Abou Gebrayel, Business Development Manager, Lloyd's Register

Laurent Abou Gebrayel is Business Development Manager at Lloyd's Register based in Kazakhstan and in charge of the Caspian Region. He has extensive experience developing the inspection and certification business for companies providing technical and business services for major global clients in the engineering, maritime, oil and gas sectors, both onshore and offshore.

Laurent Abou Gebrayel graduated from Lebanese University in 2006, and speaks English, French, Arabic and Russian.

Lloyd's Register



Casper Schytte Hemmingsen, Consultant, Lloyd's Register

Casper Schytte Hemmingsen is a consultant at Lloyds Register working with computational multi-physics. He specializes in Computational Fluid Dynamics (CFD) for top site and subsurface applications.

He holds M.Sc. and Ph.D. degrees in Mechanical Engineering from the Technical University of Denmark. His Ph.D. dissertation was on CFD based modelling of oil and gas wells and reservoirs.



Kenny Krogh Nielsen, Senior Principal Consultant, Lloyd's Register

Kenny Krogh Nielsen is a team leader and senior principal consultant at Lloyds Register. He has supervised a multitude of projects within the oil and gas industry involving CFD, Finite Element Analysis (FEA), Fluid-Structure-Interaction (FSI) and advanced experimental methods. He has also worked extensively with Root Cause Analysis (RCA) for mechanical failure analysis purposes and has led multiple Joint Industry Projects (JIPs).

Kenny Krogh Nielsen holds M.Sc. and Ph.D. degrees in Mechanical Engineering from Aalborg University and a post graduate diploma from von Karman Institute for Fluid Dynamics. Kenny was awarded the annual nation-wide prize for the best industrial Ph.D. project in Denmark.

NCOC



Michael Allen, Head of Government Relations, North Caspian Operating Company (NCOC)

A physicist by training, Michael Allen left desk work with academic journals to travel to Sakhalin when it first opened up in the latter months of the Soviet Union. He worked for the US government for several years in the Russian Far East as an investment advisor for the Gore-Chernomyrdin Commission and as Director of the American Business Centers before joining a global major oil company in 2001 as Manager of Government and Public Affairs. He worked in Houston, Washington D.C. and Tokyo before coming to Kazakhstan in 2015 to advise NCOC and its Kashagan Phase 1 project as Head of Government Relations.

Michael Allen holds an M.Sc. in Physics (Space and Atmospheric) from the University of Kansas.

Nostrum Oil & Gas



Kai-Uwe Kessel, CEO, Nostrum Oil and Gas

Kai-Uwe Kessel was appointed a director of Nostrum Oil & Gas (former ZGL) in November 2007 and has served as Chief Executive of Nostrum Oil & Gas since November 2004. From 2002 to 2005, Mr Kessel was director of Gaz de France's North African E&P division. From 1992 to 2001, he was Managing Director of Erdgas Erdol GmbH, an oil and gas company owned by Gaz de France, and Chairman of the Board of KazGermunai.

Mr Kessel is a graduate of the Gubkin Russian University of Oil and Gas.

Signum Law Firm



Sofiya Zhylkaidarova, Managing Partner, SIGNUM Law Firm

Sofiya Zhylkaidarova has over 20 years of experience as a Kazakhstan lawyer working with international clients and government. She is a well-known and highly regarded professional who has greatly contributed to the country's reforms and initiatives to improve the investment climate.

Sofiya Zhylkaidarova graduated with honors from Al-Farabi Kazakh State University and obtained her Bachelor of Laws, followed by a Master's degree from the same University. She is also an MBA global executive alumnus of INSEAD Business School.

Tengizchevroil



Yerlan Islyamov, Public Affairs Advisor, Tengizchevroil

Yerlan Islyamov is a Public Affairs Advisor at Tengizchevroil. With more than 8 years in the field, he has accumulated solid experience in crisis communications, media relations, social media, and brand management.

He holds a degree in Chemical Engineering from Atyrau Oil & Gas University and has participated in many trainings in the USA, Germany and Russia. Yerlan Islyamov's most recent professional certification was received from the University of Missouri-St.Louis. He speaks English, Russian, Kazakh, and Turkish.



CELEBRATING GROWTH AND PROGRESS.

A quarter of a century ago, Chevron recognized the potential in Kazakhstan. Together, with our partners, we've invested billions in the Kazakhstani economy. Created tens of thousands of jobs. And we've become the country's largest oil producer. In fact, Tengiz Field is now among the top producing oil fields in the world. That's taking potential and turning it into progress. Today and for many years to come. **Learn more at chevron.com/worldwide/kazakhstan**

WE AGREE.



human energy®

BUILDING KAZAKHSTAN'S CAPACITY AND CAPABILITY THROUGH INNOVATIVE SOCIAL INVESTMENTS

by Botagoz Seidakhmetova
Freelance Journalist
Chevron

Improving lives and enabling human progress

Chevron is Kazakhstan's largest private oil producer, holding important stakes in two of the nation's biggest oil-producing fields – Tengiz and Karachaganak.



Everywhere Chevron works, it strives to build lasting partnerships to create prosperity now and for decades to come. Chevron invests significantly in major projects and local goods and services, creating jobs and generating revenues for local communities. Beyond contributions to Chevron's partner countries through direct business investments and taxes, Chevron also contributes to local communities by making strategic social investments.

For more than 25 years in Kazakhstan, Chevron has worked in partnership with local and national governments, communities, non-governmental organizations, and other institutions on innovative social investments focused on health, education and economic development. A key focus area for Chevron is supporting Kazakhstan's next generation with the development of new skills and knowledge that help build the country's capacity and capability and enabling the next generation to unleash its potential.

As an industry leader, Chevron understands new technologies and trends and the importance of supporting innovative start-ups that will help secondary school and university students develop into tomorrow's leaders. In the last 5 years alone, hundreds of young people have participated in interactive training in programming and social entrepreneurship, with many establishing their own start-up businesses that create employment opportunities.

Chevron's support for educational development programs reach thousands of young people, teachers and trainers from urban and rural areas. The initiatives focus on STEM - Science, Technology, Engineering, and Math – as well as the arts and creative industries.

Below are a few examples of the great projects Chevron supports that are helping our communities succeed.

ITeachMe

The ITeachMe projects embrace diversity and inclusion and aim to educate young people with disabilities. To champion equal opportunities, disabled youth from all over Kazakhstan have had a chance to be part of the inclusive teams created for this project. They attended workshops given by prominent IT trainers, learned the basics of project management, design thinking, public speaking, and developed leadership and soft skills.

"Participation in ITeachMe served as a new lease of life for many," said project manager Zakhira Begaliyeva. "They learned to help and support each other through teamwork and got to see first-hand how IT technologies can erase boundaries."

Despite the project not yet being complete, some of the participants have already secured employment, with one participant becoming a software programmer. Three others have also been hired as site administrators for a large IT company. In addition, more than 30 events were organised across Kazakhstan to raise IT-awareness.

Robot Technology

"Robocon Games!" is the Republican Robotics Championship among schoolchildren organized in partnership with the *International Information Technology University (IITU)*. The number of teams participating in the championship has grown from 15 to 30, expanding the geography of the participants from Almaty to other major cities across Kazakhstan.



Prior to the championship, over a five-month period thirty schools engage in the development of their Arduino-based robots. *"This successful programme not only develops robotics technology in Kazakhstan, it also helps find the next generation of talented innovators,"* said Medet Turgambayev, IITU vice rector.

Astana Science Festival

The Astana Science Festival, organized in partnership with the British Council, Nazarbayev University, the Science Fund, and OYLA Scientific Popular Magazine, is aimed at popularizing technology among Kazakhstan's youth with a strong focus on the development of IT-related skills.

The final stages of the *Science Stars* and *FameLab* international contests were conducted within the Astana Science Festival framework. Visitors learned new scientific facts during interactive lectures, visited Nazarbayev University laboratories, and tested their own scientific knowledge during Open Laboratory tests arranged by the OYLA scientific magazine.

"In the modern world, technology is rapidly changing our lives, meaning the transfer of scientific knowledge, awareness of scientific achievements, and engagement of young people in science is critical to continued progress. I believe science should be more accessible to encourage greater interest and understanding," says Artur Saudabayev, winner of the *FameLab 2010*.

Girls in STEM

Girls are the most active participants of all projects sponsored by Chevron. They acquire new-for-women IT related specialties and fearlessly dive into establishing their own start-ups.

Chevron has been supporting the *Girls in STEM* summer camp for several years. Focused on girls 13-18 years old, girls undertake a special qualifying competition before becoming part of a team. The competition involves production of a 2-minute video about the most important invention in human history, what they would like to change in the modern world, and what opportunities the camp could provide for them.

In 2018, a team of girls from the summer camp won the championship among high school students held by *National Agency for Technological Development* with their self-stabilizing spoon invention for people with Parkinson's disease. The team was awarded a trip to the *Scientific Start-Ups Championship* in Singapore where they presented their project along with more than 200 others from around the world.

The Zangar Project

Together with local government agencies and educational institutions, Chevron is implementing an initiative to develop Atyrau's youth by training and preparing them for successful careers and lives. The *Zangar Project*, developed in partnership with the *International Youth Foundation* and the Atyrau Oblast Akimat, is an important part of this initiative.

Since the start of the program in 2015, more than 6,000 young people and 400 teachers in Atyrau have received interactive training in life skills and STEM disciplines, with many also participating in several festivals and championships.

FabLabAtyrau

FabLabAtyrau is designed to help young people develop key skills and enhance their creativity. The laboratory, the first of its kind in Kazakhstan, is equipped with modern tools that include 3D printers, computer-controlled routing machines, and laser cutters.

"FabLabAtyrau provides the next generation with a great space to enhance their knowledge and see how things really work," said Dias Umirbekov, a graduate of linguistic gymnasium No.34, who designed and constructed an electric wheelchair together with Bek Kaliyev, a graduate of Lyceum No.16.

Over the years, many amazing projects have been launched here, including a device that helps determine colour and sound for people with visual and hearing impairments, as well as a remote-controlled robot, which can research hazardous environments from a distance.

"This is just a snapshot of the projects we are currently supporting in Kazakhstan," said Zhanar Koshpanova, Chevron's Corporate Affairs coordinator. *"We know that if our people and communities are to thrive, education and job training are critically important. We are therefore working closely with the Ministry of Education and Science, alongside the country's leading universities and many other organisations, to support the next generation of innovators. By focusing our efforts on improving instruction in STEM, as well as social entrepreneurship, career and technical training, we will help create a Kazakhstan that is known for innovation and prosperity in the future."*



Our commitment to energy innovation

"There are few challenges more important than meeting the world's growing demand for energy. ExxonMobil is committed to providing affordable energy to support human progress while reducing environmental impacts and the risks of climate change. That's why we are working to be part of the solution to help society meet this dual challenge today".

Dinesh Sivasamboo

Managing Director of ExxonMobil Kazakhstan Inc.

R&D has been part of ExxonMobil's DNA since our company began more than 135 years ago. Our innovations have helped provide the energy fundamental to modern life – from the clean, efficient fuels that power today's transportation to the natural gas that provides light and heat to homes and businesses.

Today, we are working to develop the next generation of energy solutions, including: advanced biofuels; carbon capture and storage; natural gas technologies; and new energy efficiency processes. In addition to

our robust in-house capabilities, we collaborate with leading research and technology companies, national labs and universities, and others involved in breakthrough energy research.

The world faces a dual challenge: meeting growing demand for energy while also reducing environmental impacts, including the risks of climate change. While all forms of energy are needed – including natural gas and renewables such as wind and solar – new technologies will be required to meet the world's emissions-reduction goals.

ExxonMobil is committed to doing our part. This publication provides more insights and details about this important work.

R&D is in our DNA

ExxonMobil is looking for affordable, scalable solutions that address the three main areas of energy use: **transportation, power generation and manufacturing**. We are also deploying advanced technologies in these areas where applicable.

The three main areas of energy use

Transportation

~25%

Transportation represents about 25% of global energy-related CO₂ emissions.

Our focus areas include:

advanced biofuels, lightweight materials, and fluids and lubricants for electric vehicles

Power generation

~40%

Power generation represents about 40% of global energy-related CO₂ emissions.

Our focus areas include:

natural gas/LNG technologies, methane emissions reduction technologies, and carbon capture and storage

Manufacturing

~30%

Manufacturing represents about 30% of global energy-related CO₂ emissions.

Our focus areas include:

cogeneration, process intensification (manufacturing efficiency technologies), and carbon capture and storage

Our commitment to energy innovation

Our world faces a dual challenge: meeting growing demand for energy while reducing environmental impacts, including the risks of climate change. ExxonMobil is committed to doing our part.

The world needs more energy.

By 2040, global energy demand is projected to increase by about 25%. A few key factors are contributing to this growth.

Population growth

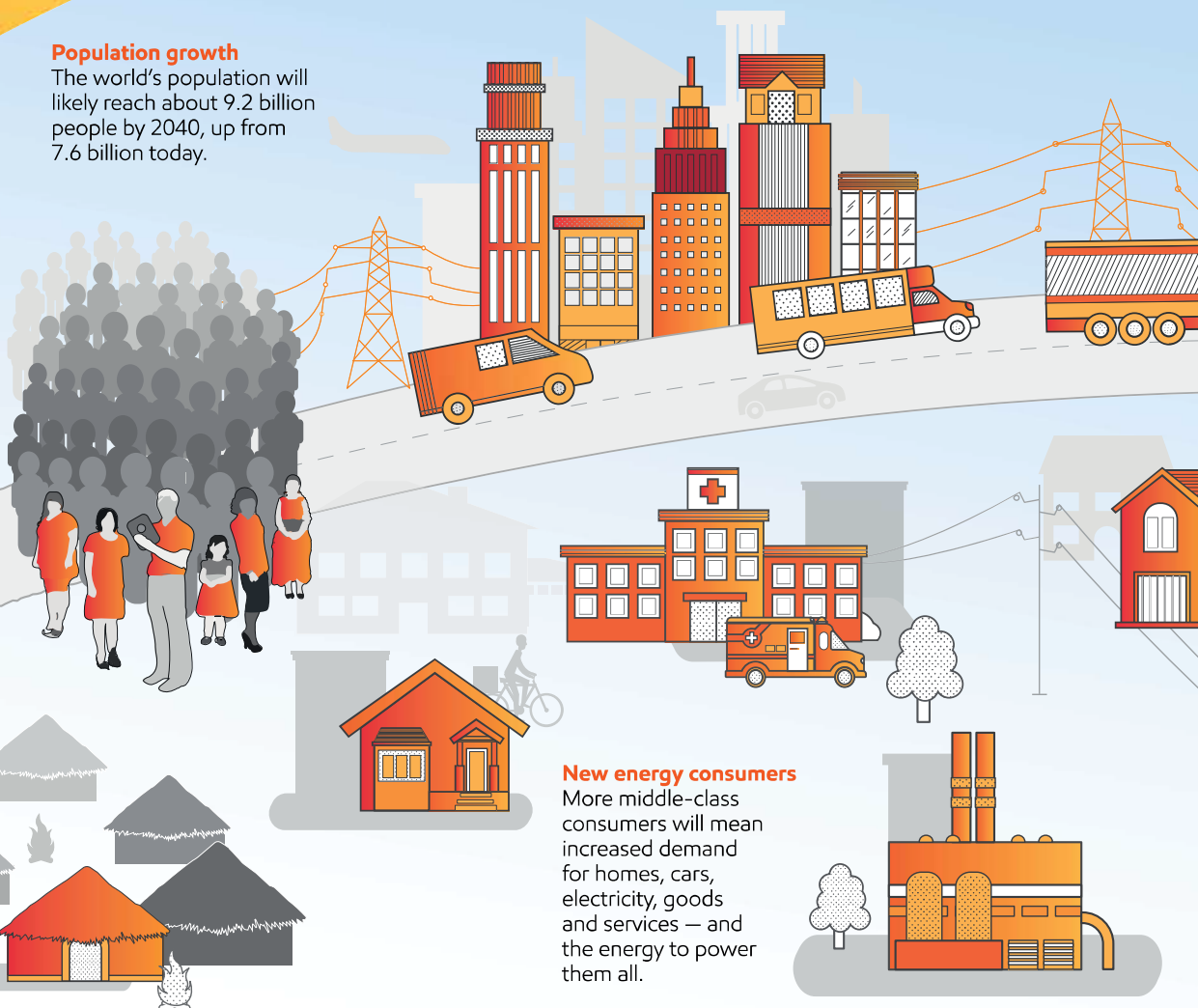
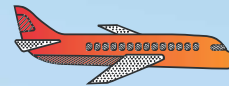
The world's population will likely reach about 9.2 billion people by 2040, up from 7.6 billion today.

Energy inequality

Even today, nearly 1 billion people lack access to electricity, which impacts their income, education and health.

Growing middle class

Rising incomes, particularly in developing nations, will help create the largest expansion of the global middle class in history, from 3 billion to more than 5 billion by 2030.



New energy consumers

More middle-class consumers will mean increased demand for homes, cars, electricity, goods and services — and the energy to power them all.

ExxonMobil

Society wants lower emissions.

To meet global energy demand while also reducing energy-related emissions, society needs more access to affordable and reliable lower-carbon energy, and technologies and products that are more energy efficient.

Lower-carbon energy

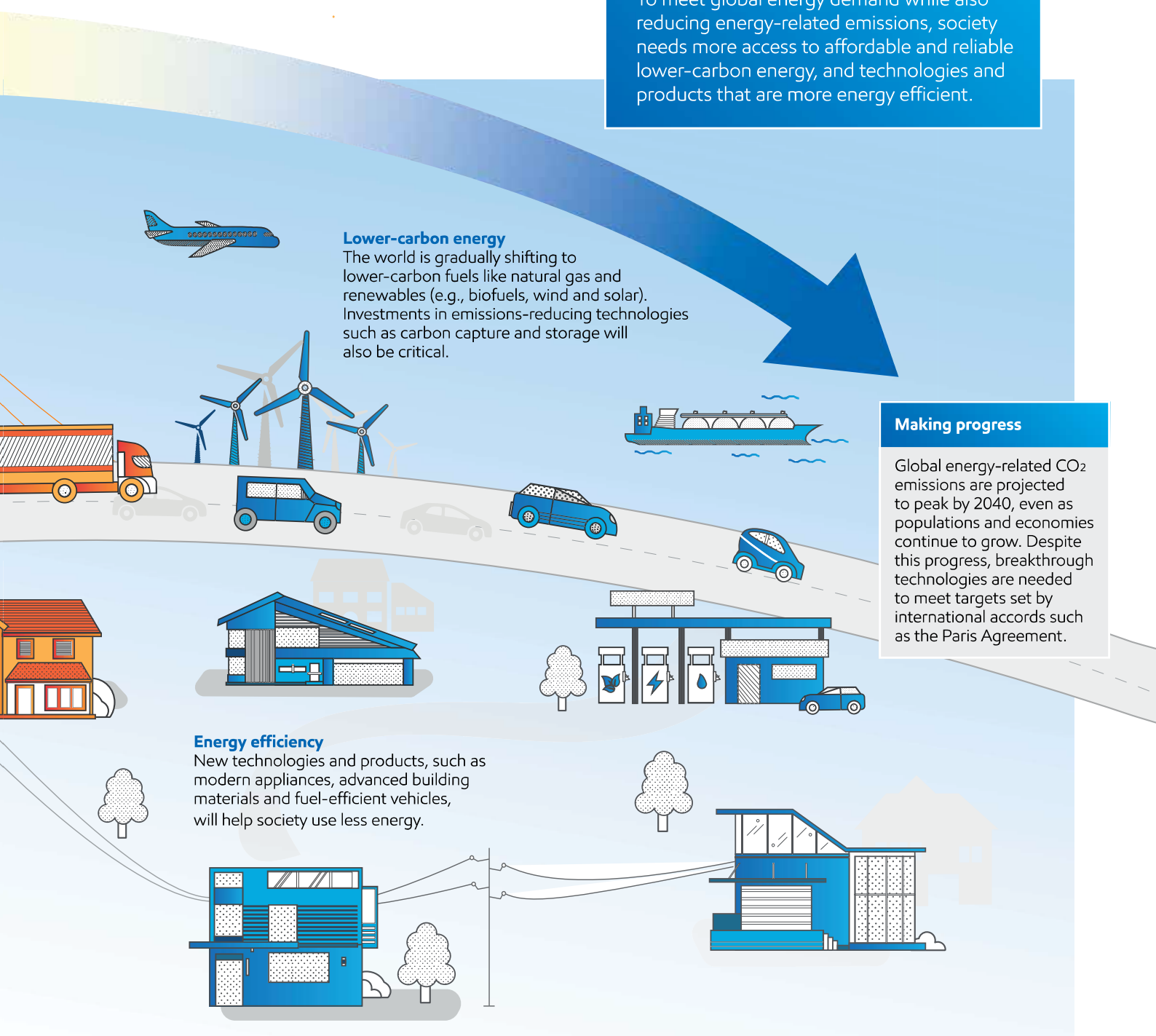
The world is gradually shifting to lower-carbon fuels like natural gas and renewables (e.g., biofuels, wind and solar). Investments in emissions-reducing technologies such as carbon capture and storage will also be critical.

Making progress

Global energy-related CO₂ emissions are projected to peak by 2040, even as populations and economies continue to grow. Despite this progress, breakthrough technologies are needed to meet targets set by international accords such as the Paris Agreement.

Energy efficiency

New technologies and products, such as modern appliances, advanced building materials and fuel-efficient vehicles, will help society use less energy.



DEVELOPING HUMAN CAPITAL: HOW SHELL CONTRIBUTES TO KAZAKHSTAN'S PROSPERITY

Shell Kazakhstan

2019 has been declared *The Year of Youth* to signify that Kazakhstan's new generation that will shape the country's future. From the beginning of its operations in Kazakhstan, in addition to participating in social infrastructure projects as part of its Production Sharing Agreements (PSA), Shell has allocated considerable voluntary investments in its social portfolio and projects aimed at developing opportunities for Kazakhstan's youth.

In recent years, Shell has successfully implemented the *Employment Program for Young Professionals*, university graduates with less than 3 years of work experience. The Program helps young professionals unlock their potential and get a jump start to their careers. With a chance of being employed at Shell, these young people receive a good career start, study the corporate philosophy, and become full-fledged members of the global team. The Program enables young professionals to receive first-hand experience in various units led by experienced personal mentors, working with highly qualified professionals engaged in innovative projects across the globe. The Program's main objective is to help young specialists become professionals in the oil and gas industry within a short timeframe.

Shell believes that investing in the youth of Kazakhstan will deliver for decades to come. Developing talent in science, technology, engineering and mathematics is not only crucial for the future of the oil and gas industry but also for other industries and, indeed, for the development of a global lower-carbon energy future.

Shell's educational programs help shape the systematic and creative mindset they need, using modern technologies to assist the discovery of innovative solutions. Young Kazakhs learn skills in technical design, analytical thinking, problem solving, scenario planning and leadership. And they get to put all that to the test both in Kazakhstan and internationally.

One example is *Shell NXplorers*. This introduces the complex and creative thinking skills and methods that can turn great ideas into reality. The ability to solve complex problems is the number one skill that future employees need, according to research carried out by the World Economic Forum. We delivered *Shell NXplorers* to schoolchildren and students in 2018 and the program is now operating in Nur-Sultan, Uralsk, and Aktau.

Another example is Shell's *Student Energy Challenge*. This program promotes scientific and innovative projects among technical university students, equipping them with the skills of teamwork and business thinking. It was launched as a pilot program during EXPO-2017 in partnership with the KAZENERGY Association. Each year over 40 university teams across Kazakhstan participate in this project.

Kazakh student teams have participated in numerous *Shell EcoMarathon* events. This international competition to design high-energy-efficient vehicles has helped launch brilliant careers all over the planet testing the teams' technical and creative skills against international competition.

Of note is a success story of the petroleum industry education project, which Shell developed on with its partners following an initiative at the World Economic Forum. It brings together students and staff at Satpayev University with industry experts and the internationally respected Colorado University. Lectures, training and knowledge exchange involving some of the world's best people, and all this takes place in Kazakhstan.

Small and Medium Enterprises are the basis for the country's sustainable economic development. Designed to develop entrepreneurs in Western Kazakhstan, *Shell LiveWIRE Global Initiative* seeks to promote entrepreneurship, support innovative businesses, and build consultancy capacity. In 2019, the Program extended to Mangystau oblast. The basic instruments are co-financing of consultancies, organization of trainings for priority business areas, facilitation of business contacts, personal coaching, and post-project support to businesses. In 2018, more than 600 entrepreneurs received of non-financial aid and more than 330 new jobs were created.

In 2013, Shell was proactively engaged in developing the *Kazakhstan Upstream Oil & Gas Technology and R&D Roadmap* endorsed by President Nazarbayev. This in-depth study of the research and development capabilities of the Kazakh oil and gas sector identified a fantastic opportunity for the country in the field of geochemical studies.

Shell Kazakhstan created a top-class geochemical capability for Kazakhstan. That involved building the facility in Atyrau, training Kazakh staff, and funding procurement of state-of-the-art equipment and technology. To ensure their successful practical application Shell, as a leader in this sphere, provided ongoing technical support.

Last December saw recognition of this project by the OECD as an outstanding example of creating both common value and local content development. This was a great success for Kazakhstan in the international arena, an investment that continues to deliver today.

Kazakhstan is not only blessed with natural resources, but with an engaged, bright and exciting youth that is full of potential. Shell will maintain its investment not only in the country's oil and gas sector, but also in developing human capital, especially in the country's new generation of young professionals.



KPO REPORTS 2019 FIRST HALF-YEAR PERFORMANCE RESULTS

Karachaganak Petroleum Operating (KPO)

AKSAI, West Kazakhstan oblast, 13 August 2019 - Karachaganak Petroleum Operating (KPO) has announced its 2019 first half-year operational performance results. For the year to date, KPO has produced more than 73 million barrels of oil equivalent of stable and unstable liquid hydrocarbons, export raw gas and sweet fuel gas. Moreover, 4.5 bln cubic metres of raw gas were re-injected into the reservoir, representing 46.3% of total gas produced.

Edwin Blom, KPO General Director, noted a number of significant achievements for Karachaganak over the past six months:

"2019 marks the 40th anniversary of the discovery of the Karachaganak Field, which became a highly important milestone in the history of the Kazakhstan oil and gas industry. Today Karachaganak is a world-class project that generates significant revenues for the Republic of Kazakhstan and for the Karachaganak Partners. The Company holds one of the leading positions among Kazakhstan's oil and gas producers. Since signing the Final Product Sharing Agreement (FPSA), \$25 billion has been invested in the development of the Field".

In May 2019, the KPO Partners signed the agreement sanctioning the *Fourth Injection Compressor (4IC) Project*. Edwin Blom stressed the importance and objectives of this agreement:

"The signing of this agreement is a monumental milestone in the continued development of the Karachaganak field. Aimed at extending the duration of the liquid production plateau, the 4IC Project will provide an opportunity to significantly increase the value for Kazakhstan and the Karachaganak Partners. The project will also generate funds to implement subsequent investment projects on the field."

The *4th Injection Compressor Project* is one of three *Plateau Extension Projects* including the *KPC Gas Debottlenecking Project* and the *5th Trunk Line Project*, which are in the implementation phase.

In developing the Karachaganak field, KPO applies the most advanced and innovative technologies. KPO strictly adheres to the principles of sustainable development and global business standards. The Company's priority objectives are environmental protection and improved energy efficiency. KPO also pays paramount attention to reduction of air emissions, waste management and the transition to the *Green Economy*

At present, KPO has gas utilization rate of 99.94%, which is within the best world-class achievements. Overall, since 1998, KPO allocated \$389 million for environmental protection activities. In addition, in April of this year, KPO successfully passed the second supervisory audit for compliance with international standards ISO 14001, ISO 50001 and OHSAS 18001.

One of the key priorities for KPO is to maximize Local Content and develop the competitiveness of local contracting companies. KPO is making every effort to achieve the maximum Local Content level in the Karachaganak project with a special focus on localizing production of equipment, goods and materials in Kazakhstan.

During the first half of 2019, KPO signed eight contracts for the supply of goods that will be produced locally, replacing contracts where the same goods were previously purchased abroad. For the reporting period, the share of local content in the supply of goods, works and services in Karachaganak exceeded 56%, or more than \$255 million in monetary terms.

Increasing staff local content also continues to be one of the KPO key focus areas. KPO currently employs approximately 4,000 local specialists. This accounts for 95% of the total number of engineering personnel, and 78% of the management personnel currently employed.

KPO annually implements a high number of large-scale projects aimed at the development of social infrastructure in the West Kazakhstan Region. To date, the overall volume of KPO investments directed for this purpose has exceeded \$375 million.

Summarizing the results for the first half of the year, Edwin Blom noted: *"The primary KPO objective is to operate the Karachaganak field in an economically efficient and environmentally safe manner, taking into account the opinion of all our stakeholders. The Company constantly strives to create the most favorable conditions for the successful social-economic development of the region and for the improved well-being of local population as part of its business activities".*

Edwin Blom further added: *"I hope that our efforts towards the introduction of cutting-edge digitalization technologies and improvements made in production efficiency will allow us to maintain a leading position amongst the oil and gas companies of Kazakhstan and fully deliver the field's production potential for the benefit of Kazakhstan and for the shareholders of the international consortium."*



Karachaganak

on a journey to sustainable development

The history of Karachaganak is recorded forever in the chronicles of the Kazakhstan's oil and gas industry. Discovered in 1979, today's Karachaganak is associated with multibillion investments, record-setting production volumes, innovative technologies and thousands of jobs. Since 1998, Karachaganak has been operated by KPO, an international consortium comprising **Royal Dutch Shell, Eni, Chevron, LUKOIL and JSC NC KazMunaiGas**.

The best international practices introduced by top-class specialists in partnership with the Republic of Kazakhstan ensure KPO's strong production performance. The Venture is a world-class operation recognized as one of the flagships of the national oil and gas industry and a key driver of the economy of the West Kazakhstan region.

In its pursuit of excellence, KPO is guided by the principles of sustainable development and social responsibility. Apart from record production levels, the company's key priorities include health, safety and environment, development of human capital and support of Kazakhstani business. Karachaganak's success story is being written before our eyes with a lasting legacy for the future generations.

Karachaganak Petroleum Operating B.V. Kazakhstan Branch

Aksay, Burlin district, West Kazakhstan region

Republic of Kazakhstan 090300

Tel: +44 208 8288 262; From the CIS: +7 71133 6 2262

Fax: +44 208 8288 620; From the CIS: +7 71133 6 2620

www.kpo.kz



ENVIRONMENTAL REGULATORY REFORM IN KAZAKHSTAN :ONE OPERATOR'S VIEWPOINT

Michael Allen
Head of Government Relations
North Caspian Operating Company (NCOC)

Background

NCOC's Bolashak onshore oil processing facility is located in an arid region. In 2017, NCOC brought additional wastewater processing capacity online that allows the water from technical processes to be recycled (returned for re-use in the processes) rather than being discharged as waste. Recycling has allowed NCOC to reduce by up to 50% the amount of water it buys from the Astrakhan-Mangyshlak pipeline for plant needs.

The treated wastewater streams are sent to artificial evaporation ponds at Bolashak. There are nine such ponds in a 3x3 grid, each section roughly 250 by 500 meters in size and three meters deep. The ponds are completely isolated from surface waters, with sloping concrete banks and lined on the bottom with multiple layers of an impermeable geotextile membrane to prevent groundwater contact through seepage.



Once discharged, the wastewater is evaporated by solar energy, leaving behind solids/salts in sludge form and returning clean water to the water cycle as vapor. After several years of accumulation, the solids will be disposed per regulations. Compared to underground injection, which removes the water from the water cycle, the evaporation pond is an economic and low-carbon solution. (Underground injection is also a Best Available Technique for wastewater disposal, however, no suitable underground aquifers have yet been found in the vicinity of Bolashak.)

The wastewater may contain some volatile fractions – trace contaminants such as methanol that will evaporate from the pond surface as vapor – but according to studies called atmospheric dispersion modelling, it is known that these are well within allowable limits at the boundary of the *Sanitary Protection Zone* four kilometers away.

Methanol, also called “wood alcohol,” is sometimes added to the oil offshore to prevent hydrate (frozen gas) plugs in the pipeline. It is closely related to drinking alcohol (ethanol), though it is lethal in much smaller quantities if ingested. Sunlight and natural biodegradation breaks down methanol vapor into carbon dioxide and water over a few

days. Methanol is a naturally-occurring organic compound; trace amounts are found in the breath of normal, healthy human individuals. Studies show low toxicity to mammals from inhalation, therefore air emissions from ponds are thought to pose negligible risk to humans or the local environment. There are no airborne methanol standards in most OECD¹ countries.

Regulation of Evaporation Ponds in Kazakhstan

In world industry, evaporation ponds are recognized as a best practice in wastewater disposal, especially in hot and dry climates. In Russia and OECD countries they are subject to technical and engineering standards for their construction and operation but there are no standards or limits on effluent discharges².

In Kazakhstan, discharge into isolated man-made industrial ponds **requires the same permit, monitoring and effluent standards that would be required for discharge into a natural water body used for recreation, fisheries and drinking water.** Methanol limits in particular are very stringent (3 milligrams per liter), exceeding the capacity of most equipment currently in use for removing it from industrial wastewater. NCOC is working toward steady compliance with this standard, but it will be costly and the environmental benefits of the additional investment are not clear.

Damages, “Polluter Pays,” and Reform of the Eco Code

Kazakhstan also differs from the OECD in the breadth and complexity of its system of environmental tax payments for emissions, discharges and waste. These are applied to dozens of pollutants within Kazakhstan, compared to a few “priority” pollutants (e.g., greenhouse gases) in some OECD countries.



¹ (OECD), an inter-governmental association of 36 developed countries. Its activities are directed at stimulating economic progress and world trade.

² *Research on the Current Environmental Legislation Practices in the OECD Countries, Russia, and Brazil*, January 2019, prepared by E&Y Consulting under contract to the KAZENERGY Association

Under Kazakhstan's current (2007) *Environmental Code*, exceeding an emission standard, or emitting one of these dozens of regulated pollutants other than as described in a permit, triggers automatic civil penalties assessed as a multiple of the tax rate. In the OECD, civil penalties address the polluter's behavior, rather than a recoup of lost taxes. Fines and penalties are infrequent in OECD-member countries, assessed only in cases where the polluter has failed to cooperate with authorities, or has clearly avoided using Best Available Techniques for preventing pollution.

Exceeding a permit limit can also trigger a claim for monetary compensation to the State for damage to the environment. The liability for this environmental damage is established simply due to the permit violation, without need to provide evidence of any actual physical harm to the environment. The amount of monetary damages that the violator must pay is assessed from a formula calculation, unconnected to a field-based assessment of restoration costs (typically because there is no actual damage to remediate).

This was the case in March 2018 when NCOC voluntarily notified the regulator that it had discharged some of its treated wastewater to the evaporation ponds from outlets other than the ones in its permit in order to minimize the risks to birds. No adverse environmental impact from this move could be demonstrated, beyond a formal deviation from a permit. Nonetheless, the monetary compensation for "damage to the environment" ran into the hundreds of millions of tenge (in addition to an administrative fine).

Let's compare this to the "*Polluter Pays*" principle. As interpreted in OECD countries, it means the polluter, not the State, is responsible for *cleaning up* damage and *restoring* the environment in the event of a major, localized pollutant release.

The clean-up is the main thing. It must happen. If the polluter does not or cannot clean up, the State may do it and charge it back to the polluter. If there is nothing to clean up, then the polluter does not pay for cleanup. This relates to air emissions in which clean-up is not possible, or the damage is not localized because the atmosphere itself disperses and neutralizes the pollutant. This system however should apply to evaporation ponds, which ought to function as designed in a system that is cleaning up wastewater.

In addition, in Kazakhstan monetary damages are simply collected and deposited into the State budget; there are no requirements that it be spent on restoration of the harm that the emissions have allegedly caused.

The sharp difference in approach has led the OECD to remark that Kazakhstan appears to be "focused on calculating and collecting monetary compensation for the state (essentially serving as a revenue-raising penalty) rather than on preventing and correcting the damage,

reducing emissions over time and incentivising the use of BATs [Best Available Techniques]."³

In 2018, the Ministry of Energy announced that it would undertake a reform of the Environmental Code to address these and other issues. NCOC has been an active participant in the public discussion, believing reforms are needed to better align with international practice and to facilitate foreign investment while remaining protective of the environment.



July 2019 Draft of New Environmental Code and Related Amendments

A "Concept" document for the new Code was approved by the Government in September 2018, and met with a generally favorable wait-and-see reaction from the business community. It called for elimination of the practice of indirect damages (described above), and for elimination of differentiated emission tax rates by which "stationary sources" are assessed only a small fraction (0.4 - 5%) of the amount due for the same pollutants if they are emitted via gas flaring. (A flare stack is also a stationary emissions source, but one used almost exclusively in the oil and gas industry.)⁴

Since the environmental impact is identical, the Concept noted that this rate imbalance could be viewed as a violation of the *Polluter Pays* principle, and the principles of administrative law.

³ "OECD Multi-dimensional Review of Kazakhstan," Vol.2, June 2017, pp 19, 44, 175, and 182

⁴ The macroeconomic distortion from this is significant. Karaganda and Pavlodar Oblasts have no oil and gas fields, facilities or flares, but they are the top two emitters of stationary source air pollution in Kazakhstan. Their total emissions in 2016 were 3.5 times more than the total emissions of the top two oil and gas regions, Atyrau and Aktobe Oblasts. Their total environmental payments for those air emissions were 3.2 times less.

After a series of informal consultations with business and civil society, drafts of the new *Eco Code* and of the Related Amendments were issued by the Ministry of Ecology, Geology and Natural Resources⁵ in mid-July 2019, for formal written comment by industry associations within ten days (by law). It is expected that the draft *Eco Code* and Related Amendments will be submitted to the Majilis by December 2019.

NCOC, joined by other Operators and international oil company investors, note with gratitude that **indirect damages appear to have been eliminated in the current Draft**. However, the **disparity in tax rates was not addressed**.



In addition, **there has been no meaningful reform of the post-Soviet system of fines linked to these tax rates for a broad list of pollutants**. The major change is that administrative penalty amounts have been increased by a factor of 10 for all large companies. This will undoubtedly affect industry as a whole.

For the oil and gas industry in particular, the combined effect of the above is that **unavoidable “safety” flaring, a globally accepted industry practice, remains subject to tens and hundreds millions of dollars in fines**.

Another centerpiece of the reform is a transition to *Integrated Environmental Permitting (IEP)* and *Best Available Techniques (BAT)*, based on the European Union’s directive on “*Integrated Pollution Prevention and Control*.” In order to incentivize the transition, pollution taxes will rise 700%. At the time of writing, industries remain concerned by lack of details.

It is not clear whether IEP will be required for all of the 200 industrial facilities in Kazakhstan, or only some of them. No robust analyses of cost-benefit, economic impact or policy options are available⁶. Non-industrial pollution (i.e., transportation, agriculture, residential/commercial) has not been addressed in any comprehensive way in this *Eco Code*.

⁵ This Ministry was created on 17 June 2019 and took over the functions of environmental regulatory control and *Eco Code* reform from the Ministry of Energy.

⁶ Marginal abatement cost, health impacts, policy priorities, etc. could be addressed with modelling resources available under the *Convention on Long-Range Transboundary Air Pollution (LRTAP)*, to which Kazakhstan acceded in 2001, but has not ratified, nor actively participated to date in its technical programs.

Measures for improving *Kazakhstan’s Emissions Trading System*, proposed by foreign investors based on OECD experience, were not incorporated: banking of quota, price stability measures, “carbon leakage” and measures for ensuring transparency of benchmarking.

New powers are given to environmental inspectors, eroding safeguards in the *Business Code*. Companies will be obligated to send raw data from continuous monitoring of all large emission sources in real-time to regulator (more invasive than in OECD countries). Inspectors will be accompanied by “approved” environmental NGOs during surprise inspections, including offshore and hazardous/strategic facilities.

Conclusion

NCOC and its investors were encouraged with Kazakhstan’s initiative to implement best OECD practices while developing the new *Eco Code*⁷. Having reviewed the draft Code and accompanying legislation, however, investors (and the oil and gas industry as a whole) are becoming concerned that reform has not been carried out as declared in the Concept.

To fall far short of OECD standards at this point may impact the investment climate and Kazakhstan’s international reputation. No one wants to see this happen, and investors stand ready to continue collaborating with the Kazakhstan Government to improve the *Eco Code* reform package in the brief time remaining.



⁷ Ministry officials have confirmed that the *Eco Code* is designed to regulate only the “big companies that are doing from 70 to 80% of the emissions,” apparently referring to the fact that industry and power plants account for 70-80% of emissions of SO₂ and NO₂ from stationary sources in Kazakhstan. However, as one example, this fails to include mobile sources (the transportation sector), which in 2016 was by far the largest SO₂ polluter and, alongside the residential and commercial sector, responsible for most carbon monoxide emissions.

*Admissions
now open for
2019-2020!*

Why choose Haileybury?

Pathway to the world elite
universities (Ivy League in USA,
Russell Group in UK).

Highly qualified
British teachers.

An excellent learning environment,
which allows children to grow
academically and holistically.

Educating future leaders

www.haileybury.kz

Haileybury Almaty

admissions@haileyburyalmaty.kz
+7 (727) 355 01 00 (ext. 240)



Facebook: [Haileybury-Almaty](#)
Instagram: [@haileybury_almaty](#)
Twitter: [@HaileyburyKZ](#)
YouTube: [HaileyburyAlmatyOfficial](#)

Haileybury Astana

admissions@haileyburyastana.kz
+7 (7172) 55 98 55 (ext. 122)

Facebook: [Haileybury Astana](#)
Instagram: [@haileyburyastana](#)
Twitter: [@hbastana](#)
YouTube: [HaileyburyAstanaOfficial](#)

TENGIZCHEVROIL (TCO) MISSION ACCOMPLISHED: IDENTIFY AND LOCALIZE

by Yerlan Islyamov
Public Affairs Advisor
Tengizchevroil (TCO)

Recently, Kazakhstan began manufacturing internationally-recognized escape hood respirators under a licensing agreement with AVON Protection (UK). The licensee is a 100% Kazakhstani company, QHSE-Akbarys, a supplier of personal and mass protective equipment for oil & gas operations. The respirator production line, which created 16 new jobs and required an investment of 1 billion Kzt, was established in the Astana–New City free economic zone in Nur-Sultan.

Respirators, a critical escape device, can be applied within less than 30 seconds and provide at least 15 minutes of filtered air supply, thus allowing enough time to reach a safe shelter in case of an emergency. A mask that comes with the respirator is fully transparent to provide superior visual communication and to protect the face from liquid agent splashes. In addition, the respirator comes with anti-fog coating on the visor. This specific model of respirators is designed to be used in Kazakhstan's severe climatic conditions and, as a result, is in high demand from Tengiz and Karachaganak field operating companies.



In his welcome speech at the presentation of the production facility on August 9, Timur Zharlikaganov, the QHSE-Akbarys Business Development Manager, stressed that the idea for this enterprise gained tremendous support from Tengizchevroil (TCO). “At its early stages”, he said, while addressing TCO General Director Eimear Bonner, who was present at the event, “TCO was actively involved in promoting the localization initiative and supported this production by placing orders. Thanks to TCO support, we are now witnessing a fully operational facility”.

Oizhas Lukmanov, TCO Domestic Market Development Coordinator, later explained that production of Avon NH15K respirators was part of a local content development plan within a long-term contract with QHSE-Akbarys. “Together with our QHSE-Akbarys colleagues we developed a plan that would lead to Avon NH15K respirator production in Kazakhstan. We negotiated and managed this process every step of the way to complete our plan”, he recalled.

Local content development plans in long-term contracts have been part of TCO's *Kazakhstani Content Development Strategy* since 2017. This model is not limited to the QHSE-Akbarys success story.

KISCO, a flange gasket supplier, suggested localization of gasket manufacturing as a part of the local content development plan in their agreement with TCO. It was no sooner said than done. By the end of 2018, a world-class gasket manufacturing facility was established in Atyrau and 23 new jobs for Kazakhstanis were created. As a result, TCO benefited from an uninterrupted supply of KISCO products that meet all international standards for TCO operations. KISCO's production line runs on German technology, and the staff is trained to the highest standards.

The TCO model that requires vendors to identify local manufacturing opportunities and invest in infrastructure and facilities benefits Kazakhstan not only by creating new jobs. A key advantage is the transfer of technology and skills that takes place through these partnerships.

Shymkent Cement is yet another good example. The company is now producing grade G oil-well cement that is in high demand for Tengiz drilling operations.

TCO listed localization of grade G oil-well cement as a priority for a long time and *Shymkent Cement* made a good candidate for this role. TCO and Schlumberger, a main well completion services provider, audited three cement manufacturing facilities in Kazakhstan to identify localization opportunities. Findings suggested that *Shymkent Cement* was able to get API 10A certified and its product samples passed tests in Chevron and Schlumberger labs.

Technological processes were brought in line with proper standards and world-class cement manufacturing kicked off in Kazakhstan for Tengiz operations. Grade G oil-well cement produced by *Shymkent Cement* is also suitable for export to international markets. In addition to localization efforts, having a long-term agreement with TCO, Schlumberger was able to train and substitute most of its foreign staff, thereby increasing the Kazakhstani workforce ratio to 95% of total personnel.

As of the end of 2018, Kazakhstani citizens hold 88.7% of all positions in TCO Base Business. The overall ratio of Kazakhstani staff in Base Business with the Future Growth Project-Wellhead Pressure Management Project (FGP-WPMP) is 81.6% of the total. The Tengiz project provides jobs to roughly 80,000 Kazakhstani employees. In 2018, Tengizchevroil spent over 1.3 trillion tenge for goods and services from local suppliers. By comparison, expenditures of the entire Atyrau oblast, where TCO operates, amounted to just over 100 billion tenge for the same year.

A significant volume of Kazakhstani goods and services was procured for the needs of the *FGP-WPMP* Project. *FGP-WPMP* has accounted for up to 65 percent of the TCO expenditure on local goods & services in 2018. Over 48,000 Kazakhstani employees are engaged in *FGP-WPMP* and the project is expected to reach peak activity during 2019-2020. Over 500 Kazakhstani companies supply the project with goods and services estimated to total over \$6.7 billion since 2017.



The TCO expenditure on procuring domestic goods and services has increased continuously. According to company sources, since TCO was created in 1993, it has spent \$27 million on Kazakhstani goods and services. In 2003, that figure exceeded \$500 million. Ten years later in 2013, TCO spent over \$2.3 billion on sourcing local goods and services. And in the first half of 2019 alone, TCO has spent \$2.1 billion on local goods and services. Services and labor are in high demand at TCO and this is not likely to change. In 2018, Kazakhstani entrepreneurs provided 70 % of TCO's Base Business needs in labor and services.



NEW LEADER IN PROJECT LOGISTICS

www.barrusprojects.com



Address: 348/1 Raiymbek ave., Almaty Kazakhstan
Telephone: +7 (727) 250 04 87
E-mail: info.kz@barrusprojects.com

LEVERAGING TECHNOLOGY TO BRING THE FUTURE TO KAZAKHSTAN'S OIL AND GAS INDUSTRY

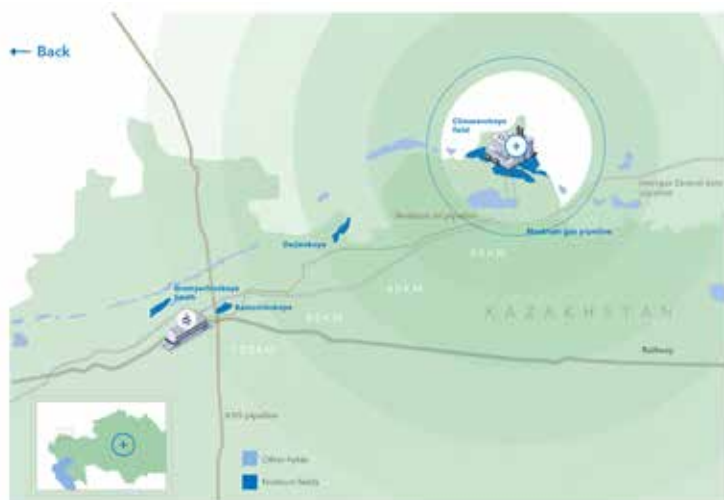
by Kai-Uwe Kessel
CEO, Nostrum Oil and Gas

One of the key challenges facing Kazakhstan's leading industry, the oil and gas sector, is how to build a sustainable future. Today, oil and gas companies recognise their role in the global energy mix and have a common goal to meet the world's energy needs in a responsible manner. This requires a strong focus on sustainability, safety and efficiency. At Nostrum Oil & Gas, this approach is at the heart of our vision as we strive to grow our operations.

Harnessing cutting-edge technology enables us to both maximise the efficiency of our market-leading infrastructure, including our third Gas Treatment Facility (GTU3), and improve greenhouse gas (GHG) emissions through the adoption of new technologies.

Utilising technology to efficiently recover LPG in Kazakhstan

As the 100% owner and operator of four licences in North west Kazakhstan, Nostrum is a key operator in the region, having sold over 122 million boe of crude, condensate, LPG and dry gas since 2004.

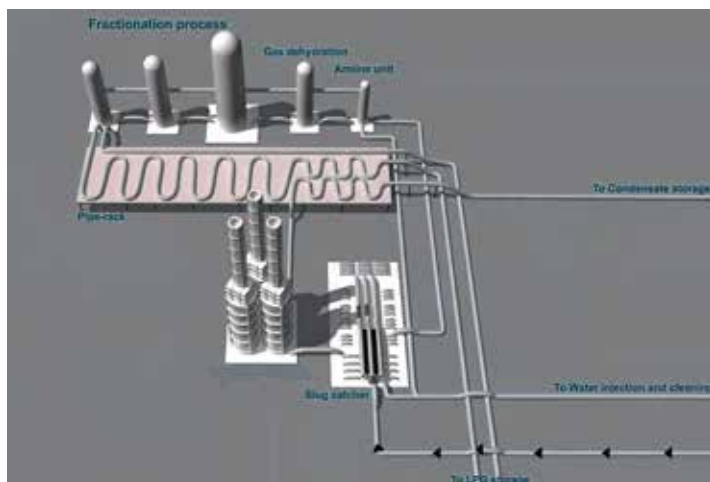


Nostrum is committed to making a contribution to building a sustainable future in the country. Over the last decade, we have invested over US\$2billion into drilling and developing our fully integrated infrastructure hub, which has a 4.2bcm gas processing capacity - making Nostrum the owner and developer of the largest infrastructure hub in North-West Kazakhstan.

The world-class facility, including a power plant, an oil treatment facility and storage, three export pipelines and a rail loading terminal, gives access to major export routes for all our products. With GTU3 now in the final stages of commissioning, production capacity is over 100,000 boepd.

What makes GTU3 state-of-the-art? Our approach to processing liquefied petroleum gas (LPG) sets us apart.

Inside GTU3: The Nostrum approach to LPG recovery



The gas condensate is piped from the wells to the inlet manifold whereby they enter the plant. The first step is to separate the liquids from the gas in the slug catcher.

Water is removed, cleaned and re-used for water injection. The two remaining products – gas and liquid condensate – go on for further processing.

The condensate is made safe and stabilised in the liquid stabilisation unit. It then travels along the piperack to the condensate storage tanks.

The gas from the slug catcher is then compressed and sent to the Amine unit for sweetening and the removal of the H₂S and CO₂.

After further dehydration, the gases are then processed in the cryogenic unit and sent for the fractionation process involving the removal of ethane and methane – the left-over gas is condensed into liquid propane and butane, more commonly known as LPG, which is sent to storage.

In addition to the three products from the gas treatment facility, Nostrum also produces crude oil. From the crude oil wells, the oil is piped to the oil treatment facility for cleaning. The oil treatment facility is capable of processing 400,000 tonnes of crude oil per year. We also have oil storage facilities on site for up to 30,000 cubic metres of oil.

Nostrum's infrastructure is powered by the power plant that runs off the dry gas produced from the field. Nostrum has the capacity to produce up to 41 mega watts per hour through four turbines from its power plant. Finally, Nostrum has storage on site for all its liquid products.

Building a sustainable future

Nostrum has operated in Kazakhstan for more than 20 years and during this time the Company has sought to be a responsible and transparent company which places public interest at the core of decision-making processes. We have a deep understanding of, and respect for, the needs of the communities in which we operate, and we therefore prioritise the careful management of our people, our communities and our environment. We are passionate about cultivating a diverse and talented workforce, and promoting equality and safety within our environment. One of the most impactful approaches to championing ESG issues is through investing in transformational technology.

As an oil and gas company, we recognise that hydrocarbon exploration and production is a major contributor to GHG emissions and consequently we have a responsibility to work to address climate change. We continue to invest in new technologies to improve our GHG emission performance.

As part of our commitment to minimising waste and pollution in a responsible and transparent manner, Nostrum strictly adheres to Kazakh regulatory requirements and also takes into account international best practice standards with regard to GHG emissions and has been monitoring and reporting GHG emissions since 2011. In 2019 we are participating in the CDP disclosure process to demonstrate our commitment to improvement and transparency in this area.

Nostrum monitors the development of technologies and regularly considers new solutions in its efforts to increase operating efficiency, reduce environmental footprint, including air emissions, and increase safety. During the design phase for any new facilities or upgrades to existing infrastructure, the best use of available technology is considered in order to minimise GHG emissions. Historically, this has included the use of different fuel types to power machinery at our field site. We have also successfully introduced a company-wide safety card initiative to promote health and safety amongst our workforce.

Nostrum future GHG reduction initiatives

As part of our journey towards building a sustainable future, our planned initiatives include modernising equipment at the Oil Treatment Unit to reduce GHG emissions and to further identify ways in which GHG emissions can be reduced. For example, we have the capacity to retool drilling rigs to derive power from electricity rather than diesel, a process which has already begun. We will also continue to invest in low-carbon research and development, equipment, products, and services.

'During more than 20 years of working in Kazakhstan, we have developed a deep understanding and respect for the needs of the region which are embedded in our activities in Kazakhstan, a country we are proud to work in', said Atul Gupta, – Nostrum Executive Chairman.

AG-DATA INTEGRATOR: exchange data with your machines

-  AG-DATA CONNECT
-  MAPPING
-  ANALYZING
-  ACCOUNTING
-  JOHN DEERE EQUIPMENT



AG-DATA Integrator transfers agrotechnical data between John Deere onboard data management software and accounting systems of a company based on 1C:Enterprise platform. Install AG-Data Integrator and be aware of what is going on in your fields.



Precision farming and digital technologies for a modern farm management!

THE NEW ERA FOR ABB: ABB ABILITY™ DIGITAL SOLUTIONS FOR OIL, GAS & CHEMICAL COMPANIES

ABB Kazakhstan

About ABB

Let's write the future. Together.



ABB (ABBN: SIX Swiss Ex) is a pioneering technology leader with a comprehensive offering for digital industries. With a history of innovation spanning more than 130 years, ABB is today a leader in digital industries with four customer-focused, globally leading businesses: *Electrification, Industrial Automation, Motion, and Robotics & Discrete Automation*, supported by its common ABB Ability™ digital platform. ABB operates in more than 100 countries with about 147,000 employees.

ABB is the product of many acquisitions and mergers, but primarily the 1988 coming together of ASEA and BBC, formerly known as Brown Boveri, two of the proudest and best-known names in European electrical engineering.

As a proven leader in the Oil, Gas & Chemicals industries and with continued investment and expansion of new services and solutions, we are uniquely positioned to support your digital needs.

ABB Ability™ provides a full-range of digital solutions that help Oil, Gas & Chemical companies manage complexity. From electrical condition monitoring in the Barents Sea to developing the world's largest industrial computer network for plant integration in Saudi Arabia, **ABB Ability** offers tried and tested solutions for each stage of the operational lifecycle.

Our leading digital products and solutions have been designed to meet the real world needs of the industry. This is based on over fifty years of experience in Oil, Gas & Chemicals, a team of 5,000 experts and the implementation of over 1,000 projects worldwide.

ABB Ability™ Solutions for Predictive Maintenance

ABB Ability™ solutions for Oil, Gas & Chemicals offer a condition monitoring system that monitors the health status of any standard asset. Low-cost sensors collect plant-wide data. This data enables predictive maintenance and real-time oversight to improve the entire system based on fleet analytics algorithms.

ABB Ability™ solutions for Oil, Gas & Chemicals allow reduction of O&M costs while also extending asset life. Digital technologies and applications will increase the effectiveness of assets and improve the efficiency of manufacturing and engineering processes. ABB Ability infrastructure now empowers critical assets, like rotating equipment, by comprising smart sensors and an analytics algorithm. This enables transparency of asset fleet conditions, reducing unplanned downtimes through

predictive maintenance and enabling improvement services that minimize operational costs.

ABB Ability™ Manufacturing Operations Management

ABB Ability™ solutions for Oil, Gas & Chemicals enable the world's largest petrochemical complex to secure connectivity and data management while accommodating future scalability needs. They provide advance analytics capabilities for domain-specific applications and allow seamlessly cooperation between managers and experts.

Data storage and transactions also need to be reliable, cyber secure, and with high capacity. The question is: How can industrial plants meet these requirements and operate at an optimal level – by turning large amounts of industrial data into knowledge and action? The answer is **ABB Ability Manufacturing Operations Management – Process and Production Intelligence**, a modern and intelligent hub for technology, ICT, people, and opportunities, and the ability to change is a requirement for any industry, especially Oil and Gas.

As players on the global market, companies are facing fast changes to their business conditions, and adaptability based on registered data is a keyword for any ambitious business. Industrial developments as a result of *Industry 4.0* and *The Internet of Things (IoT)* will create even more data that needs to be analyzed and interpreted. Raw data is useless, unless it is turned into knowledge. Data needs to be analyzed and applied ambitiously and innovatively – to the benefit of decision-makers, the individual industry, and the whole network. ,

This is why we, at ABB, are going all the way and have developed a cyber secure solution that supports effective decision making and plant operations. We call it *ABB Ability Manufacturing Operations Management (MOM)*. *MOM Process and Production Intelligence Software* is all about combining plant operations data from control systems, ERP, and other data sources into actionable information. Information that provides the right insights for decision-makers to plan, optimize and continuously improve plant operations, in order to stay competitive in a rapidly changing environment.

Over past decades, industrial automation has evolved to become driven by big data, thanks to technological innovation and advancements.

The foundation is the Common Services platform that includes the following 5 key capabilities:

- **Connectivity:** to connect to control systems and disparate data sources
- **Data Storage:** high capacity process historian tailored for secure long time storage of process data and event
- **Common Services:** to ensure a consistent integration environment across all applications
- **User Experience:** Empowers decision-makers with the right data at the right time. Easy access through Launchpad.
- **Reporting:** supports the users with the reports they need

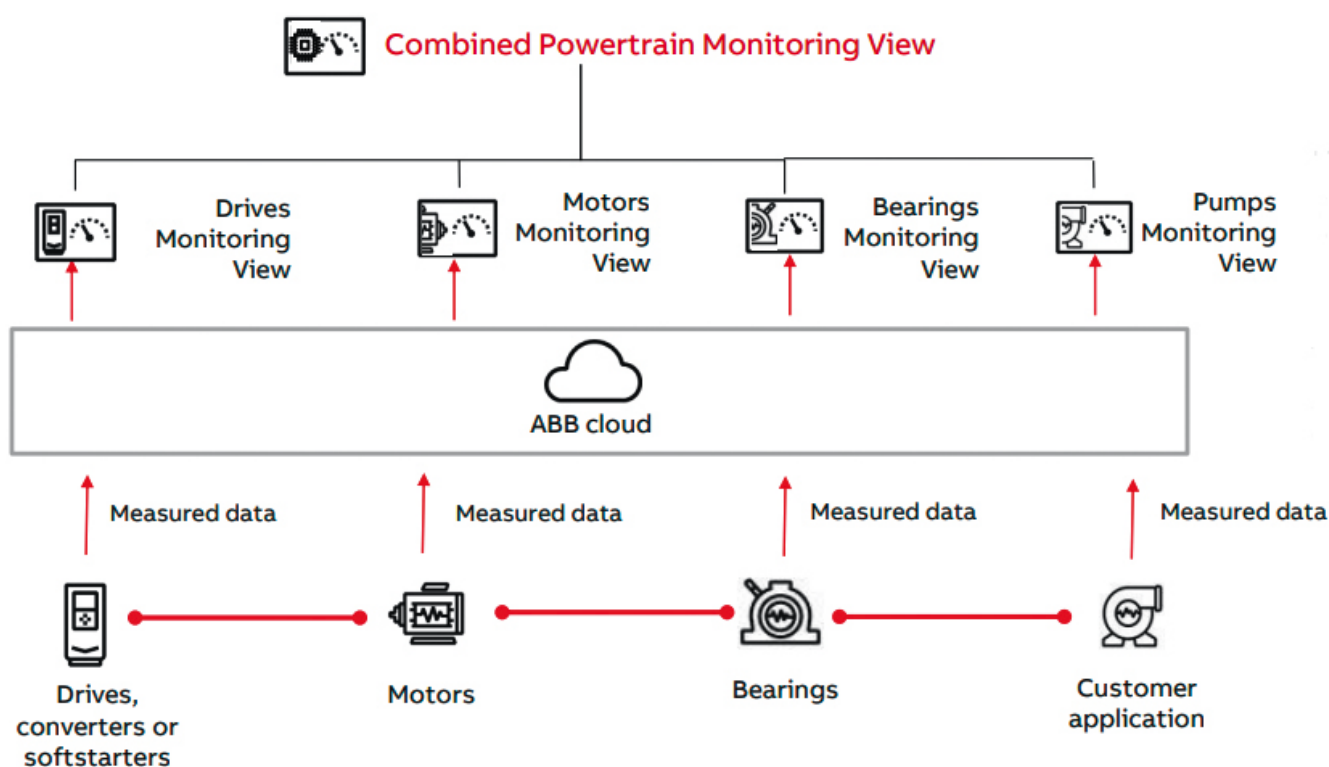


ABB Ability Manufacturing Operations Management (MOM) reflects the trend and helps you meet these requirements. *MOM Process and Production Intelligence* software collects, stores and analyzes your relevant data, always giving you the best foundation for making decisions with a minimal risk of error. In the industry today but even more significantly in the future, software-based systems suited for industrial software, such as *Manufacturing Operations Management Software*, will play a large role.

Thanks to this intelligent information infrastructure MOM definitely ensures that decisions-makers can make the right decisions at the right time. In addition, the software can be expanded by adding specific applications, targeting your industry and suitable for your requirements. Here are some of the reasons why MOM will play a large role in the industry of the future.

Gather and analyze your data

As decision-maker, one of your most important responsibilities is to make the right decisions based on the optimal information available. *Manufacturing Operations Management* provides all the knowledge your need – fast and effective.

Managed complexity

The incoming data masses will be stored, combined, and translated into meaningful information, based on the intelligent information infrastructure. MOM meets demands

Control system independent

The very reliable, high capacity and cyber secure platform enables integration of any data according to open industry standards. MOM will allow industries to collaborate across systems and networks in the production process and to react faster to changing market requirements.

Easy to expand

The *Common Services* platform also hosts different industrial productivity software applications. This enables MOM Software users to adopt and expand fast and easy



for the highest levels of quality, precision and accuracy in output, by supplying information that can be trusted to provide the best operational decisions for your plant.

by adding new relevant industrial software applications, as requirements from different operational excellence programs or changes in business objectives.



Cost effective software life cycles

With a life cycle separated from the control systems Common Services and applications offer a very cost effective IT/OT integration. Industrial productivity software applications can be added whenever needed. The underlying control systems life cycle does not impact this agility to add new software products and solutions as new requirements occur. With these separated software life cycle layers, *ABB Ability Manufacturing Operations Management Software* offers low total cost of ownership.

Meet industry standards

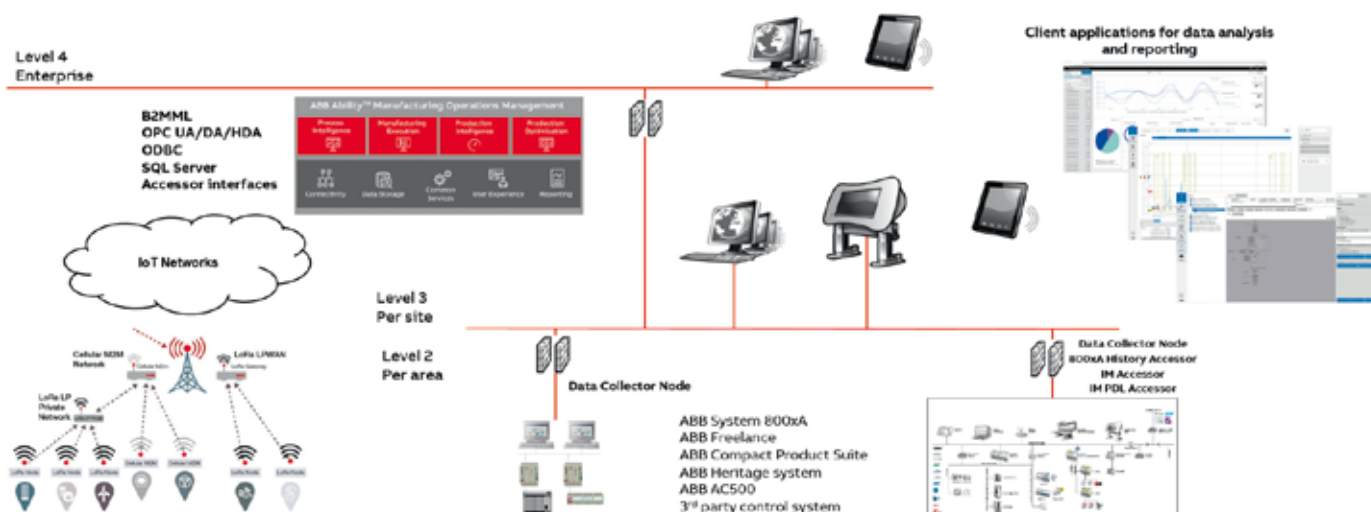
The industry is continuously facing new standards and regulations and needs to adapt to these changes fast, in order to stay competitive. *ABB MOM Process and Production Intelligence* provides the advanced data analytics needed to achieve the necessary insights into the operations. In addition, MOM Software includes a comprehensive set of industrial productivity software applications which address and support compliance to new standards such as *ISO 50001 for Energy Management*, *ISA-18.2 for Alarm Management* and alarm systems performance, or *ISO 55000 for Enterprise Asset Management*.

Customized knowledge

ABB Ability Manufacturing Operations Management enables you to individualize even the smallest details while retaining optimum productivity. You and your colleagues can track and plug specific data and knowledge, based on your individual needs. Different users have different needs and ways of exploring data. The intelligent software from ABB supports decision-makers who need interactive access to KPI displays, reports, documentation etc. on their desktop computers or mobile devices. A second type of users are the data analysts who typically configure reports, analyze data and calculate the required KPIs or perform other types of data mining based on the data stored in the MOM system.

ABB Ability™ solutions for Oil, Gas & Chemicals allow industry operations to go further and smarter than ever before. ABB Ability™ contributes to development of the oil and gas segment through innovation and offers unique opportunities to meet digital needs. As a result, customers are able to reduce their operational and capital expenditures, as well as maintenance and operational costs.

Manufacturing Operations Management Software Topology



BORUSAN CONDITION MONITORING FOR THE OIL INDUSTRY: WARNING AND PREVENTION

by **Ruslan Bekenov**
Energy and Transportation Department
Borusan Makina

As an official dealer of Cat® engines for the oil and gas industry for over 20 years, Borusan Kazakhstan has extensive experience with the industry requirements. **Borusan Oil & Gas** is a single source supplier for all power applications, offering tailor-made solutions, whether power generation or other forms of auxiliary, main or emergency power. Borusan customers are assured of professional support throughout the power unit's entire life cycle. This knowledge and experience ensures the power unit has the optimum design right from the project's initial study phase.



Borusan Kazakhstan has an extensive team of experts to help our oil & gas customers enhance every aspect of our clients' operations. With more than 500 service technicians, 150 engineers and 21 service centers in the Caterpillar® service network in Kazakhstan and worldwide, Borusan is able to offer its customers an extensive package of services, resulting in efficient energy solutions with Cat engines as their reliable power source.

In 2019, BORUSAN highlighted its **Condition Monitoring (CM)** services, a pro-active analysis using equipment and application data inputs providing maintenance, component replacement, application and repair recommendations that help customers lower owning and operating costs and improve availability. Borusan CM Advisors use electronic data, fluids analysis results, inspection records, equipment history and site analysis to develop value-added recommendations for customers.

Condition Monitoring plays a key role to optimize maintenance and overhaul periods, foreseeing and budgeting short/mid-term costs, preventing premature failures, saving direct costs, and improving up-time.

WITH THE CAT PRODUCT LINK™, THE BORUSAN CLIENT CAN BE EVERYWHERE AT ONCE

When you're a one-man equipment management crew with operations spread as far apart as an eight-hour drive, sometimes you need a little assistance. For Azamat Makupov, technical superintendent for Burgylau Drilling, help came in the form of the Cat Product Link. *"I need to be able to look at everything in one place,"* Azamat says. *"But I'm one person—I can't be everywhere at once, and it's too costly to send a service technician after every possible problem."*

Instead, he uses **Product Link**, Caterpillar's remote monitoring fleet management solution, to keep an eye on his company's drilling rigs—all of which are powered by Cat engines—and Cat generator sets.

"I can look online and watch the engines," Azamat says. *"It shows me on a map exactly where they are and how they're performing."* More important, **Product Link** delivers a warning whenever there's a potential problem. That's because sales representative at Cat dealer Borusan CAT set up the system to send him email and text alerts."

"If a rig is losing fuel pressure, I know about it before the operators notice," he says. *"I can alert them to the problem and have them perform a simple fix."* That not only saves the cost of downtime, but also the expense of sending dealer service technicians to what can be fairly remote locations in west Kazakhstan."

Recently, he received a text alert at 2am, warning him of low coolant levels on one of rigs. He was able to call the team on site, diagnose the problem and fix what turned out to be a leaking hose before the rig lost power. Another time, he was alerted to low fuel pressure at the same location. It turned out the valves hadn't been reopened after fuel delivery — a problem Azamat was able to identify and fix before the fuel delivery person even left the site.

"Product Link catches things fast, and it's really easy to use," he says. *"It practically runs itself. It makes my job easier, and it gives our company peace of mind."*

The Customer Support Agreement (CSA) is the most effective way of running your equipment at peak performance and eliminating the risk, cost, disruption and loss of revenue caused by unscheduled downtime. No matter your industry or brand of equipment, you can count on Caterpillar and **Borusan Condition Monitoring** experts to help you make informed decisions that boost your productivity and profits.



OMV Petrom,
the largest oil & gas producer
in Romania and
South Eastern Europe

OMV Petrom is an integrated energy company with activities in Upstream, Downstream Oil and Downstream Gas.

OMV Petrom has been active in Kazakhstan since 1998 and via its two operating companies, TOC and Kom Munai, is producing in four onshore oil fields: Tasbulat, Turkmenoi, Aktas and Komsomolskoye. Currently over 350 people, mainly skilled local staff, are employed by the company. OMV Petrom invests in local projects for the long term and contributes to the communities living close to the oil fields.

We produce and deliver the energy for a better life.



OMV Petrom

The energy for a better life.

FLUOR JV - TENGIZCHEVROIL (TCO) OIL AND GAS MEGAPROJECT IN KAZAKHSTAN

by Alan Evans
Sales Director, Fluor

Fluor's joint venture team, KPJV, has developed one of the world's largest, single 3D intelligent plant design models for Tengizchevroil LLP's *Future Growth Project – Wellhead Pressure Management Project (FGP-WPMP)*. The KPJV team, consisting of Fluor, the *Kazakh Institute of Oil and Gas (KING)*, *KazGiproNefteTrans Engineering Company (KGNT EC)*, and *WorleyParsons*, is providing detailed engineering, procurement and construction management services for *FGP-WPMP*, the next expansion of the Tengiz oil field in western Kazakhstan.



"One of the largest oil and gas projects in the world, the engineering effort is providing the design and tools to enable delivery of the project in a safe and efficient manner," said Simon Nottingham, President of Fluor's Energy & Chemicals business in Europe, Africa and the Middle East. *"We have worked with Tengizchevroil and our joint venture partners in Kazakhstan for more than 20 years."*

Led by Fluor's Farnborough office, engineering is being executed by Fluor and its joint venture partners in an integrated team with Tengizchevroil. Engineering teams are also located in Atyrau and Almaty, New Delhi, and Houston, with fabrication yards in Kazakhstan, South Korea and Italy.

"The scale for this industry-leading project calls for engineering to be executed simultaneously at multiple locations around the world," said Gerald Stone, Fluor Senior Vice President and Project Director. *"Spanning multiple time zones, work is taking place around the clock. The project's 3D model provides the latest integrated design and data management system, using millions of pieces of data to deliver construction-driven execution."*

The single 3D plant model allows project engineers around the world to see real-time developments in the design. Fluor's investment in engineering technology and a digital infrastructure capable of handling giga amounts of data enables the multi-location, multi-party execution platform to achieve increased levels of automation.

The data-centric model provides 3D visualization of the plant with intelligent coupling of 2D and 3D information. It enables sequencing tools to optimize construction and to produce advanced engineering, construction, and installation work packages.

In 1990, Fluor launched continuous operations in Kazakhstan. Since then, the company has undertaken some of the country's most challenging oil and gas projects, establishing a permanent operation center in Atyrau in 2009.

"We are leveraging innovations across every facet of the company to improve project delivery," said Robert Moore, General Manager of Fluor's Kazakhstan operations. *"Over past years, many tools have been developed, both by Fluor and our vendors, which allow us to deliver projects more efficiently."*

Moore added: *"We are also committed to developing a sustainable local supply chain by working collaboratively with Kazakhstani companies to better understand their capabilities and how we can work together to maximize opportunities."*

Fluor participates in many industry working groups in Kazakhstan to assess what other opportunities can be leveraged and to improve integration over the supply chain. Fluor is working with suppliers, local partners, clients and the Kazakhstan business community to remove inefficiencies across the supply chain and better understand how we can use data-driven project execution to provide operational excellence in the oil and gas industry.



ENGINEERING AND CONSTRUCTION BY DESIGN



With industry-leading expertise and a proven track record in Kazakhstan, Fluor provides best-in-class safety and quality performance with cost and schedule certainty.

FLUOR[®]

www.fluor.com

© 2019 Fluor Corporation. All Rights Reserved.
Fluor is a registered service mark of Fluor Corporation.
ADFB188319

By Ruslan Stefanov
Cybersecurity Consultant, Honeywell

As oil-producing and oil-refining companies implement digital technologies more widely, industrial digitization is impossible without improved cybersecurity systems. For successful protection against ever-developing cyber threats, an integrated approach is needed, combining deep knowledge of production processes as well as best practices in industrial cybersecurity. It is important that in each digital project implemented at an enterprise, the issues of selecting cybersecurity resources are discussed from the very start as project specifications are shaped.

Efficient cybersecurity: A prerequisite for successful digitization

The industry has developed a clear understanding that technologies of the *Industrial Internet of Things (IIoT)* are an integral prerequisite for competitive ability, and implementation of such concepts as *Connected Plant* and *Smart Field* directly influences the commercial rate of return. New software tools greatly increase the efficiency and safety of production facilities, improve quality, and reduce time and resource cost of security operations. Even skeptics agree that it is impossible to avoid implementing innovative technologies, and digitization levels will only grow in the future.



At the same time, in the digital transformation context, one should not forget the cyber threats accompanying this process. The more connected a facility becomes, the higher the concern about its security. Cyberattacks are increasing worldwide every year. The actions of intruders can cause a stop in production, confidential data leaks, and consequently, financial and reputational losses. In the worst cases, hacker attacks may result in environmental disasters and fatalities.

Executive management often does not realize the scope of the problem due to insufficient knowledge and experience in a domain new to them, and continue to use obsolete approaches to cybersecurity in their practice. This is indicated by the results of the LNS Research sponsored by Honeywell in 2017. The polling covered 130 managers of small and large companies of oil and gas, machine-building, and other industries from North and South America, Asia/Pacific, Europe, Middle East, and Africa.

More than half of them indicated that the enterprise they work for has already faced attempts at security system hacking. Furthermore, 45% of respondents said that their companies had not yet appointed the executive responsible for cybersecurity. Just 37% of companies were monitoring suspicious network activity, while 20% of companies did not even assess the risks regularly. About 64% of respondents said that they had already started implementing IIoT technologies, or were going to start in 2018.

Attacks by cryptoware (such as *WannaCry* and *Petya*) have already affected the largest oil and gas companies, however experts believe that we are only seeing the very beginning of the cyberattack era today, and its prime still lays ahead. According to the research company *Cybersecurity Ventures*, the global damage from cybercrime will grow to \$6 trillion a year by 2021. Corporate cybersecurity spending will increase to \$1 trillion.

In addition, there will be a lack of information security specialists; employers will be unable to fill up to 1.5 million vacant positions. The deficit in skilled personnel will be felt even more acutely in the industrial facility cybersecurity sphere, where teams must understand operational conditions and limitations. There are various reasons why the threat situation is developing in this direction, as well as several best practices for companies to face cybersecurity challenges productively.

Vulnerability of industrial networks

For many years, before the rise of IIoT and the trend for production components' connection to a network, *Automated Process Control System (APCS)* specialists did not face cyberthreats. It is no wonder then, that in training and briefing of operators controlling industrial processes, maximum attention is traditionally given to occupational health and safety rules, but less so to information security. As a result, industrial personnel often do not pay due attention to information security measures, and does not use them.

For instance, employees not trained in industrial cybersecurity basics might connect a promotional USB device, brought from an exhibition or a personal mobile device, to an APCS-connected computer, thus creating risks of infecting the entire network. Rank-and-file employees are hardly at fault if the organization lacks a cybersecurity policy supported and controlled top-down.

Another major cause of vulnerability of industrial networks is obsolete software and delayed updating of antivirus programs. While software and hardware in the IT domain are regularly updated, many process plants are still operating controlled by Windows XP released in 2001.

Of course, such an operating system cannot respond to today's threats and even prevents installation of several important security updates (corrections of program errors). Most of the APCS equipment was not designed for today's level of connectivity of devices, and does not offer easy and fast software updates.

To make things worse, even a brief malfunction in industrial systems controlling complex processes can entail very serious consequences. A non-scheduled restart of IT servers also involves problems for the users, but is still less dangerous than causing an emergency shutdown of equipment operating at high temperatures or with chemically active raw materials.

Requirements for industrial cybersecurity systems

To change things for the better, cybersecurity matters must become an integral part of digital transformation of companies in the oil and gas sector. They must enter the daily agendas of general managers, and be considered in the development of investment plans and budgeting. It is important to implement best cybersecurity practices across personnel, processes, and technologies. Lack of collaboration between engineers and IT personnel should be overcome; a cybersecurity unit should be established at the enterprise, and external expert panels engaged to reach the best security results.

Oil and gas companies operate in a highly competitive environment. Therefore, it is important for them to economically justify investment in cybersecurity. Experts advise switching from traditional data protection methods based on threat analysis to a more efficient risk-oriented approach. This strategy enables setting the priorities correctly, allocating resources primarily to handling problems most critical for production stability.

An industrial cybersecurity system must seamlessly fit in the overall business strategy of the company, and be considered in the modernization of industrial assets. Its purpose is not just minimizing the cyberthreat risks, but also providing additional advantages for the company - for instance, promoting higher output and reducing manual labor inefficiencies.

It is also important that specialists creating a cybersecurity system are proactive, foresee future threats, and influence the development of events rather than just respond to actions of cybercriminals. This is possible using advanced methods of threat detection (intelligence) and exchange of threat information.

Solutions used in industrial cybersecurity systems must not affect the manufacturing process and equipment. Therefore, many standard products and approaches well-proven in the information technologies domain are not suitable for

the protection of APCS. Special protection techniques considering the production requirements are needed here, which is why leaders need to know cybersecurity and the processes at a facility.

Solving the personnel problem

As mentioned above, deficit of skilled specialists is one of the main problems in the early stage of industrial cybersecurity. Even personnel competent in the cybersecurity sphere needs significant time to understand the inner workings of a production facility. Companies should invest heavily in training existing personnel, because it is difficult to find available specialists. And knowing that most of Kazakhstan oil and gas assets are far from the headquarter, in areas with an inclement climate and undeveloped social infrastructure, attraction of skilled personnel and setting up a full-featured service responsible for cybersecurity becomes an expensive task.

Honeywell's experience in industrial cybersecurity shows that in this situation there are three solution scenarios: centralize cybersecurity management, or outsource this function, for instance to an outside *Security Operations Center (SOC)*. Or, often, it is useful to combine both approaches.

The first option suggests that all geographically scattered assets of an oil and gas company are connected to the central control room with the aid of a protected communication channel. A single cybersecurity competence center operating in 24/7 mode is set up at the headquarter. All its personnel is in close interaction as they are not separated by thousands of kilometers and time zones. This enables the team to instantly notify each other about anomalies, to jointly find optimal solutions, and to quickly implement them in practice. Under such conditions, new hires gain experience faster, and regional facilities are relieved of the challenging task of searching for specialists.

Overall, an infrastructure developed for centralized cybersecurity can be used to solve a broad range of problems in the context of the connected production concept. A secure remote access system may be used for various kinds of industrial risk monitoring and management, for example.

For companies striving to minimize their personnel or with limited centralization, the personnel problem may be solved by engaging a cybersecurity service provider. One such provider is Honeywell's *Managed Security Service* unit, handling several hundreds of facilities in the oil and gas, petrochemical, and pulp and paper industries.

Subject matter specialists know the specifics of these facilities well, and can find an optimal balance between production priorities and cybersecurity requirements.

Outside experts are also ready to share their knowledge and the industry metrics available for comparative benchmarking.

Support from an outside team of experts not only helps in complicated situations, but also guarantees that all basic, but by no means less important operations (installation of correction packages, management of network firewalls and intrusion detection systems, etc.) will be performed accurately and on time. For internal teams focused on solving multitudes of various problems, such operations sometimes recede into the background, and are performed "when there's enough time."

Cybersecurity tools

Solutions for protection of industrial process automation systems (or OT) have their own capability sets compared to protection of business process automation systems (or IT), and are currently being actively developed and improved.

Honeywell *Industrial Control Systems Shield* centrally manages protection against cyberthreats in ramified APCS across thousands of industrial sites worldwide from one operation security center. The platform is suitable for automation systems with equipment and software by different manufacturers.

To measure the performance and security metrics of industrial control systems, Honeywell *Industrial Cybersecurity Risk Manager* is suitable. It ensures continuous observability, proactive identification of vulnerabilities, and quantitative assessment of risks. With the aid of an intuitive interface, even non-experts can assess the current situation correctly, set the priorities, and manage the situation in online mode.

To protect industrial systems against threats related to the use of removable media or storage devices, Honeywell *Secure Media Exchange (SMX)* is available. This solution only permits USB drives that have passed a prior check and login to connect to APCS. It is part of a Honeywell global threat detection (intelligence) system which greatly enhances SMX efficiency for protection against cyberattacks. As a threat is discovered, protection for it is updated in the intelligence system and readily deployed across all SMX instances.

In conclusion, the drive to digital transformation offers significant benefits for oil and gas operators, yet cybersecurity is a critical element for safe operations. Increasing operational efficiency and security through a centralized security operations center is recommended, together with deploying advanced tools and best practices. Knowledge and expertise from a third party such as Honeywell can offset personnel shortage issues and offload important cybersecurity initiatives to ensure correct security control measures are continually in place.



INTELLIGENT PROVIDER OF LOGISTICS

Address: office 231, 348/1 Raiymbek ave., Almaty, Kazakhstan
Telephone: + 7 (727) 250-04-83, 250-04-84, 250-04-85
E-mail: info@ipl.kz

www.ipl.kz

FIELD
OF
ACTIVITY

LOGISTICS

CUSTOMS
CLEARANCE

CERTIFICATION

INDUSTRIAL
SAFETY





BUSINESS TRIP WITH BENEFITS

Join our Nomad Corporate programme
and manage business travel better, whilst
we reward both you and your company.

 **nomad corporate**

LLOYD'S REGISTER - PRODUCTION OPTIMIZATION IN THE OIL FIELDS

By Casper Schytte Hemmingsen
Kenny Krogh Nielsen
and Laurent Abou Gebrayel
Lloyd's Register

Lloyd's Register is an international company working in the marine and energy industries. Within the oil and gas industry Lloyd's Register has strengthened its position with acquisitions of companies such as Senenergy, Scandpower, ODS, and Moduspec. Offices are located across the globe, working in cross-disciplinary teams. Cutting-edge technology is implemented in the workflow and used to support customers encountering complex real-world problems.

Accurate representations of the near-wellbore flow in reservoirs are important in order to understand the impact of different design changes in well completions and to predict and perform optimal control of the well flow. The industry standard for investigating the well flow is to represent the individual components as one-dimensional nodes, then the network of nodes are interconnected and solved as a system based on defined boundary conditions.

However, the flow in the well is three-dimensional and cannot always be realistically represented by simplified one-dimensional nodes. To accurately model the complex flow interaction between the well and the near-wellbore, Lloyd's Register solves the domain in a three-dimensional framework using *Computational Fluid Dynamics (CFD)*. The Lloyd's patented *Wellscope™* method has been used in many projects to improve key client decisions. *Wellscope™* employs *High Performance Computing (HPC)* clusters to solve the fluid flow equations and obtain an accurate representation of the complex near-well flow.

Wellscope™ has been applied successfully in many client projects around the globe. A large 5-year *Joint Industry Project (JIP)* research project has been conducted to gain further insights into well flows and to further develop *Wellscope™*. *OPTION JIP (Optimizing Oil Production by Novel Technology Integration)* investigated different aspects of near-well challenges in reservoirs, involving multiple companies within the oil and gas industry as well as two universities. Real-life North Sea wells were used for demonstration.

The well model influences the performance of the reservoir simulator through the productivity index (PI). The PI represents the production of fluids from the near-well parts of the reservoir, and is generally based on simple analytical equations. Changes in the permeability around the wellbore due to damages or stimulations, are interpreted in the PI using an artificial constant called the skin factor. The skin factor also includes resistance due to geometrical deviations of the completion compared to the simple base case, influence of gravel-packs, hydraulic fractures, or deviated wells.

The skin factor does not fully rely on physics, but is used as a fitting parameter to adjust the productivity of the well in the reservoir simulator. CFD does not rely on any skin factor, but instead captures the physics involved in the near-well region by fully resolving the three-dimensional space. CFD can accurately capture changes in permeability along the well and shows how the inflow to the wellbore is influenced by the changes. This strengthens the base of the decision-making for completion designs or interventions in a well.

Multiple real-life *Wellscope CFD* studies have proven that utilising many Inflow Control Devices (ICDs) not only provides a uniform inflow profile, but also increases the

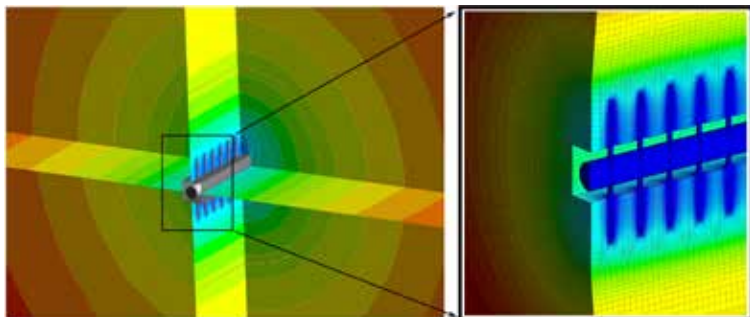


Figure 1. Wellscope CFD model of cemented and perforated well to determine optimum perforation for multiple well formation damage scenarios.

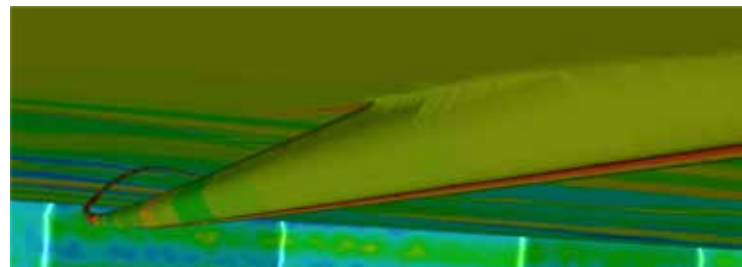


Figure 2. 3D well trajectory representation from logged data in the North Sea converted into the Wellscope CFD model.

total well flow rate significantly compared to screen-only completions. Furthermore, screen-only completions are prone to hot-spotting and water-coning. The standard industry solution is to increase the flow area of the screen, but that will only result in increased hot-spotting velocities. Optimum flow performance depends on several factors, such as the formation characteristics (e.g. permeability profile, formation damage, fractures, faults, thief-zones), the number of ICDs, design, location, nozzle sizes and total flow rate.

Proper wellbore clean-up of the treatment fluids is extremely important to unleash the full potential of a well completion. Removal of stagnant drilling fluids and wellbore debris or stimulation of formation is accurately investigated using *Wellscope™*. This ensures that the efficiency of the well is not jeopardized due to an overly simplified estimation of the multiphase flow in the wellbore and near-well reservoir.

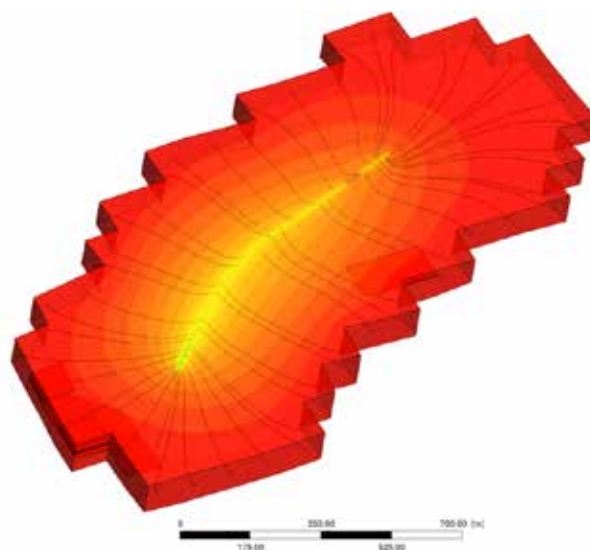


Figure 3. Near-well Wellscope CFD model used for coupling to ECLIPSE reservoir simulator model for actual North Sea reservoir.

SINCE
1865

Bertling



**BERTLING – ALWAYS
A SMART MOVE.**



Bertling plans globally and performs locally. Freight forwarding projects are managed and executed to the highest technical standards. Bertling uses experienced, in-house personnel, robust group-wide systems, and puts together teams dedicated to your global business. For more than 150 years, Bertling's innovation has delivered operational excellence.

Your Freight Forwarding Specialist in Kazakhstan:

Bertling Kazakh Logistics LLP
Admiral Lev Vladimirovsky Str.
Building #9
E02A4H5 Atyrau
Kazakhstan

Contact: Colin MacIsaac, Regional Director
Phone: +44 7585 902187

Contact: Aliya Zhaksylykova, General Director
Phone: +7 7122 763171

BAKER HUGHES A GE COMPANY, PARTICIPATES IN DEVELOPMENT OF KAZAKHSTAN'S HUMAN CAPITAL

by Meirzhan Sheraliyev, Senior Sales Lead
Baker Hughes a GE Company

Supporting and encouraging ongoing learning is a key to succeed in today's dynamic environment. This is particularly critical in the industrial space – the energy industry is going through a major transition with greater focus on digital and new energy solutions. Working with high-tech equipment demands an employee base with the relevant professional and specialist skills in that field, and so development of human capital is a key topic for Kazakhstan today.

Kazakhstan President Kassym-Jomart Tokayev noted that foreign investment should be used to transfer knowledge and new technology to Kazakhstan to strengthen the country's economic development. The *32nd Plenary Session of the Foreign Investors' Council* chaired by the President was specifically dedicated to *Development of Human Capital*.

Baker Hughes, a GE company (BHGE) - the world's first and only full-stream provider of integrated oilfield products, services and digital solutions, with operations in over 120 countries - provides modern technology to Kazakhstan for the region's key strategic projects, such as Tengiz, Karachaganak and Kashagan. BHGE has been supporting the growth of the customers' workforce since 2005 to take the energy industry forward by providing an opportunity to customer employees to study at BHGE Oil & Gas University in Florence, Italy.

The interactive full-stream educational program addressed to BHGE customers' young talents simultaneously builds leadership skills while familiarizing them with specific technical processes through an immersive, hands-on approach. The program's main goal is to create a global forum of future leaders based on knowledge-sharing and a shared vision about the future of the sector, giving major industry players the chance to foster their relations and build new synergies.

This year, BHGE is bringing human capital expertise to Kazakhstan to create the next generation of local engineers locally. BHGE is launching projects to develop new centers of competence in Kazakhstan aimed at training students and specialists to use advanced solutions.

On April 25, together with its local partner, BHGE signed a Memorandum of Understanding with the country's leading technical universities – *Satbayev University and Kazakh-British Technical University (KBTU)* – to enhance the role of education and science aimed at further developing industry within the region. BHGE senior business and engineering leaders will deliver lectures on best practices and emerging trends in petroleum engineering at both universities.

Partnership with KBTU

Kazakh-British Technical University (KBTU) has been ranked one of Kazakhstan's best technical universities by the *Independent Quality Assurance Agency for Education*. Ninety-eight percent of KBTU graduates secure employment within months after graduation or move on to higher studies. KBTU cooperates with the world's best universities, such as the University of London and Harvard Business School, and participates in teacher and student exchange programs such as Erasmus + and Bolashak.

In Atyrau, BHGE is setting up a *West Kazakhstan Training Center* together with KBTU on industry best practices in drilling, evaluation, completion, production for employees of local operating and drilling companies. This Center will be suitable for any training format, both for short-term programs and for long-term ones. Program synergies will enable training of both specialists and supervisors. This comprehensive program will cover all the demands of the market for training Kazakh technical specialists. The Center will start working during the 2019-2020 academic year.

Partnership with Satbayev University

Satbayev University is the oldest and one of the most prestigious technical universities in Kazakhstan. In 2019, it was ranked Kazakhstan's best technical university by the *Independent Quality Assurance Agency for Education*. Satbayev University cooperates with 174 leading higher educational institutions in 25 countries, including the USA, England, Germany, Italy, France, China, Korea, Poland, as well as with the largest industrial organizations of the mining, metallurgy, and oil-gas industries to conduct research projects and personnel training.

At Satbayev University, BHGE will set up in Almaty two *Drilling and Completion Fluids Laboratories*, one for academic purposes for Satbayev students and the other for Research and Development purposes with full laboratory high-tech equipment. These laboratories can be used to provide access for undergraduate and graduate students to modern technology and to develop expertise in drilling and completions fluids. *The Drilling and Completion Fluids Laboratory* will begin operating during the 2019-2020 academic year.

As a global company, it's critical for BHGE to give back to the communities in which the company operates. BHGE is proud to be a trusted strategic partner of Kazakhstan and to be investing in its human capital. BHGE believes these projects will be the next step in a longer journey of helping train Kazakhstan's next generation of workers and managers.

UNDERGROUND GAS STORAGE IN KAZAKHSTAN: INVESTMENT CHALLENGES

by Ana Severova
Partner, Devine & Severova LLC

Gas is enjoying a golden age. Global trade in LNG continues to grow and natural gas accounts for just under a quarter of global energy demand. Policy makers seeking to lower carbon emissions are promoting the use of gas over coal, and the International Energy Agency predicts that natural gas will overtake coal as the world's second-largest energy source after oil by 2030. Whether the gas age will be permanent or only a stepping-stone

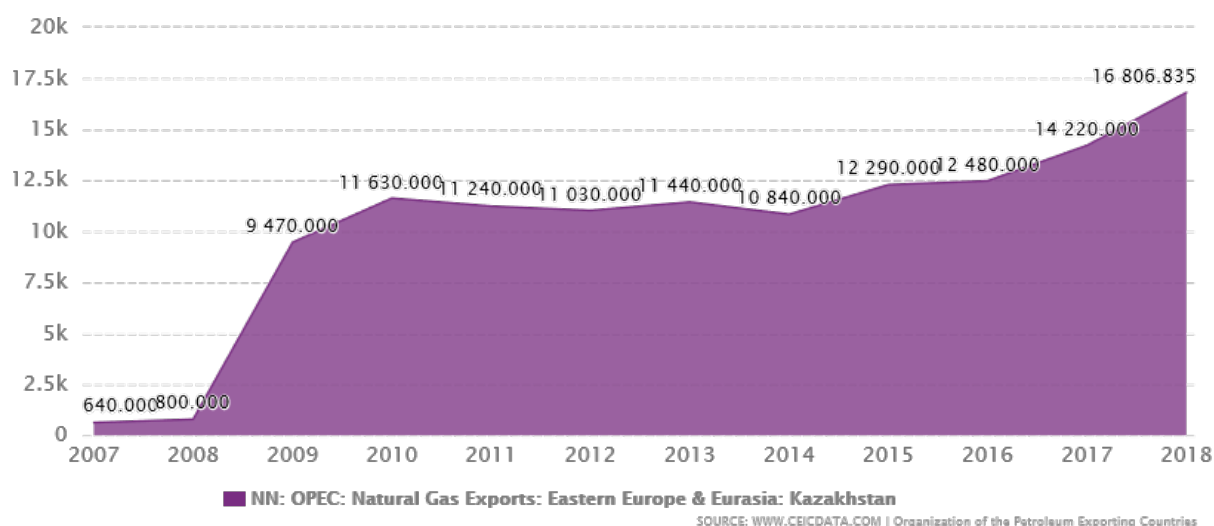
to a world powered by renewable energy, the intermediate future of gas is radiant. This will have wide-reaching consequences for gas markets and associated infrastructure, including underground gas storage facilities.

Global gas storage capacity is expected to grow from 14.9 billion cubic feet (bcf) in 2018 to around 17.8 bcf in 2022. Gas storage has several functions, but essentially it helps balance the supply and demand of natural gas. For example, during the winter months stored gas is used as a fuel to satisfy the seasonal surge in demand for power. Gas storage companies in mature markets (such as liberalised gas markets in the EU and North America) provide services other than balancing, such as parking and interruptible services.

Traditionally an oil-producing area, the Caspian region's importance as a natural gas producer is growing rapidly. Kazakhstan is dotted with natural gas reserves, the majority of which are in the west of the country and include the Kashagan field in the North Caspian Sea and the Karachaganak field in the country's northwest. According to the *BP Statistical Review of World Energy 2019*, Kazakhstan's proved natural gas reserves are higher than Oman's at 35 trillion cubic feet and gas production continues to rise.

In parallel with the increase in gas production, Kazakhstan is expected to add around 49 bcf of underground gas storage capacity by 2022. *GlobalData* identifies Kazakhstan as the second largest country in the Former Soviet Union (FSU) in terms of underground gas storage capacity additions in the period to 2022, trumped only by Russia. Currently, there are three underground gas storage facilities in Kazakhstan: *Bozoi*, the largest facility, in the Aktobe region; *Poltoratskoye* in the Southern-Kazakhstan region; and *Akyrtobe* in the Zhambyl region.

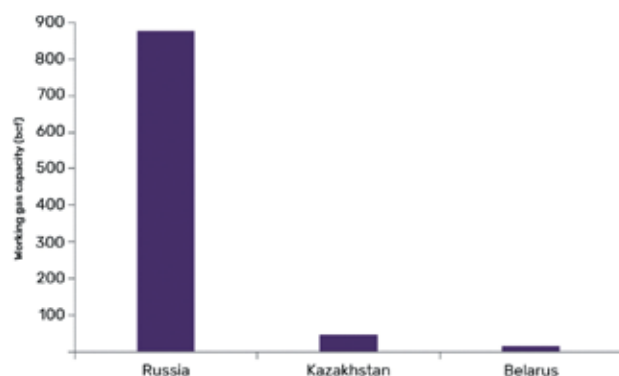
In 2016, the European Bank for Reconstruction and Development (EBRD) provided financing for expansion of the Bozoi facility. The expansion's aims are to enhance the security of natural gas supplies to southern Kazakhstan



These services seek to optimize storage capacity for the benefit of the market by managing peaks and troughs in demand and price. Batteries storing power off-grid are also being used to solve the same problems, but such technology is still in its infancy. In liberalised markets, gas traders can use storage to profit from fluctuations in price. Strategic storage of gas can also help with security of supply, mitigating the potential damage of reductions in national or imported supply.

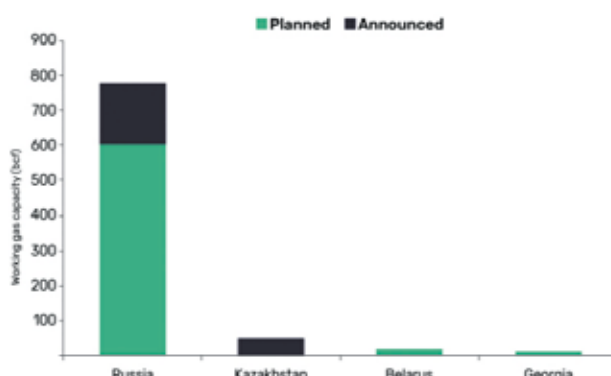
and to smooth out the peaks in gas consumption which lead to power deficits during winter. The country plans to spend US\$345 million on the Bozoi II storage site. In order to facilitate gas exports and to meet domestic demand, we understand from public sources that Kazakhstan plans to build a new gas storage facility linked to the Central Asia–Center pipeline and another gas storage facility near its capital.

Planned and Announced Underground Gas Storage Capacity Additions (bcf) in FSU, 2018–2022



Source: GlobalData, Oil and Gas Intelligence Centre

New-build underground gas storage capacity growth (bcf) in FSU, 2019–2023



Source: GlobalData, Oil and Gas Intelligence Center

In this article, we consider some of the regulatory challenges faced by gas storage projects in Kazakhstan. They can broadly be divided into the macro and micro and cover issues relating to:

- (1) *Macro*: regulation of the gas market, competition, support for private sector and foreign investment; and
- (2) *Micro*: ownership of stored gas, commingling, relationship between users of the storage facilities, rights to underground storage reservoirs, security of rights, royalties, health, safety, security and environmental considerations.

Types of gas storage facilities

There are several types of gas storage. For the purposes of this article, we have not considered wholly man-made gas storage facilities, as they tend to be prohibitively expensive to operate on a commercial basis. Underground gas storage may take place in the same reservoir from which the petroleum was extracted, or it may be located away from the original production field, ideally, close to the end consumers of that gas.

Natural gas is stored underground primarily in three reservoir types: depleted oil and gas fields, depleted aquifers, and in salt beds and salt caverns. Each type of storage facility has its advantages and disadvantages. Depleted oil or gas reservoirs are the most common form of storage facility.

Existing legal framework for underground gas storage in Kazakhstan

In 2012, the President of Kazakhstan signed the Law "On Gas and Gas Supply" (the **Gas Law**). The Gas Law defines the activity of "gas supply" as the production, transportation, storage and sale of gas, without differentiating between these activities. Kazakhstan's national oil company, KazMunaiGas (through its subsidiary KazTranzGas) acts as the national operator of the Kazakh gas grid system.

The Gas Law establishes the pre-emptive right of the national operator to purchase all gas produced in Kazakhstan and to purchase all gas infrastructure assets put on sale in the country. The right provides a legal basis for consolidating KazTranzGas' ownership of the entire gas sector. *Intergas Central Asia (Intergas)*, a subsidiary of the national operator KazTransGas, is responsible for the operation and maintenance of the gas transportation networks. Intergas operates all three existing underground gas storage facilities in Kazakhstan.

According to the Gas Law, gas storage infrastructure may be owned by the private sector or the state. The construction and operation of underground storage facilities require separate licences from the state and additional permits. *The Committee on Regulation of Natural Gas Monopolies and the Protection of Competition of the Ministry of National Economy of Kazakhstan* must approve gas storage tariffs.

These restrictions (together with those in the Gas Law) make it more challenging to secure investment from the private sector in gas facilities such as underground storage in Kazakhstan.

Macro legal issues on development of underground gas storage

In mature jurisdictions such as the UK and US, underground gas storage facilities are typically privately owned and run independently of the state. In the UK, this was driven by the EU's policy on its internal energy market, which led to the dismantling of state monopolies in the electricity and natural gas markets in order to achieve market-based supply prices.

The UK has a well-developed privatized, commercial gas storage market with several underground gas storage facilities. *The Office of Gas and Electricity Markets (Ofgem)* is responsible for regulating gas markets. Gas storage licenses and relevant environmental and gas

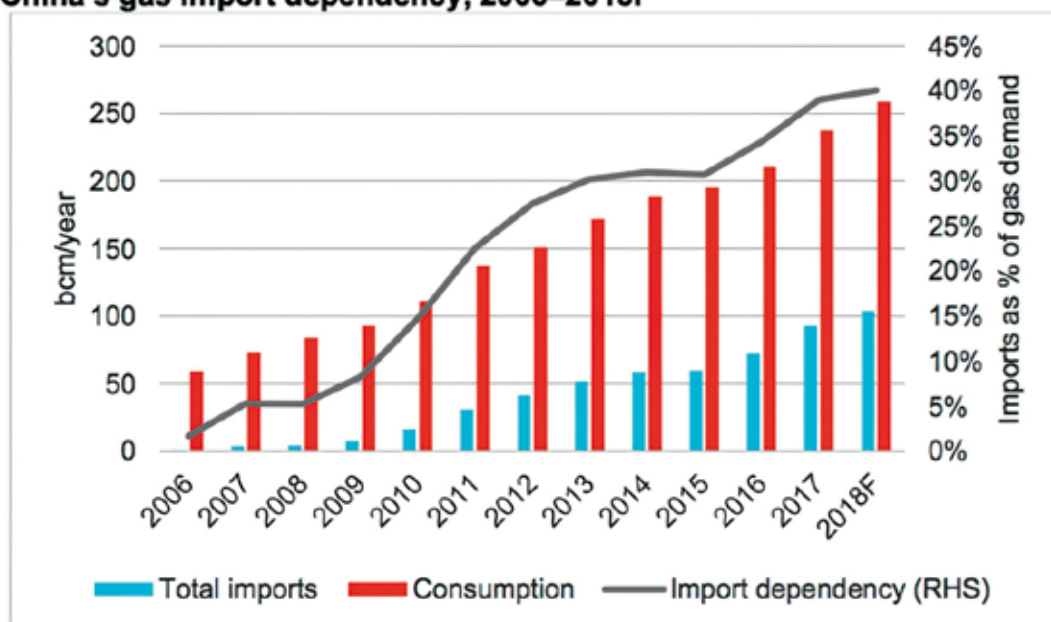
processing licenses are required for any gas storage facility, with additional approvals required for new offshore storage facilities.

In the UK, the requirements for third-party access to storage facilities are set out in the *Gas Act 1986* (as amended). The negotiated third-party access (TPA) requirements apply to those facilities for which access is economically necessary to secure an efficient market for storage services. The fundamental objective of TPA is to ensure no undue discrimination between parties in access to storage. Storage operators must publish the contractual terms for access annually and have a duty negotiate terms of access on a good faith basis.

Since 2013, the country has become an important link in *China's Belt and Road Initiative*. As part of this cooperation, KazMunaiGas and CNPC have built a joint gas pipeline for the export of gas to China. According to KazMunaiGas, exports to China have increased more than five times year on year, to 5.5 billion cubic meters (bcm) in 2018, up from one bcm in 2017. Exports are expected to continue growing, as China's access to LNG supplies is affected by its trade wars with the US.

Kazakhstan's gas market is therefore inextricably linked to its geographical and political position. At the same time, the country is proceeding with a programme of internal gasification to lower carbon emissions – for example, it is

Figure 11: China's gas import dependency, 2006–2018F



Source: BP Statistical Review of World Energy 2018, NDRC, TS Lombard

Accordingly, each of the gas storage operators publishes storage terms, usually in the form of a standard storage contract (SSC). The key features of the SSC are that it is a bilateral agreement between the storage operator and the user. The terms of each SSC are identical, and this facilitates the trading of capacity and gas in store between users. The users can trade capacity easily through a trade services system operated by the storage operator.

The gas policy objectives of Kazakhstan diverge greatly from those of the UK. Kazakhstan is a land-locked country and gas export routes must be considered in the context of the regional energy power play between Russia, China and the other Central Asian countries. Kazakhstan is balancing gas exports to Russia and China, both with near-monopoly conditions.

constructing a central gas pipeline to transport gas to large areas of Nur-Sultan where coal and firewood have been traditionally used for heating.

The applicable objectives of each gas market affect how it is regulated. The interaction with other domestic energy markets is also important. Gas is a major source of fuel for power generation and regulation of the electricity markets therefore affects the development of gas. While in the 1990s some progress was made to unbundle Kazakhstan's electricity market, by the mid-2000s the government reconsolidated state control over all segments of the electricity market.

Accordingly, the way electricity is traded in liberalised markets such as the EU is vastly different from how electricity

is sold in Kazakhstan. If the price paid for electricity is not cost-reflective, this will affect the price at which gas can be sold internally in such markets. The countries' policies act as signals for investment decisions by the private sector.

Another important macro issue is TPA. TPA rules are usually compulsory in countries with liberalised gas markets. While Kazakhstan has competition laws including TPA requirements, gas transportation and storage is dominated by state entities and this is likely to continue to be the case considering the provisions of the Gas Law.

Accordingly, any private sector investment in the Kazakhstan gas storage sector is likely to be in the form of a public-private sector joint venture or with the private sector entity involved as the operator of gas storage facilities wholly owned by the state. There is a precedent for this – in 1997, Tractebel won a concession to manage gas transportation pipelines in the south and west of the country. While the venture was ultimately unsuccessful, this may be a viable option if Kazakhstan wants to benefit from some form of private sector involvement and transfer of know-how in the gas storage sector.

Development of underground gas storage: Micro legal issues

The concept of underground gas storage raises several legal issues that are common across different jurisdictions, although each jurisdiction may address them differently. Some of these issues are unique to underground gas storage whereas others are well known to companies operating in the petroleum sector. The extent to which they are relevant depends upon private sector participation in the gas storage sector. Since there has been no such private sector participation to date, extensive analysis of the associated legal risks would be required.

1. Ownership of Stored Gas

If gas is being produced pursuant to a production sharing contract, at the point of recovery or production of gas, ownership generally passes to the producer (subject to the production sharing mechanism agreed in the relevant contract). Generally, such petroleum would be sold by the producer. Depending on applicable laws, concerns may arise as to whether the re-injected gas reverts to government ownership. Clearly, a company that has invested in underground gas storage, and the owners of the gas being stored, need assurances regarding their ownership of stored gas.

2. Relationship between users of the storage facilities

Gas injected into storage facilities may be owned by multiple parties. Once injected, each party's gas is indistinguishable from the mixed whole. This may have several legal

implications. Users of the facilities will wish to mitigate risks (if any) associated with the insolvency of another user and eliminate (or limit) claims by the creditors of that insolvent user against gas in the storage facility. Formulating adequate legal mitigation will require a thorough analysis of Kazakh law.

Insolvency risk might be mitigated contractually by eliminating competing title claims to gas in the facility. The users could all transfer title to the gas to the facility owner, on input and take a certain volume (with adjustments to account for quality differences, if necessary) on withdrawal. If there are variances on the quality of the gas stored in the facility, the quality of gas withdrawn from storage will be different from the quality of gas input.

This has financial implications for the users, which need to be addressed. The transfer of title to the gas to the storage facility owner means that users of the facility need to concern themselves with the owner's insolvency risk. This may be less problematic where the owner of the facility is a state-owned entity.

3. Rights to Underground Storage Reservoirs

As most storage facilities will need to be explored for, tested and developed before being used, it is important that the legislation provides for appropriate rights to facilitate such work. Similarly, there needs to be appropriate rights conferred to enable a storage facility to be operated (that is, to allow the injection, storage and withdrawal activities). The extent and type of rights conferred are important considerations. For example, is the concession area large enough to cover the whole reservoir and does it confer rights for the associated infrastructure to be constructed and operated?

4. Security of Rights

For privately owned storage sites, given that considerable investment will go into the exploration for, development and operation of, an underground gas storage facility, it is vital that the owner of the facility has security of title and certainty and continuity of its rights to use the reservoir. This includes provisions dealing with issues such as: (a) if a reservoir is discovered, an entitlement to use it for storage; (b) usage rights for a term sufficient to make the project commercially viable; (c) protection against arbitrary termination of the usage rights; and (d) exclusivity and the rights to prevent interference from others (and loss of stored gas).

5. Environmental Obligations and Operatorship

As with any other petroleum operation, underground gas storage may have an adverse impact on the environment if not appropriately managed. There is also the question as to whether the owner/users of underground storage

facilities should be liable for acts of god (for example, an earthquake), or acts of third parties (for example, unauthorised drilling). Further, there are the issues of the obligations of the operator towards the remaining users and the operator's standard of care, as well as allocation of responsibility for abandonment and decommissioning of the storage site. A detailed analysis of existing applicable laws in Kazakhstan will be needed to evaluate legal risks.



The future of underground gas storage in Kazakhstan

As the importance of gas as an energy source in Kazakhstan grows, ensuring security of supply becomes even more important. Gas storage evidently has the potential to assist with security of supply and provide other benefits, as does battery storage if the technology develops as expected. Increased demand for gas for use within Kazakhstan and for export to China is likely to provide the impetus for gas production and heighten the need for gas storage facilities. Kazakhstan is committed to build such storage facilities and, while the legislation could accommodate private sector participation, the role the private sector will play in future projects (if any at all) is unclear¹

Author's Note: The information contained in this article is provided for informational purposes only, and should not be construed as legal advice on any subject matter. Sources of data are available upon request from the author

About PBN Hill+Knowlton Strategies



28 years in Russia
21 years in Ukraine
20 years in Kazakhstan



70 talented world-class professionals in Russia, Ukraine and Kazakhstan



Full-Service Integrated Communications Practice



Part of the 85 H+K global network offices and WPP



Focus on Russia, Ukraine, Kazakhstan & CIS



Award-winning consultancy



PBN
Hill+Knowlton
Strategies

Contact information:

Inna An
+7 777 674 76 50
Inna.An@hkstrategies.com

TECHNOLOGY, STRATEGY, AND PEOPLE ALIGN TO BECOME A DIGITAL OIL AND GAS COMPANY

by Mauro Emanuele Buongiovanni
Senior Manager, Deloitte

It is widely accepted that oil and gas companies focus primarily on preserving margins in order to withstand price volatility, but companies are now also embracing digital technologies and data analytics at a fast clip, and this is deeply impacting the full sector value chain.

Data analytics doesn't represent a disruption in oil and gas. Unlike other sectors that only recently are witnessing a swift adoption of analytic benefits, energy players have long relied on large pools of data to create visibility around the expected capacity of their reservoirs and other future explorations.

Nevertheless, most of the oil and gas companies still have major opportunities to better leverage the full power of their data pool due to the inability to align the organization around the generated insights and to put in place the right initiatives based on data.

Embracing the full power of data will become possible only when oil and gas companies upgrade their digital capabilities and improve the way they connect these insights to their operating model. We expect to see wide cost-saving synergies and significant profitability improvements.

For instance, Cisco estimates that companies could see an 11% earnings growth across the value chain, with most of the cost-savings positioned upstream. One data-driven oil company was able to save about 10% on unit costs by digitization of its remote offshore operations center. Another company decreased operating costs per barrel by roughly 10% and improved the reserves' recoverability by applying selective IoT devices for sharing real-time information across every level of the company.

Notwithstanding diverse success stories, few oil and gas players have adopted a disciplined and holistic approach to discern which digital technology can create long-term efficiency. Most of today's digital initiatives don't aim to disrupt the operating model, and companies tend to search for improvements at a technical or operational level: for instance, predictive maintenance, geological analysis to build geophysical models and choose drilling patterns.

The reason for a deep change in the way the interaction with data is conducted is that there is a large, untapped potential in existing data that companies can rapidly use to generate new insights with advanced analysis techniques. Another reason is that most companies aren't ready for enterprise-wide transformation because they lack the proper talent, core processes, and capital required to make it happen.

Given the strong externalities and fluctuating economics of the business, oil and gas companies must focus their investment in analytics, where they can deliver most value (see exhibit 1). However, in the daily support to our clients, we see companies facing three common limitations that hamper their long-term digital potential:

Exhibit 1.

Improved production KPIs. In the exploration and production phases, the use of real-time data can help to improve the decision-making processes with a large impact on operational choices based on complete data visualization or predictive analytics for maintenance and decrease accidents.

Higher data quality for process modeling. IoT sensors will provide early warnings and other sort of real-time information on onshore and offshore events, so to help automatically react to any circumstance.

Robotics automation and machine learning. A centralized equipment, platforms and wells information into one data room permits key decision makers to track and analyze the operations at multiple levels, allowing companies to reduce the presence of personnel on platforms.

- **A lack of long-term digital strategy.** The majority of the companies have committed to digital investments without clarity on where and when the transformation will generate most of the upsides. Companies that find themselves trapped in this miscalculation will very likely invest billions in CAPEX, but calculate only a fraction of the expected benefits. For instance, offshore activities can reap the benefits of advanced analytics in the reservoir and equipment dimensions if companies properly analyze the data set to optimize equipment maintenance and mitigate disruptions to operations.

Cisco explained that an individual offshore platform may produce 1–2 terabytes of data per day, but today's satellite network bandwidth speed is limited to roughly 2 Mbps, thus making it impossible for subsurface and operations teams to have a real-time dashboard with updated information. In this case, the absence of an integrated operating model that has analytics at the base of its operating efficiency results in a fragile foundation for quickly ramping up digital tools, missing the opportunity to act around real time data.

- **An obsolete operating model.** Companies struggle to see how the degree of fluidity of information within the organization dictates the scalability of the business. If data and information are not institutionalized so that they flow through the organization, any attempt to scale the business will end badly.

For instance, a company can run toward the design of a new offshore scheduling activity system with a rigorous definition of routing capabilities, but this may turn into a useless tool if the system is not aligned to the line management's decision-scheduling. In the absence of proper alignment, data becomes only random information, rather than the base for structured actions.

- **An obsolete skills matrix.** Human capital will always be as important as technology. Talent is a crucial element of a successful digital strategy, but too often recognizing the proper level of skills upgrade is the cause of a failing transformation. Leaders should evaluate their team's existing capabilities fairly and work out a plan to ensure a quick, sustainable transition to the appropriate level of expertise.

A good plan to invest in human capital requires a combination of re-training activities and a surgical recruitment plan. Hiring the right talents (data scientists as a top priority) will create the foundation for transmitting to the operational staff the skills required at the level that is needed. It would be a deadly sin to assume the operating staff will seamlessly embrace new processes and will smoothly start operating in a digital infrastructure that requires a deep change in management program implementation.

This is just the beginning of a change that will shake the foundations of the industry. Today the majority of oil and gas companies are still working around the design of the necessary prerequisites for the disruptive transformations that will occur as they adopt a broader range of digital technologies. This adoption calls for a clear strategic plan that identifies the strategic ambition, the digital role in the transformation of the business model, and the associated changes required in the operating model, with human capital the most delicate component.

The methodological approach, primarily led by the risk appetite and the point of departure for digital transformation, may vary. However, there are five key success factors to be considered by any player keen to navigate the change:

- Identify the **point in the value chain that embeds the largest contribution to the financial and operating results** and match it with quick-win opportunities to achieve improvements via digital tools and capabilities (see exhibit 2).
- **Track sector and technological trends** with a greater emphasis on the points of the value chain in focus, quickly deciding to dive into industry changes as an innovator or as a follower by adopting tested technological solutions and best practices.
- Precisely identify the **co-dependencies between the company's most critical decisions and digital implications**, including the demonstration of how digital solutions will make the decision-making process more effective. Furthermore, giving a sense of which target operating model will follow ensures faster buy-in from departments that are more data-driven and will be empowered by the transformation.
- Calculate the **investment required to digitalize the most value-adding activities** within the selected points of the value chain, thus developing a multi-horizons budget expenditure and associated milestones in terms of cash-flow benefits
- **Evaluate the point of departure from a skills matrix perspective** and design an action plan to fill the gaps. The skills upgrade plan should consider budget limitations and shortage of technical expertise, but include a well-defined set of actions able to incrementally re-train talents and instill a new approach to work.

The digital journey of an oil and gas company will never be a standardized one, due to company-specific factors such as industry positioning, historical path and future strategic ambition. Designing a corporate strategy which heavily relies on a digital transformation is not the best choice for most incumbents, regardless of the investments required. Yet in a period of low energy, prices are influencing the appetite for major investment in capacity increase, and the surgical piloting of solutions and tools able to quickly provide high ROI is worthwhile to investigate along with the potential to be scaled at enterprise level.

Exhibit 2
Digital has a role all along the oil&gas value chain, with four applications representing quick wins

	Exploration	Development	Production	Refining	Sales & Marketing
Improve efficiency by better internal networks	Reduce costs associated with logging & completion	Predictive analytics spots deviations & prevent negative events	IoT sensors to detect leaks & optimize production	More accurate forecast of the demand for crude and refined products so to improve product mix	Anticipate demand fluctuations so to identify transportation needs to optimize variable costs
Optimize data security & access	Enhance acreage acquisition using competitive intelligence dashboard	Improve accuracy of model reduction by using rigs and sensors data	Automated update of well model		Integrated financial planning, aligning production to market demand
Automatic process management	Analyze large amounts of aerial and seismic data to generate integrated output	Repeatable concept selection optimization	Reduce level of personnel on-site operations	Improve production yield and increase safety	Market intelligence, long-term demand planning
	Decrease uncertainty and increase visibility	Increase quality and pace of decision	Decrease recovery and decrease risks		Optimize route-to-market approach

Whether the choice is to be a pioneer or follower, every oil and gas player must start conceiving a long-term plan to integrate digital solutions into the business and operating model, so as not to create a self-created competitive divide. Regardless of the individual strategic initiatives involving the operating model, it is paramount to clearly articulate how data and information will travel across it, and how people and departmental capabilities will make use of their power.



Deloitte.

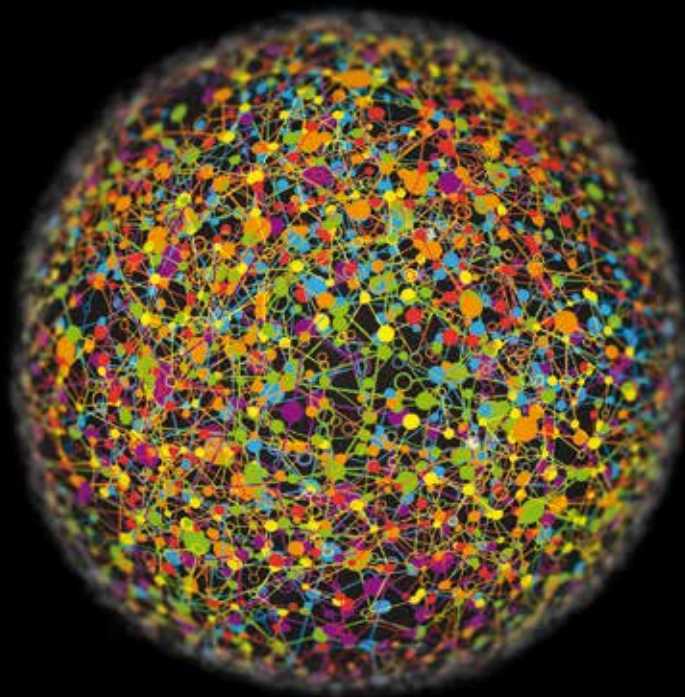
Deloitte
Academy

Color your knowledge

The Deloitte Academy offers comprehensive development programmes for specialists in a range of business areas, catering for all experience levels and offering the individual the opportunity to develop business skills, at the same time keeping in mind their professional growth and expanding duties and functions.

+7 (727) 258 13 40
www.deloitte.kz

© 2019 Deloitte TCF, LLP. All rights reserved.



GLOBALINK
LOGISTICS

KLN
MEMBER COMPANY

We are one team around the world across your supply chain. We employ a far reaching global network that stretches across six continents and includes the largest logistics hubs in 55 countries. No matter how complex your freight, logistics and relocation needs are, you can always rely on us to find a fitting solution for you.

removals@globalinklogistics.com | www.globalinklogistics.com

OIL AND GAS INNOVATIONS AND THEIR EFFECT ON THE REGIONAL INDUSTRY

by Denis Borisov, Director, Energy Center Leader
Gulmira Turmagambetova, Energy Sector Leader, EY

There is broad recognition now that technology is essential to success. Oil and gas companies are being pressured on both pricing and their ability to access new assets. One of the keys to the industry's growth ambitious lies in unleashing capital expenditures on innovations and digital.

A case in point is the investor response to the high-tech agenda. If, in the past, IT majors were rare in the ranking of the most valuable companies, today they occupy all five top positions - Apple, Microsoft, Amazon, Google and Facebook. In 2011 the top positions were held by three oil companies and only one high-tech enterprise (Apple). However, ExxonMobil, the largest company by market cap at that time, was valued at less than half of Microsoft today.

The declines of cheaper and more accessible resources since the 1990s due to depletion of the larger fields has also driven the need for technological development in the industry. The oil market collapse in mid-2014 provided further impetus for innovative products to cut costs, including through use of new technologies.

As a result, the industry has adapted to market fluctuations quite rapidly, as the need to improve efficiency has become critical. Furthermore, there are persistent concerns over the environmental impact of energy production and consumption. Thus, oil and gas companies are actively seeking innovative approaches to achieving their business goals while reducing their environmental impact.

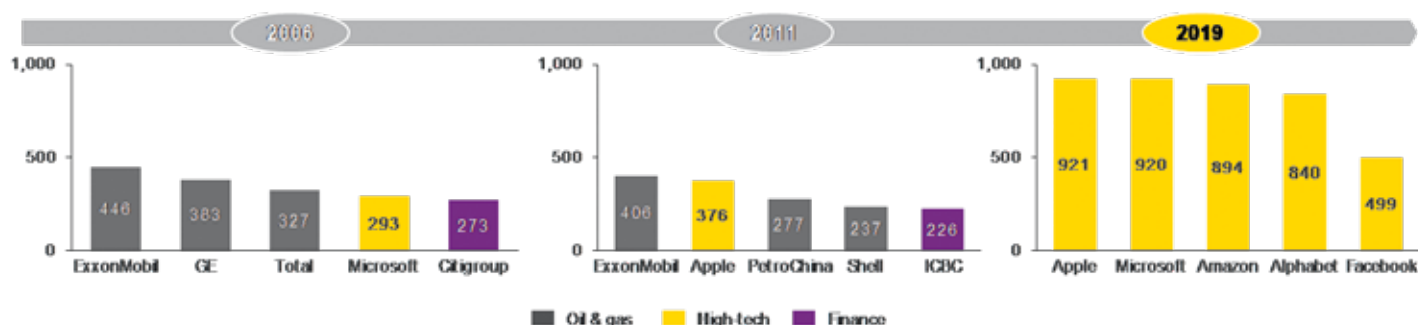


Figure 1: Top 5 companies in terms of market capitalization (\$ billion)

Having said that and despite perceptions that the industry is quite conservative, oil and gas companies have also been engaged in technological transformation. This has been accomplished by seeking to utilize evolving technology. For example, the development of electronics resulted in a technology boom in the 1970s with the birth of new EORs, modelling and exploration data interpretation. The shale revolution is one example of the above. The Permian Basin, an area covering 250 to 300 miles in western Texas and eastern New Mexico, started producing oil in 1921. However, the resurgence of production occurred in the late

All the above has driven demand in the industry for new technologies, the price of which has decreased over the years. Since 2005 the number of devices with access to the Internet has increased from 500 million to 8 billion, and it is expected to reach approximately 1 trillion by 2030. Over the same period, the cost of drones widely employed to implement safety measures and improve visibility and accessibility around oil and gas sites, has fallen to one-hundredth of its previous level, to below \$1,000. The price of industrial robots has dropped from half a million dollars to approximately \$20,000. This has resulted in the cost of

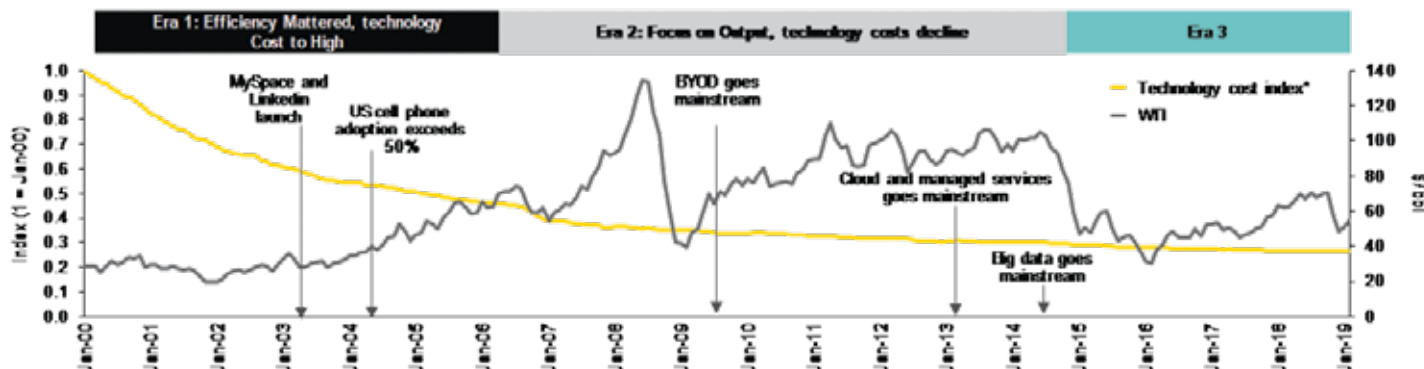


Figure 2: New technologies' growing availability on the back of their cost decline

2000s on the back of new drilling techniques referred to as "hydraulic fracturing or fracking". As a result, the Basin's share in the overall US production increased from 16% in 2007 to 37% in 2019.

an average well in major hard-to-recover formations falling by two-thirds, to around \$4-6 million today. Of course, the effect of adopting innovative technologies varies depending on many factors, including the complexity of extraction and the depth, scale, and geography of the reservoir.

There is no doubt that technology will continue becoming less expensive, while the product mix is expected to expand. High-tech advances can play a major role in improving access to oil and gas and in reducing the cost of production and environmental impact. Therefore, companies are expected to continue to look increasingly at technologies and innovations to boost productivity and gain competitive advantages.

According to the *2018 BP Technology Outlook*, the potential reduction in average lifecycle costs for oil and gas businesses resulting from technological advances is estimated at approximately 30% by 2050. For instance, the average per unit expenses of extracting 1 barrel of oil from the US shale formations and Arctic shallow water may be cut by 28% and 35%, respectively.

On the other hand, liquids production in brownfields may become cheaper by approximately only 10%. The effect of innovation on gas extraction is as follows: a reduction in average lifecycle costs in the Arctic of 28%, in the US shale gas deposits of 22%, and in traditional onshore fields of 13%. Of course, these estimates will be affected by other factors, including future changes to regulatory incentives, taxes and logistics.

If this trend of technological innovation continues globally, the recoverable (excl. undiscovered) oil reserves may increase by 50% through to 2050, with gas reserves increasing by 25%.

One of the keys to the oil and gas industry's growth ambitions lies in continued expenditures on technology. International oil companies are investing in operational

lateral lengths. The development and implementation of the concept of the digital oil field (*Smart Fields* by Shell, *Field of the Future* by BP, *iFields* by Chevron) results in a 30-50% reduction in operating costs, 20-40% faster managerial decisions, as well as a 10-35% profit upturn. In Prudhoe Bay, Alaska, operated by BP, a drone takes only 30 minutes to check a section of three kilometers of pipeline. Previously a human being would spend up to seven days doing that.

Oil field service companies are also launching digital solutions across the value chain to enhance reservoir recovery, improve drilling efficiency, and optimize production to address the issues of their oil and gas customers.

Transocean provided Equinor with 25-30% higher rate of penetration on seven drilling sections supported by automated control system installed on a rig for the Norwegian company. By means of condition-based maintenance and continuous monitoring of blow-out preventers, *Diamond Offshore* reduced BOP downtime to less than 1% in 2018, as well as delivered 31,000-feet wells 54 days ahead of schedule in the US GoM.

The CIS countries today are also adopting new technologies. In pursuance of Rosneft's strategy (to 2022) to develop a sustainable technological advantage throughout the supply chain, the company has started to employ unique software and instruments. These include a commercial simulator for hydraulic fracturing (*RN-GRID*), a program suite for geological modelling (*RN-Geosim* and geomechanical modelling (*RN Sigma*). LUKOIL is developing four aspects within its strategy "*Digital LUKOIL 4.0*". These are a digital ecosystem, digital personnel with modern equipment improving labor efficiency, robotics and digital twins of

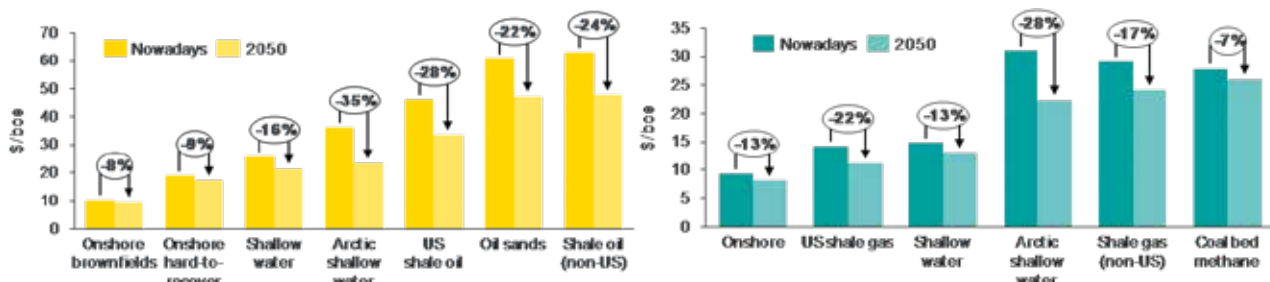


Figure 3: Production costs of various types of hydrocarbon (2050 vs. 2018)

improvement technologies, such as artificial intelligence, the *Internet of Things*, analytics and others. They are implementing innovative sustainable energy strategies via various approaches: from in-house R&D to high-tech start-up acquisitions.

For instance, BP has purchased *Beyond Limits* focused on adapting NASA exploration technologies for the upstream. Moreover, partnerships with technology firms are created, some of the examples being BHGE and NVIDIA, Total Oil and Google Cloud, ExxonMobil and MIT, Aker Solutions and Cognite.

The deployment of more modern technologies and data analytics has already delivered important results for operations, with reported examples of a rapid increase in the growth of production levels per well once adjusted for

industrial facilities. Similar developments are also being made by many other CIS oil and gas companies.

In the Caspian Sea, technology plays a critical role in solving many of the challenges faced by operators. This is from finding and classifying hydrocarbons to delivering optimal development plans to maximizing recovery safely and efficiently. In Kazakhstan, due to the need to develop novel solutions, many innovations have been developed locally in collaboration with ExxonMobil, Total, Shell and Eni.

Implementation of the *Digital Kazakhstan-2020* state program has become a top priority and the main strategic focus of the country's development. In February 2016 KMG EP implemented a pilot "*smart field*" project at its subsidiary

Embamunaigas, which operates the Uaz deposit in the Atyrau region. To this end, equipment was installed to take readings at all stages of oil production and deliver them in real time to the control center to support rapid decision-making. Some of the positive results at the Uaz field were an 1.6% increase in production, 15-20% less time to repair wells, and 30% reduction in electricity consumption. As such, the company decided to include the other upstream assets to the “*smart field*” initiative through 2023.

The State Oil Company of Azerbaijan (SOCAR) is also evolving its technological portfolio in line with its upstream digitalization strategy by enhancing partnerships with international IT leaders. In 2017 SOCAR established the *Caspian Innovation Centre* in a joint venture with IBM. This was done to facilitate digital business transformation and boost the efficiency of production in the energy industry and across sectors.

This strategic partnership will engage SOCAR's industry expertise and IBM's digital, cognitive computing and data science capabilities in building differentiated industry solutions and competencies in the region. And, similarly to Kazakhstan, certain innovations have been developed locally with the help of an oil multinational - BP in this case - to deal with specific challenges.

Summarizing, a solid innovation strategy separates the best from the rest. And the above practical cases with real positive outcomes prove that technology and digital are the major directions of further development in the industry.

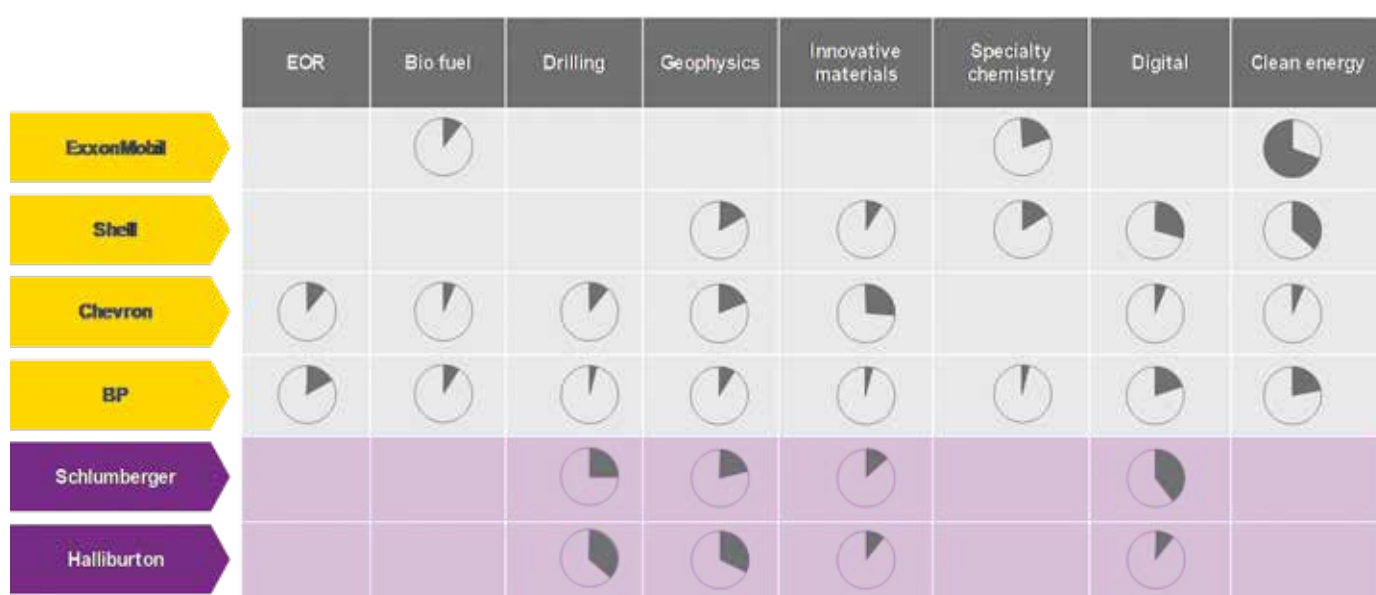
More digital technologies have tremendous potential to allow oil and gas companies to increase competitiveness and deliver value to all stakeholders. Specifically, technically recoverable resources grow while drilling time is reduced by 7-20% with a cut in drilling costs by 10-20% and in maintenance costs by 20-30%. At the same time, we witness a 2-3% growth in production volumes.

However, the application of digital technologies in the CIS and in the Caspian is still at a nascent stage. There remains the potential for misunderstanding between the IT function and business, and skepticism as to whether the digital pilots will alternately deliver value. In practice, a digital company starts with people. They have to not be digital, but to work digitally. To walk the innovative pathway, the regional oil and gas players should first study the existing digital climbing experiences of major multinationals.

The shift to a digital workplace is highly dependent on speed and flexibility. Local companies can achieve success if they treat digitization like any other fundamental business transformation. Therefore, the traditional methods of project implementation, such as continuous integration, should be reconsidered in favor of agile or hybrid methodologies to speed up time-to-market, reduce waste and risk, and respond rapidly to new trends and opportunities.

EY's immersive international experience makes the case that the best results in such initiatives are provided by the synergy of already globally-implemented approaches coupled with local specifics

Figure 4: Innovation growth areas of major international oil and gas and oil field services companies



THE CASPIAN SEA LEGAL REGIME: RECENT DEVELOPMENTS

by **Rashid Gaissin**
Co-Managing Partner
Integrites Law Firm

The Caspian Sea is one of the largest closed reservoirs on Earth. The classification of this reservoir is debatable and includes a description of both the largest closed lake and a full-fledged sea due to its size and location. The Caspian Sea is surrounded by five states: in the south-west by Azerbaijan, in the south by Iran, in the northeast by Kazakhstan, in the north-west by the Russian Federation, and in the south-east by Turkmenistan.



The first agreements between the RSFSR (Russian Soviet Federative Socialist Republic) and Persia in Moscow 26 February 1921, and the *Treaty between the USSR (Union of Soviet Socialist Republic) and Iran* of 25 March 1940, marked the beginning of the legal regulation of the Caspian Sea.

On 6 July 1998, continuous, ineffective negotiations eventually led to the signing of the first agreement on the seabed division of the relevant sectors of the Caspian Sea between Russia and Kazakhstan.

On 4 November 2003, the *Framework Convention for the Protection of the Marine Environment of the Caspian Sea* was concluded in Tehran between the five Caspian littoral states: Azerbaijan, Iran, Kazakhstan, the Russian Federation, and Turkmenistan.

The legal regime of the Caspian Sea is governed by the *Convention on the Legal Status of the Caspian Sea*, signed by the heads of state of Azerbaijan, Kazakhstan, Russia, Iran and Turkmenistan in Aktau on 12 August 2018. This Convention was ratified by Kazakhstan on 8 February 2019.

The provisions of this Convention define the Caspian Sea as “a water body surrounded by land territories of the Parties”. Due to the fact that the Caspian Sea is not officially considered either a sea or a lake, the *UN Convention on the Law of the Sea* of 1982 and the principles of bottom division applied to seas do not apply to the Caspian Sea. This point has great importance since it is the qualification of the Caspian Sea as a reservoir that significantly changes the manner of regulating relations between countries.

Also of importance is that the Convention regulates a number of issues, in particular the rights and obligations of the Parties regarding the use of the Caspian Sea, including its waters, bottom, subsoil, natural resources and the airspace above the sea. According to the Convention's main provisions, the waters of the Caspian Sea are divided into internal, territorial and fishing zones and a common water area.

The division of the bottom and the depths of the Caspian Sea into sectors is carried out by agreement of the neighboring and opposite states, taking into account generally-accepted principles and norms of international law. However, this may lead to disputes if the Parties fail to reach a specific agreement. In this case, the norms of international law will only have a framework character, since it is unconditional that there is direct agreement on this issue between the countries.

The Convention also provides for the rights of Parties to explore and develop the seabed and subsoil within their respective seabed sector outside territorial waters; the exercise of jurisdiction over ships under its own flag in the Caspian Sea; the exclusive right to regulate, authorize and conduct marine scientific research in its territorial waters (within the territorial waters of the other Party only with its written permission and under the conditions established by it). This article, on the contrary, clearly regulates application of the rights of countries on the basis of ownership, which excludes occurrence of conflicts between member countries.

According to *Article 8*, ‘delimitations of the seabed and subsoil of the Caspian Sea into sectors is carried out by agreement between the states with the neighboring and opposite coast, with due regard to generally accepted principles and norms of international law’. The Convention does not mention the process by which countries should divide the Caspian Sea subsoil.

One of the main issues of the entire agreement is the Convention's *Article 14*, which gives the Parties the right to build underwater pipelines without the unanimous consent of all parties. At the same time, the parties to the Convention may exercise this right in agreement with those parties on whose sectors of the reservoir these pipelines will pass. Due to the Caspian's oil and gas characteristics, the laying of pipelines affects the interests of each party to this Convention, and resolving this issue will lead to a significant simplification of the infrastructure needs of the states.

The Convention does not, however, cover the process by which the parties should grant their permits for the pipeline. There is also no information about the involvement of the private sector and the extent to which private sector organizations themselves can apply or take benefit from the ‘agreement’ that is reached based on the Article 14.

This Convention also contains provisions that regulate access to the sea and passage through it by the Convention Parties. For example, *Article 10* states that ships under the flags of the Parties enjoy freedom of navigation outside

the Parties' territorial waters. It is particularly noteworthy that the Parties have free access from the Caspian Sea to other seas, the World Ocean, and from them. For this purpose, the Parties enjoy freedom of transit through the territory of the Parties by all means of transport. Thus, when the Convention was being developed, the interests of the countries participating in passage through the Caspian were taken into account as much as possible.



The Convention does not clearly specify how disputes between parties should be resolved. There is no provision for a clear forum to resolve disputes, even though according to the *Article 21*, disagreements should be resolved through 'consultation and negotiation'. *Article 21* states that to the extent that disputes cannot be resolved in accordance with *Article 21*, they must be transferred 'for settlement by other peaceful means provided by international law', upon the decision of the Parties.

In conclusion, the Convention is the result of many years of difficult negotiations involving the resolution of key differences among the member countries. It is still relatively early to draw final conclusions on the effectiveness of this Convention, since only further practical application will show the effectiveness of its provisions.

V I C T U S™
INTELLIGENT MPD

DRILL WITHOUT DEFEAT

Victus delivers unmatched safety and cost savings in all drilling environments. It provides precise downhole analysis and rapid responses while you drill forward with no fear. From advanced models to highly technical specialists, Victus applies intelligence that takes MPD to the next level.

Visit weatherford.com/victus to beat your drilling challenges.

Weatherford®

© 2019 Weatherford. All rights reserved.

GOVERNMENT CONSENTS FOR OIL AND GAS TRANSACTIONS

by Almas Zhaiylgan, Counsel
Kuanysh Kanlybayev, Managing Associate
Kinstellar

Before entering into a transaction for the sale and purchase of oil and gas assets in Kazakhstan or shares/interests in a company directly or indirectly holding subsurface use rights, consideration should be given to the government authorizations and consents that will be needed. Failure to obtain regulatory approvals before closing a transaction may entail unforeseen consequences and risks. The following article discusses the main government consents, waivers and notifications that must be obtained or filed before or after closing a transaction for an oil and gas asset.

Consent of the Competent Authority

Since adoption of the main oil and gas laws in the mid-nineties, it has always been necessary to obtain consent from the competent authority before transferring subsurface use rights or shares/interests in a company holding subsurface use rights. Although the details of this requirement have evolved over the years, its essence remains unchanged. Currently, with some exemptions, full or partial transfers of subsurface use rights, as well as objects related to subsurface use rights, still require prior consent from the competent authority (currently the Ministry of Energy or **MOE**). Transfers made without the MOE's consent are deemed void.

The law¹ defines 'objects related to subsurface use rights,' in relation to hydrocarbons, as participation interests, participation units, shares and other forms of equity participation, as well as securities confirming ownership right or securities convertible into such items in:

- a legal entity holding subsurface use rights under: a contract for exploration and production² or production of hydrocarbons; and/or
- a legal entity or another organization, which may directly or indirectly determine decisions adopted by a subsurface user referred to in item (i) above.

Please note that, under the law, the following is not considered an 'object related to the subsurface use rights':

- a. shares and other securities floating on a stock exchange either in or outside Kazakhstan; and
- b. shares, participation interests, participation units, and other forms of equity participation in legal entities and organisations, directly or indirectly owning securities listed in item a) above.

¹ See Kazakhstan's Code No. 125-VI ZRK *On the Subsurface and Subsurface Use* (the *Subsurface Code*) dated December 27, 2017, which came into effect on June 28, 2018

² Although the *Subsurface Code* no longer provides for exploration contracts, shares/interests in a legal entity holding subsurface use rights under exploration contracts also qualify as objects related to subsurface use rights.

The law also outlines what constitutes a 'transfer' of objects related to the subsurface use rights. It is worth noting that the following actions, among others, qualify as a transfer of objects related to subsurface use rights:

- forfeiture of objects related to subsurface use rights; e.g. upon enforcement of a pledge, and
- issuance of shares and other securities that are objects related to subsurface use rights into circulation in an organised securities market.³

Waiver of the State's Priority Right

In 2004, the government created another mechanism for controlling M&A transactions in the natural resources sector by introducing the state's priority right to acquire any subsurface use right or object related to subsurface use rights proposed for sale/transfer. This right applied to any interest in a subsurface use contract or shares/interests in companies directly or indirectly holding subsurface use rights. The state's priority right also retroactively extended to rights arising under contracts executed prior to introduction of this rule.

A decade later, lawmakers decided to limit the state's priority right to so-called 'strategic fields,' the list of which was approved by the government. In the case of shares/interests in companies holding subsurface use rights, it would also apply only to those objects related to subsurface use rights where the underlying contract was for a 'strategic field.'

Currently, under the *Subsurface Code*, the state's priority right applies in case of 1) alienation of subsurface use rights in relation to 'strategic fields'⁴; and 2) objects related to subsurface use rights in relation to strategic fields that are being issued into circulation in an organised securities market.

This means that in case of objects related to subsurface use rights in strategic fields the state has a priority right to purchase them only if they are being issued into circulation on a stock exchange. The strict reading of the law suggests that in all other cases, objects related to subsurface use rights in strategic fields may be alienated without seeking a waiver of the state's priority right.

The law also provides for a few exemptions from waiver of the state's priority right and the MOE's consent. One

³ The issuance of shares and other securities that are objects related to subsurface use rights, into circulation in an organized securities market is an offer to acquire such objects in the organized securities market in Kazakhstan and/or on the stock exchange operating in a foreign state. This also includes the placement of shares in the organized securities market in Kazakhstan and/or on a stock exchange operating in a foreign state.

⁴ The *Subsurface Code* specifies that a field shall be a 'strategic field' if it (i) has geological reserves of: (a) more than fifty million tonnes of oil; or (b) more than fifteen billion cubic meters of natural gas; (ii) is located in the Kazakhstan sector of the Caspian Sea; or (iii) is a uranium field.

sensible exemption added to the *Subsurface Code* is transfer of subsurface use rights, a part thereof, or objects related to subsurface use rights when the government, a state authority, a national management holding, or a national company is a party to the transaction.

Application for MOE Consent and Waiver

A person intending to acquire subsurface use rights or an object related to subsurface use rights must obtain MOE's consent and, if applicable, the state's waiver of its priority right by filing an application in the Kazakh and Russian languages with the MOE. In addition, documents supporting the information contained in the application must be attached to the application. Copies of documents in foreign languages must be submitted with notarized translations into the Kazakh and Russian languages.

Timing for MOE Consent and Waiver

The MOE shall consider the application for the consent (and waiver, if applicable) within a month, or within three months in cases concerning 'major' and 'strategic fields.' In practice, the process of obtaining the consent will likely take longer, considering that the MOE may place consideration of the application on hold if additional information is required or, in the case of 'strategic fields,' until it receives approval of the national security authority.

MOE consent will be issued for a one year term without the possibility to extend. This means that if consent is granted, the transaction transfer of subsurface use rights or an object related to subsurface use rights must be consummated within one year or else a new consent is needed.

Post-Closing Notification to the MOE

In addition to the consent and the waiver, the parties to the transaction must also be aware of the following notifications required after the transaction closes.

By the acquirer

A person or an entity that acquired objects related to subsurface use rights must notify the MOE within a month from the acquisition date. The same rule applies to the persons who issued objects related to subsurface use rights into circulation on a securities exchange.

By the subsurface user

In addition, subsurface users are now obliged to notify the competent authority about a change of control, i.e. changes in the composition of persons/ organisations that directly or indirectly control the activities of the subsurface user within 30 calendar days of this change. Control shall mean at least one of the following:

1) ownership of more than 25% of interests/ shares and other forms of equity participation, as well as securities confirming the ownership right or securities convertible into shares in a legal entity or other organisation;

2) more than 25% of all votes in the highest management body of an organisation;

3) a receipt of more than 25% of distributable net profits of the subsurface user; and

4) the right to determine the decisions of another organisation based on either an agreement or Kazakhstan legislation.

Competition (Anti-Monopoly) Consent

For many transactions, the merger control regime requires prior consent from the *Anti-Monopoly Committee* for 'economic concentration.' Where applicable, the consent requirement is mandatory, but it will not apply to transactions that do not meet the requirements (thresholds) established by the *Entrepreneurial Code*⁵ or transactions between companies within a conglomerate of companies.

The acquirer must obtain prior consent from the Committee with respect to the acquisition of voting shares/ participating interests in a company that increases the total share or those interests beyond 50% provided that the acquirer previously had 50%, less than 50%, or no shares/ interests in that company.

Thresholds

The Anti-Monopoly Committee's consent for the above transactions is required if the following condition is met:

*the aggregate balance sheet value of the assets or the aggregate volume of sales of goods (works, services) of the acquirer, its group of entities, and the target company (in which the shares/participating interests will be acquired) for the last financial year exceeds 10 million times the monthly calculation index (the "MCI" - currently KZT 25,250,000,000 or approximately USD 65,720,979) that is in effect on the date of submission of the application/notification.*⁶

Timing for Anti-Monopoly Consent

To receive the Committee's consent, the acquirer must submit a formal application containing full and correct information and supporting documents required under the *Entrepreneurial Code*.

The Anti-Monopoly Committee has 10 calendar days from the application's date of submission to decide whether all necessary information and documents are provided and can be accepted for review. If any required information and/ or documents are missing or do not meet the formalities, the Committee will return the application. In this case, the acquirer has the right to submit a new application free of the defects listed by the Committee.

⁵ See the *Entrepreneurial Code* of Kazakhstan No. 375-V dated 29 October 2015, as amended

⁶ A monthly calculation index (MCI) is an index annually established by Parliament.

If the Committee accepts the application, it will then have 30 calendar days to decide whether to give its consent. However, the Committee has the right to suspend the review process if it needs additional information and/or documents from the acquirer or other state authorities. In this case, the Committee notifies the acquirer about the suspension of consideration of the application.

For example, the acquisition of subsurface use rights or shares/participating interests in companies engaging directly or indirectly in subsurface use (i.e., mining and oil & gas companies) requires the consent of the competent authority. The Committee may suspend consideration of the application until the MOE's consent is issued and provided to the Committee or until the analysis is completed. Consideration also can be suspended if analysis of competition conditions in commodity markets is required.

Under the Entrepreneurial Code, the consent must be issued by the Anti-Monopoly Committee within 40 calendar days of the application's submission. However, given the time needed to prepare the application with supporting documents, and the Committee's right to suspend consideration of the application, the overall process often takes three months or more.

The Anti-Monopoly Committee's consent is valid for one year from the date of issuance. If the transaction has not been completed within one year, the applicant must submit a new application.

Notification to the Anti-Monopoly Committee

The acquisition of rights to direct the business of another entity and to hold positions in two or more unrelated companies requires notification to the Anti-Monopoly Committee. The above thresholds also apply for notification. The acquirer must notify the Committee within 45 calendar days after signing the agreement or closing of the transaction. The Committee must make a decision on the notification within 30 calendar days from the date of its receipt. If it does not send an order to cancel the transaction/ action following the 30-day period, then it is considered to have consented to the transaction/ action.

Conclusion

The above is not a complete list of consents/ filings required for an oil and gas M&A transaction. Depending on the specifics of the transaction, other consents or requirements may apply. For example, if the target entity also holds 'strategic assets' (i.e. airports, trunk pipelines, railroads, etc.), which differ from the definition of 'strategic fields' as specified above, then the transaction requires the government's consent for disposal of those 'strategic assets.'

A separate set of filings/ requirements will also be necessary for acquisition of shares in a JSC. Therefore, before entering into an M&A transaction, the parties must ensure they know what regulatory filings must be made and what consents must be obtained. Advance planning is crucial for the transaction's successful and timely completion.

HEIDELBERGCEMENT



Oil Well cement from world-wide company made in Kazakhstan



■ Oil well PC I-G-SR-I (API 10a)

■ Oil well PC I-SR-100/50



OIL AND GAS REGULATIONS IN PRACTICE: A LAWYER'S REVIEW

by Sofiya Zhylkaidarova
Managing Partner
SIGNUM Law Firm

Kazakhstan is a country renowned for its commodities, whose major source of government revenue is the export of minerals, with oil exports holding the largest place. According to statistics, oil exports account for about 60% of all country exports. Consequently, close attention is paid by the local and international community to the state and legislative developments in the field of oil and gas exploration and production. The global economic situation, oil prices, operations of foreign investors, project implementation, and industry social problems of the industry are the main triggers for any initiative in legislation and social response.

Since its independence - and following from the signing of the main PSAs in the early 90s - Kazakhstan's oil and gas industry has witnessed a phased development of legislation, ranging from the establishment of favorable conditions within the framework of coherent and welcome investment legislation in the 90s to a situation where Kazakhstan has mainly recovered, formed its own National Fund, begun to strengthen government control measures, and to increase requirements for investors, some of which are very questionable.

In this article I will try to briefly analyze the main legal issues facing the industry, with conclusions detailing how it is possible to achieve comfort and positive law enforcement for investors, and where legislation still needs to be significantly improved. To discuss this in more detail, I would like to dwell on recent trends in the industry, current red flags for investors in the oil and gas community. Since I am expressing the opinion of a practicing lawyer on the processes that exist today, without a long-term perspective, some issues may be viewed from different perspectives - political, social, or through the lens of long-term development.

Improvements: Achieved KPIs

Given the increasing maturity of the market as well as its players, there is a pressing need to increase liberalization of legislation, decrease government intervention, and change economic conditions to revive the market and make the situation more appealing to investors. What has been done to date, and how do current laws and practices address these needs?

Entry of investors into projects

Current legislation clearly defines and clarifies conditions for tenders regarding the signing of new concession agreements, as well as details regarding the procedure for buying and selling interest in existing projects. Kazakhstan has changed the procedure for obtaining state permits, established a clear and coherent process (documents, deadlines), removed the state's pre-emptive rights of acquisition of small and medium-sized projects (non-strategic projects), making the procedure for acquiring interest in projects more straightforward and faster.

Are PSAs no longer challenged?

Several years ago, previously concluded PSAs were actively challenged by trying to waive their tax stability, by converting them into regular contracts, or by changing their meaning and interpretation. We are now witnessing a more or less established process of their recognition and application.

Taxation

Today, contracts can be conditionally divided into those that have fixed tax stability as of certain date (as a general rule as of the signing date), and contracts that have no tax stability. Under the latter, the investor is subject to current tax legislation. If we analyze the tax burden, we can conditionally say that it is not as high as in many developed countries, however, constant changes in the legislation detract from the stability and clarity of the game's rule.



Reporting. Project Documentation

At present, no major questions arise regarding which project documents are needed and where they are to be submitted, how they should be drawn up, or where to look for experts. The processes for reporting and the preparation and approval of project documents seem to be settled and are comprehensive and straightforward.

R&D Expenses

A formal list of nominated organizations has been established to which oil companies transfer a certain percentage of their working capital budget for research and development to improve exploration and production technology. However, it would make real impact and clarify meaning if the formal transfer of money to entities "authorized to accept money" would entail clarity of the relevant results and outcomes. Kazakhstan could spend this money to acquire technologies, patents or innovations for disruptive businesses other than commodities production to diversify the economy.

Environmental matters

The current Environmental Code establishes processes and environment compliance rules. The rules of the game have become increasingly transparent. However, a number of issues raised by the industry remain in relation to “economics vs ecology”, for instance, compensation for excess emissions or gas flaring.



Local talent training

In the past, there was a shortage of local talent in the field. Subsequently, establishment of contractual obligations for the training of personnel and the replacement of foreign personnel led to an increase in local employment. Active training of local specialists and their promotion to management positions is now visible. This is due to the commitment of oil companies and their corporate culture to train local staff and internal talent development programs.

KPIs to Target

Stabilized vs. Current legislation on concession agreements

PSAs and contracts approved by Kazakhstan's President now have a certain security and stability against legislative changes; however, Kazakhstan's economy is still that of a developing economy with constant revisions to its legislation, yet it is important that investors be assured of a certain stability.

At the same time, stability should not be equated with rigidity; it should not mean refusing to improve legislation, but rather guaranteeing clear and consistent rules to predict long-term results of investment activities. When planning an entry into a project, an investor must be able to predict its economy based on some coherent and calculable initial data. Therefore, Kazakhstan at this present stage, - when there is already relevant experience and knowledge - should consider how to reduce the number of “shocks” to investors, openly announcing longer-term policy planning.

Local content

The contracts now set various thresholds for local content, for example, the percentage of locally- produced materials and equipment in the total budget spent for purchasing goods and equipment for operations. The same normally applies to purchase of services and staff hiring. The goal of the state is obvious - to increase domestic production and national product. However, it is often necessary to adopt an individual approach, for example, for goods and equipment due to the non-diversified economy of Kazakhstan and the limited production and availability of local goods and equipment.

Procurement

Procurement rules are in constant flux. There is currently an innovative online platform that marks the beginning of transparency; however, this system does not allow an accurate determination regarding the compliance of price range qualification requirements. Moreover, competition between potential suppliers at a fixed price cannot be applied to projects with special sensitivity or the need for complex technologies and qualifications.

Oil Export Quota

Currently, most contracts require that a subsoil user supply the local market with a certain percentage of oil produced and then be allowed to export the rest (export quota). However, in practice there is frequent non-compliance with the quota in the contracts. For example, the contract may require supply to the local market of up to 30 percent of the volume of oil produced, allowing over 70 percent to be exported, but in practice government agencies often only permit smaller export volumes. Creation of a transparent mechanism and compliance with guaranteed export volumes is the most important KPI to convert an ambiguous oil sales economy into a transparent, corruption-free system.



Customs Export Duty

Customs export duty was introduced as an instrument of state influence on excess profits of oil companies, as a response to the years of high oil prices. It is directly dependent on world oil prices. However, the government's bureaucratic mechanisms to update the rates often delay a prompt response to the volatile oil prices market, and, therefore, to the economics of the investment projects.



Regional Social Response

Given the general economic situation — the lack of diversification of the economy and the concentration of basic income around oil exports — the negative social response in the 'oil patch', which should be properly managed by the local governments to avoid risks to investors, has instead intensified. Increase of public awareness and the engagement of local communities should also be seen as important KPIs for collaboration between the national governing bodies and investors.

Government Management and Cooperation

Today, the competent authority - the Ministry of Energy - plays a dual role: that of the party to the civil contract (E&P contract), and that of the controlling state body. However, this cannot always work due to the different status and legislation regulating these roles. As the common objective is to ensure the safety of the projects and improve their economics at the same time, the mechanism of state management and regulation of oil operations should be significantly improved, for example, by introducing self-regulatory organizations, agencies, or institutions without the status of a state body into the management structure, following the example of many Western countries representing the state's interests to the investors. This allows the establishment of real cooperation, increases the efficiency of project implementation, takes into account the specifics of projects, and changes the nature of the relationship from "punitive" to "collaborative".

Recent Trends

Litigation: Rule of Law or Rule of State Interests?

When representing the interests of oil companies in court disputes with state bodies, we are faced with a persistent bias by the courts towards the interests of the state. How should courts be guided? By Rule of Law or Rule of State Interests? Without getting into political theory, a solution must be found.

One solution could be the pre-trial (peaceful) settlement of disputes. This is not currently done due to the dual status of the competent authority. Legislation sets out a peremptory norm - public authorities cannot conclude amicable agreements with private companies. This directly contradicts the nature of a civil law contract - a subsoil use contract. Peaceful resolution of disputes, the search for compromises between the parties to civil law contracts, especially in long-term relations, should be the basis of cooperation between investors and the state since it directly proceeds from the essence of contractual legal relations.

An extrajudicial and pre-trial settlement of disputes by analogy with tax disputes can also be a good alternative. There is already a positive example - an appeal commission to hear complaints of tax assessments (decided not only by the relevant government body, but also by the Atameken National Chamber of Entrepreneurs).

Although this option is not ideal, it is definitely a step towards improving the process of dispute settlement. Currently, the claims against the competent authority are appealed directly to the court, in the absence of any alternative. The competent authority may also immediately file a lawsuit against the subsoil user in court. A buffer between the dispute and its consideration by the court is necessary. In terms of judicial review of disputes, a good option is to consider disputes in non-state courts, for example, the AIFC court or arbitration.

Finally, during the hearing itself, a reconciliation between parties is possible. After all, the competent authority's claim to recover the penalty under the contract is not a public law matter. The voluntary agreement by the competent authority and the subsoil user to enter into a mediated negotiation process to resolve the conflict through compromise, helps to maintain a balance of interests between the parties and the possibility of further joint activities.

Breach of Contract

Earlier this year, a number of companies were sued for breach of contract and ordered to pay fines. The violations were:

- *Violations of the deadlines for the start of exploration or production*
- *Failure to fulfill obligations under the work program*
- *Violations of obligations regarding Kazakh personnel, goods, work and services, and maintenance*
- *Failure to train Kazakh specialists and finance social programs, etc.*

For bona fide investors, who are still the majority, the non-fulfillment of contractual obligations arose in most cases for reasons beyond their control, for example, untimely (protracted) signing of documents by the competent authority (permission for additional issue, altering of the contract, affecting the fulfillment of contractual obligations). At the same time, in almost all claims, court decisions were made in favor of the state.

Without analyzing the specifics, in those cases we reviewed, the subsoil user's fault was ambiguous, often directly due to inappropriate action by the competent authority. As a result, due to the improper fulfillment of obligations by the competent authority acting as the state regulatory body, the same authority, but acting as a party to the contract, sued the company for defaulting on its obligations.

Model contracts

As a measure of the unification and "modernization" of subsoil use contracts, the latest Subsoil Code, after exploration, envisages the conclusion of new production contracts in the form of a standard contract. This is a logical step in light of the new regulations in the field of subsoil use.

Despite the fact that this is the right of the subsoil user, the competent authority in most cases insists on concluding a new contract. The first model contracts are already being concluded and a paradox of this process has already arisen. The tax authorities' position is that these are "new contracts" and, accordingly, accumulated exploration expenses under the "old contracts" cannot be counted as costs against future production.



Is this a "cold shower" for the investors? It is nonsense. On the one hand, the state is in favor of creating conditions to attract investment in subsoil use, and, on the other hand, it frightens investors by legal inconsistencies and/or their interpretation, which do not favor subsoil users. An investor may invest in exploration, taking huge risks with the expectation of recovering the investment through production, only to lose this opportunity.

Given the above, we believe there is a real need for negotiations between the State Revenue Committee, on the one hand, and subsoil users, with the assistance of the competent authority, the Ministry of Justice and the bodies regulating investment activity. A transparent and fair approach to the taxation of hydrocarbon exploration and production should be developed. Otherwise, irreparable damage will be caused to the investment climate in Kazakhstan.

Tax Stability vs. Tax Creativity

The state has also found creative ways to increase profitability from projects, even from under-stabilized contracts. In our practice, we observe repeated cases of refusal to return VAT, the amount of which is sizeable as the accumulated VAT is often almost fully refundable.

Companies may not receive VAT refunds due to errors made by their suppliers, such as problems with documents or a supplier reporting of the 4th stage in the total supply chain. Yet the investor cannot influence the actions of this supplier in any way as he does not have a contractual relationship with the supplier. And so the investor is punished. The government aims to create a transparent system for the supply chain and VAT, but why must this be done at the expense of a bona fide investor?

Transfer pricing

In Kazakhstan, control of oil export prices, even in transactions between independent parties, is included in the concept of transfer pricing. Despite regular changes (introduction of price monitoring - submission of regular reporting, establishing an agreement on prices), there are still additional assessments of the oil revenues, yet a clear practice still does not exist for both tax and judicial authorities. There are often cases where companies, with an absolutely transparent mechanism for selecting oil buyers, and all the documents confirming the costs associated with the transportation and sale of oil, accrue millions of dollars through the use of "convenient" sources of information.

Summary

With the development of oil and gas legislation and maturity of the industry, it is necessary to introduce new institutions and mechanisms to cooperate with oil and gas investors so that the state's profit from projects is expressed not only in material benefits, but also in a meaningful balance of economic interests and collaboration with oil companies.

This collaboration should sustain the short-term receivables as well as increase investment into future gains by acquiring new technologies, human and social capital, and overall to improve Kazakhstan's reputation in a challenging and changing global economic arena.

COCA-COLA CUMULATIVE SOCIAL AND ECONOMIC CONTRIBUTION TO KAZAKHSTAN 2013-2017

Coca-Cola System in Kazakhstan has initiated an independent study together with a widely known international company "E&Y". The main objective of this study was to assess the contribution of the Coca-Cola System to the sustainable development of Kazakhstan between 2013 and 2017. The Coca-Cola System in Kazakhstan consists of The Coca-Cola Company (Coca-Cola CIS Services Ltd.) and Coca-Cola Icecek (JV Coca-Cola Almaty Bottlers LLP), which produces, markets and sells non-alcoholic beverages in Kazakhstan. The report analyzes contribution to all three aspects of sustainable development: economic, environmental and social.



**₸ 300
bln**

total contribution to Gross Domestic Product of Kazakhstan



**₸ 81
bln**

paid taxes and other payments in the government's budget



**9 226
people**

were provided with jobs in various sectors of economy, directly and indirectly*



**₸ 74
bln**

was the contribution to the labor income of the population of the Republic of Kazakhstan



**1.6
bln liters**

of water was returned to the nature through implementation of projects on rehabilitation of water supply. It is 3 times higher than the volume of water required for production of beverages by the Company in 2017



1 %

of the cost of each bottle of the Company's products bought by our consumers is invested in environmental or social initiatives



**>\$4.5
mln**

was invested in implementation of social projects

(*) Contribution to employment is shown for 2017

MEMBER NEWS



Sanofi Appoints Vitaly Bystryukov Country Chair of Sanofi Kazakhstan



Sanofi Kazakhstan announces the appointment of Vitaly Bystryukov as Country Chair Sanofi Kazakhstan and General Manager RX Sanofi Central Asia. His main tasks in this new role will be strengthening Sanofi's leadership not only in Kazakhstan, but throughout Central Asia to ensure patients are supplied with high quality medicines, and to support and develop the company's long-term strategy in the region, as well as strengthening the organization's management profile.

Vitaly Bystryukov has over seventeen years of management experience in Russia's pharmaceutical industry. He joined Sanofi Russia in 2013 as the Head of Sales for endocrinological medicines. At Sanofi he has held positions in sales and marketing, constantly expanding his range of responsibility and acquiring new experience. To date, he has headed the division of endocrinological medicines.

Vitaly possesses strong leadership and team-building skills, and the ability to successfully integrate organizational change. Under his leadership, his division achieved excellent results, successfully launched an innovative product, and received an international Sanofi award.

Before joining Sanofi, Vitaly Bystryukov was employed by pharmaceutical companies such as KRKA, Teva, and Akrikhin/ Polpharma, where his career developed first as a medical representative, then as a product manager and sales director.

Vitaly Bystryukov is by training an emergency room anesthesiologist. In addition, he holds an MBA from the Moscow International Business School.



Dmitry Osipenko Appointed Country Manager of ALD Automotive Kazakhstan



Dmitry Osipenko has been appointed the new Country Manager of ALD Automotive Kazakhstan. In line with the ALD Automotive global strategy, his main focus is to grow and expand the full service leasing business in Kazakhstan, and to ensure high service quality.

A graduate of the the International Law Faculty at Moscow State University of International Relations, Dmitry Osipenko started his career in the ALD Russia Legal Department, then was promoted to Head of the Remarketing Department. Among his core projects were implementation of IT platforms for remarketing and corporate car-sharing, a personal online platform for fleet managers, a testing service for all stages of the customer's journey, and promoting the service to customers. With 11 years professional experience at ALD Automotive Russia, Dmitry was appointed Head of Customer Accounts in 2018.

Dmitry's extensive experience in diverse areas of business, will serve to further develop ALD Automotive performance and strengthen its position in Kazakhstan. Commenting on his new appointment, Dmitry said *"I'm firmly convinced that ALD Automotive high-quality services, high standards, and our team's professionalism will make the ALD Automotive business an even a greater success"*.

About ALD Automotive

ALD Automotive is a global leader in mobility solutions providing full service leasing and fleet management services across 43 countries to a client base of large corporates, SMEs, professionals and private individuals. A leader in its industry, ALD Automotive places sustainable mobility at the heart of its strategy, delivering innovative mobility solutions and technology-enabled services to its clients.

HEIDELBERGCEMENT

Wojciech Halat Appointed General Manager at HeidelbergCement



HeidelbergCement is pleased to announce that **Wojciech Halat** has been appointed General Manager of HeidelbergCement in Kazakhstan as of August 1, 2019.

Wojciech Halat joined the HeidelbergCement Group in 1998. Since then he has held various management positions such as Finance Director, Technical Director (Georgia), Project Manager (Russia), and Project Coordinator (Kazakhstan), as well as Purchasing Director and President of the Board for Gorazdze Beton in Poland. He has also participated in many successful projects within the HeidelbergCement Group aimed at improving the efficiency of business operations (Russia, Ukraine, Georgia).

Wojciech Halat graduated from the University of Science and Technology in Krakow (Poland) and the Warsaw School of Economics. In 2000, he graduated from the Finance Department of the College of Management and Finance in Wadowice (Poland). In addition, he received an MBA from Warsaw University of Technology.

Wojciech looks forward to continuing the reputation of HeidelbergCement as one of the leading producers of high-quality building materials in Kazakhstan.



Estate Management Company Appoints Yerbol Zhamanbayev Chief Executive Officer



Yerbol Zhamanbayev has been appointed new Chief Executive Officer of the Estate Management Company, bringing to his new role more than 40 years of experience in the civil service.

His previous roles include Economist at Kazakhstan's Ministry of Finance, Chairman of the Tax Committee for Almaty's Bostandyk District, and Chairman of The Board of Alem Bank Kazakhstan. His most recent position was with the Fund of Problem Loans JSC (FPL), where he was Deputy Chairman of the Board.

Yerbol Zhamanbayev graduated from the Almaty National Economy Institute, and received a further degree from the Leningrad Finance and Economics Institute.

About Estate Management Company

Estate Management Company is one of the leading and fastest growing asset management companies in the commercial real estate market. The company's current portfolio consists of 18 commercial properties with a total area of 143, 000 SQ metres in Almaty, Nur-Sultan and Atyrau.

MEMBER NEWS

ILF Consulting Engineers Opens New Office in Atyrau



ILF Consulting Engineers signed a 5-year contract for engineering services with a major upstream operator in the Western Kazakhstan region in May 2019 and is pleased to announce the opening of a new office in Atyrau.

ILF Consulting Engineers is a leading engineering and consulting company with 40 offices around the world. Since 1967, ILF has successfully executed more than 6000 projects in over 100 countries. ILF has worked with industry leaders in solving complex engineering and project management challenges in the following sectors: Oil, Gas & Industrial, Energy and Climate Protection, Water and Environment, Transport and Structures.

ILF has been working in Kazakhstan since 1994, establishing its Almaty office in 2004. During this period, ILF experts have supported upstream oil and gas greenfield and brownfield projects, key regional and national oil and gas pipeline projects, and renewable energy projects.

The ILF office in Atyrau is located at: 26V Vladimirskiy Street. Please feel free to contact us at: info.kaz@ilf.com



OSG Records Management in Kazakhstan Celebrates Its Fifteenth Anniversary



In November 2004, OSG was the first company to arrive in Kazakhstan with an off-site storage concept. The first steps weren't easy because the market was not familiar with these new storage services and companies. OSG was the first company to offer the possibilities and benefits of archiving documents in compliance with legislation for the storage and destruction of documents in Kazakhstan.

By the end of 2019, OSG will have in storage over 250, 000 boxes in storage space covering more than 3000 square meters of archival facilities in Almaty and Nur-Sultan. OSG Records Management provides a full range of long-term services, including, but not limited to:

- Confidential destruction
- Document scanning
- Electronic archiving
- Magnetic media storage
- Archival processing

OSG Records Management is ranked a «Market Leader» in Kazakhstan, with over 300 clients and more than fifty years of global experience. The OSG Records General Manager in Kazakhstan is Mikhail Betin.



WELCOME ADDITIONS TO THE CHAMBER



Accenture

CORPORATE A

Vartan Dilanian
CEO in Russia and Kazakhstan

77/7 Al-Farabi Avenue
Almaty, Kazakhstan

Telephone: +7 (727) 355-10-88

E-mail: info-kazakhstan@accenture.com
Website: www.accenture.com/kz

Accenture is a leading global professional services company, providing a broad range of end-to-end services and solutions in strategy, consulting, digital, technology and operations.

Combining unmatched experience and specialized skills across more than 40 industries and all business functions—underpinned by the world's largest delivery network—Accenture works at the intersection of business and technology to help clients improve their performance and create sustainable value for their stakeholders. With 482,000 people serving clients in more than 120 countries, Accenture drives innovation to improve the way the world works and lives.

Five Accenture businesses – *Accenture Strategy, Accenture Consulting, Accenture Digital, Accenture Technology, and Accenture Operations* – develop and deliver integrated services and solutions. Accenture is the largest independent technology services provider, #1 partner of many key players, including SAP, Microsoft and others. Accenture's deeply skilled professionals work from more than 50 delivery centers and at client sites around the world.



Nobel

CORPORATE B

Selcuk Tanriverdi
Chief Executive in Kazakhstan

162E Shevchenko Street
Almaty 050008 Kazakhstan

Telephone: +7 727 3995050

Email: eren.eygi@nobel.kz
Website: www.nobel.kz

The Nobel Almaty Pharmaceutical Factory is one of the leading manufacturers of pharmaceutical products in Kazakhstan. The company was founded on the basis of the Almaty Pharmaceutical Factory in 2002.

Nobel APF has five production facilities that produce solid, soft and liquid dosage forms. The factory's production facilities have a GMP certificate and each facility meets international standards. The company's production facilities are equipped with modern equipment compliant with GMP requirements.

The factory's production capacity represents a significant share of the KZ pharmaceutical market and includes 750 million tablets, 250 million capsules, 20 million vials of syrup-suspension, and 10 million tubes of cream-gel.

The Nobel APF product range comprises more than 250 items of import-substituting drugs for treatment of both common and rare diseases, as well as malignant neoplasms.



Japan External Trade Organization

Jetro

NON-PROFIT

Jun Takahashi
Chief Executive Officer

107-B Amir Temur Street
Tashkent 100084 Uzbekistan

Telephone: (+998 78) 120-5591

Email: jun_takahashi@jetro.go.jp
Website: www.jetro.go.jp

JETRO (the Japan External Trade Organization) is a Japanese government organization established in 1958 to develop trade and investment activities, and to conduct a comprehensive trade policy.

JETRO organizes events to establish business relations between business community members, as well as organizing trade fairs, seminars and business forums for high level visits. It is also actively engaged in providing assistance to developing countries in establishing cooperation with Japan, and facilitates international exchanges.

JETRO has 74 overseas offices in 54 countries worldwide, as well as 46 offices in Japan, including Tokyo and Osaka headquarters.

The JETRO Regional Office for Central Asia was opened in Tashkent in 2000. It cooperates with government agencies and the private sector across Central Asia to promote business relations with Japan. Under this mandate, JETRO supports a number of Japanese and foreign companies.



Global Experience – Local Presence

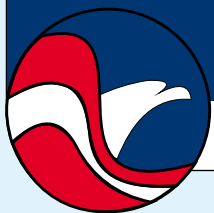
Our advanced coatings provide protection for Oil & Gas Industry projects worldwide



62 companies represented in more than
100 countries. 40 production facilities globally.
Uniform standard of global service.

jotun.com





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 Kazakhstan Government at senior levels
- ✓ AmCham Members may attend 19 Working Groups in 5 cities plus 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 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 |

Astana (4)

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

Shymkent (1)

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

WORKING GROUPS

Working Groups made up of representatives from our 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 our 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	Intercontinental Almaty Hotel
BASF Central Asia	KIMEP
Bracewell & Giuliani	KPMG
BG Group	LeBoeuf, Lamb, Greene
Capital Bank	Nestle
Chevron	PetroKazakhstan
Citibank	Philip Morris Kazakhstan
Conoco Phillips	Philips Kazakhstan
Coca-Cola	PricewaterhouseCoopers
Dechert	Procter & Gamble
Deloitte	Raytheon
DUCAT	Scot Holland CBRE
EBRD	Tengizchevroil
Ernst & Young	USAID
GE International	Visor Capital
Halliburton	White & Case
Honeywell	Procter & Gamble

OFFICE

Rixos Almaty Hotel Office Tower, 8th floor
050012 Almaty Kazakhstan
Tel.: +7 (727) 330 92 50
www.amcham.kz

Doris Bradbury
Executive Director
Doris.Bradbury@amcham.kz

Rimma Kazhemyakina
Finance Director
Rimma.Kazhemyakina@amcham.kz

Dean Rodan
Publications / Working Groups Coordinator
Dean.Rodan@amcham.kz

Anar Zholdosbek Kyzy
Publications / Communications Coordinator
Anar.Zholdosbek.kyzy@amcham.kz

Akmaral Bekzhunissova
Government Relations Coordinator
Akmaral.Bekzhunissova@amcham.kz

Togzhan Smagulova
Events / Working Groups Coordinator
Togzhan.Smagulova@amcham.kz

Aigul Sauranova
Accountant
Aigul.Sauranova@amcham.kz

Receptionist / Assistant
TBD

REGIONAL REPRESENTATIVES

Bela Ferenczi
CEO General Electric
Resident Representative, Astana
Bela.Ferenczi@ge.com

Dorin Baru
CEO OMV Petrom
Resident Representative, Aktau
Dorin.Baru@omv.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

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.

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

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



البنك الإسلامي
al hilal bank



WELCOME TO THE WORLD OF NEW BANKING AND INVESTMENT OPPORTUNITIES

Safe and secure investment deposits

- Investments in projects that comply with the rules and principles of Sharia
- High profitability
- Bank reliability confirmed by high investment-grade credit ratings*

*Ratings of parent bank group (Abu Dhabi Commercial Bank): A+ from Fitch Ratings and A from Standard & Poors

2330
www.alhilalbank.kz

License for banking and other operations of islamic bank №11.261, issued by the National Bank of the Republic of Kazakhstan on 10 june, 2015



1.2
BILLION US\$
LOCAL GOODS

3.8
BILLION US\$
LOCAL WORKS

9.2
BILLION US\$
LOCAL SERVICES