



SUMMARY REPORT

**KAZAKHSTAN ENERGY WEEK/
XII KAZENERGY EURASIAN FORUM
«FUELING THE FUTURE: INNOVATION
GROWTH»**

(SEPTEMBER 23-27, 2019, NUR-SULTAN, REPUBLIC OF KAZAKHSTAN)

➤ KAZENERGYFORUM.COM

INTRODUCTION

PLENARY SESSION «FUELING THE FUTURE: INNOVATION GROWTH»

«THE FUTURE OF OIL: REALITY AND FORECASTS»

NATIONAL ENERGY REPORT - 2019

GAS AS A KEY TREND IN GLOBAL ENERGY

ENERGY FOR SUSTAINABLE DEVELOPMENT

NEW ENERGY SECURITY CONFIGURATION: ENERGY ACCESS AND BALANCE OF INTERESTS

ENERGY INVESTMENT RISK ASSESSMENT (EIRA)

INVESTMENTS IN THE ENERGY SECTOR: OPPORTUNITIES AND PARTNERSHIPS

«SMART ELECTRIC POWER»

ROLE OF RENEWABLES IN THE ENERGY SYSTEMS OF TOMORROW

DIGITAL ENERGY OF THE FUTURE. TRANSITION PERIOD

ENVIRONMENTAL SOLUTIONS FOR SUSTAINABLE ENERGY. LEGISLATIVE BREAKTHROUGH

GEOLOGY OF THE FUTURE: FROM ENVIRONMENTAL SAFETY TO INNOVATIONS

CLEAN COAL: INNOVATIONS AND ENVIRONMENTAL FRIENDLINESS

EXPLOSION SAFETY IN THE OIL AND GAS, OIL REFINING, PETROCHEMICAL AND MINING SECTORS IN KAZAKHSTAN AND EAEU

SPECIAL CONFERENCE DEDICATED TO THE 120TH ANNIVERSARY OF KAZAKHSTAN OIL

KAZAKHSTAN PARTNERS DAY. KAZAKHSTAN-JAPAN

SPE SYMPOSIUM: CASPIAN HEALTH, SAFETY, SECURITY, ENVIRONMENT AND SOCIAL RESPONSIBILITY

X NATIONAL EITI CONFERENCE «TRANSITION TO A NEW LEVEL OF EITI IMPLEMENTATION IN INTEGRATED OPEN DATA SYSTEMS»

IV KAZENERGY WOMEN'S ENERGY CLUB FORUM «THE MODERN FEMALE LEADERSHIP PATTERN IN ENERGY»

XI KAZENERGY YOUTH FORUM «THE YOUTH VS MODERN CHALLENGES»

EQUIPMENT MANUFACTURER'S FORUM. LOCALIZATION OPPORTUNITIES AND LOCAL CONTENT DEVELOPMENT

WORKSHOP FOR MEDIA REPRESENTATIVES «SECTORAL JOURNALISM: OIL AND GAS RELATED TOPICS»

6TH INTERNATIONAL CONFERENCE «DOWNSTREAM CASPIAN AND CENTRAL ASIA»

III INTERNATIONAL RENEWABLE ENERGY SUMMIT

KEW OUTCOMES

INTRODUCTION

On September 23-27, 2019, a new national project in the energy industry – the KAZAKHSTAN ENERGY WEEK (KEW) – was organized for the first time in the Nur-Sultan Congress Center (Kazakhstan).

The KAZENERGY Association with the support of the Government of the Republic of Kazakhstan, including the Ministry of Energy, the Ministry of Foreign Affairs, the Ministry of Industry and Infrastructure Development, as well as a number of authoritative organizations, such as the International Energy Charter, the International Renewable Energy Agency, the World Petroleum Council, the World Energy Council and others, organized about 20 different events on a single platform during the week.

The weekly KEW program reflected the transformations taking place in the petroleum and energy markets, and the participants of the events, analyzing the situation, discussed issues related to the formation of a sustainable energy future.

The main events of KEW were the XII KAZENERGY Eurasian Forum «Fueling the Future: Innovation Growth»; presentation of the IV National Energy Report 2019; DIGITAL ENERGY exhibition, which demonstrated the results of application of the latest technological achievements in the energy market; as well as a special conference dedicated to the 120th anniversary of oil production in Kazakhstan.

Other events of the energy week included:

- XXIII Session of the CIS Intergovernmental Council on Subsoil Exploration, Use and Protection;
- III International Renewable Energy Summit;
- Kazakhstan Consular Congress;
- Report of the Secretariat of the International Energy Charter on «Energy Investment Risk Assessment (EIRA)»;
- 6th Downstream Caspian and Central Asia International Conference;
- Equipment Manufacturers Forum;
- X National EITI Conference;
- SPE Symposium: Caspian Health, Safety, Security, Environment and Social Responsibility;
- IV KAZENERGY Women's Energy Club Forum;
- XI KAZENERGY Youth Forum and "Student Energy Challenge" Intellectual Team Competition;
- Workshop for the Kazakh Media Representatives, dedicated to the peculiarities of mass media coverage of oil and gas related topics;

In addition, the event program featured Round Table meetings on such topics as:

- environmental and digital solutions for sustainable energy;
- the use of «clean» coal innovation;
- problems of explosion safety in the oil and gas, petrochemical, oil refining and mining sectors

The new format of discussions of energy problems helped expand the scope of discussions and attract as many specialists and industry experts from Kazakhstan and abroad as possible.

PLENARY SESSION

«FUELING THE FUTURE: INNOVATION GROWTH»

The countries of the world are on the way to ensure the transition to sustainable energy in the context of global market changes. Demand for energy worldwide is growing mainly due to traditional sources of raw materials – oil and gas. The issues of energy security, development of existing and search for new sources of energy resources, opportunities for their stable supply to consumers, as well as formation of the fair value of a barrel, on which the budgets of the producing states depend, become particularly relevant against the background of these transformations. These aspects were discussed during the Plenary Session of the XII KAZENERGY Eurasian Forum «Fueling the Future: Innovation Growth».

The Plenary Session was attended by authoritative politicians and leaders of major international organizations in the petroleum and energy industries.

Among the keynote guests and speakers, there were Prime Minister of the Republic of Kazakhstan **Askar Mamin**, OPEC Secretary General **Mohammad Barkindo**, Chairman of the Board of NWF Samruk-Kazyna JSC **Akhmetzhan Yessimov**, former President of Iceland (1996-2016), and Head of the Arctic Circle International Forum **Olafur Grimsson**. Participation of such important persons in the Forum underlined the high authority of the event organized by the KAZENERGY Association

new is required of us. This is a clear message within the framework of how the world is developing today with a view to achieving sustainable development. Today, the pace of the global economy is developing in a highly competitive environment. There are major falls in both the financial sector and the industry. Regional instability is increasingly becoming a recurring phenomenon,» he said. - «KAZENERGY Association today gives us an excellent opportunity to contribute to a constructive dialogue and gathered here the best representatives of the industry and the international community.»

Thanks to the annual increase in oil and gas production, stability and predictability of energy supplies, Kazakhstan is becoming a regional leader. Oil and gas production in the country has become a major factor for the further development of the petrochemical, oil refining industry. The capacity of domestic oil refineries has increased significantly, which made it possible to fully ensure domestic consumption and improve the quality of oil products. The introduction of renewable energy requires infrastructure development and innovation in this sector. Since hosting the EXPO in 2017, Kazakhstan has achieved significant success in the implementation of comprehensive «green» measures in the country's economy. To date, the portfolio of projects for introduction of renewable energy sources has been expanded to 3,000 MW of capacity, while, only in the first 6 months of 2019, production in the sector increased by 31.7%.



ASKAR MAMIN,
Prime Minister of the
Republic of Kazakhstan

«At present, all participants of the world energy market need to join global efforts to overcome the existing challenges.» «Kazakhstan

shall maintain stability and predictability of the energy market and the global economy in view of the risks of future recessions.»



MOHAMMAD BARKINDO,
OPEC Secretary General

«over the past few months, the global oil market has been saturated with uncertainty – mainly due to ongoing trade disputes, softening

demand and geopolitical developments.»

«Any disruption to the established system of secure oil and gas supplies is counterproductive and harmful to industry and to the wider global economy. OPEC is firmly committed to market stability and remains a reliable source of supply for its customers around the world»

According to the Head of the Government, «Today, the structure of global consumption is changing, which requires changes in the industry. Something

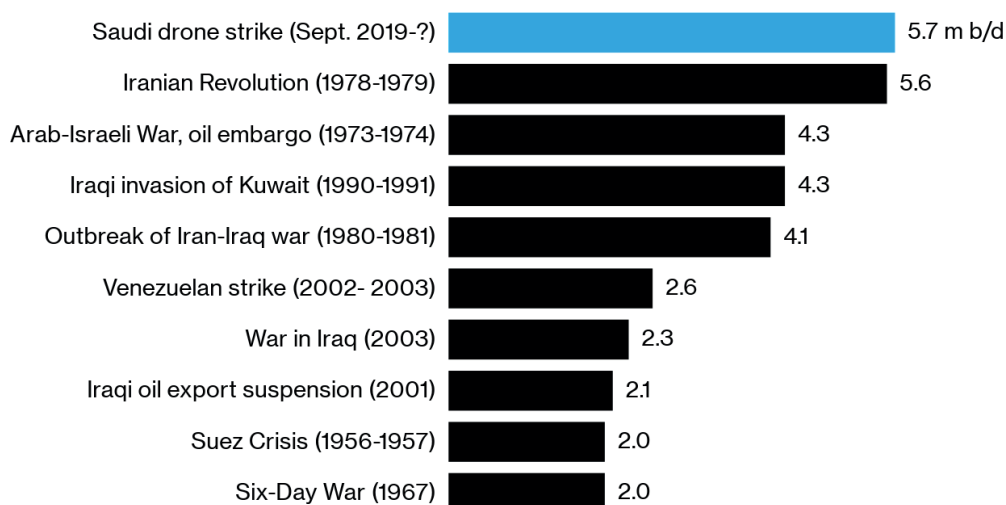
This, he said, was exacerbated by recent attacks on the energy facilities of the world's largest energy producer, Saudi Arabia, which eventually reduced its oil supplies to the world market by more than half. Within minutes, an estimated 5.7 million barrels of oil produced per day were withdrawn from the market. Immediately after that, the price of oil jumped by more than 18%,

which was the highest volatility for the last 30 years! A prompt response from the Saudi government and Saudi Aramco to restore production as soon as possible was absolutely essential to assuage market concerns about rising volatility. This incident, which caused a shock to the global energy market, forced oil producers to reconsider their security programs.

Oil Disruptions

Saudi attack tops biggest disruptions in history

■ Gross peak supply loss



Sources: International Energy Agency, Bloomberg

Bloomberg

M. Barkindo noted that oil and gas will occupy a significant share in the structure of energy resources until 2040. At the same time, OPEC expects long-term global demand for oil to grow to almost 112 million barrels per day by this time. Most of the demand will come from developing countries with high population growth, an increasing share of the middle class and economic growth.

The OPEC Secretary General thanked the Kazakhstan Government for its effective support and active participation in the OPEC Declaration of Cooperation.

- «The participants of the OPEC+ Declaration, in which Kazakhstan continues to play an important role, have established a basis for effective international energy cooperation. So, let's now go further and build on that through the Cooperation Charter, which was approved at the 6th Ministerial Meeting of OPEC and non-OPEC countries on July 2, 2019. The Charter is a continuation of the very successful Declaration of Cooperation, providing a permanent platform for discussion and cooperation,» M. Barkindo said.

Assessing the development of the Kazakhstan

petroleum industry, the Head of OPEC pointed to «the rich past of the country, with more than 120 years of experience in oil production.» «Thanks to huge investments in the energy sector, Kazakhstan is now seeing the fruits of its labor, because such large projects as the giant Kashagan field and the equally impressive Tengiz project help to significantly increase the capacity to produce liquid hydrocarbons, thereby ensuring the energy security of the market.»

Former President of Iceland, Head of the Arctic Circle Olafur Grimsson during the Plenary Session called the problem of heating and cooling of cities which in the future, according to his assessment, will be home to two-thirds of the world's population, the main challenge of the XXI century. These challenges, he said, are based on two important facts. «The first fact is that today more than half of the world's population lives in cities. In 20 years, two-thirds of the world's population will live in megacities in Asia, Africa and America. The second fact is that 40-50% of the energy produced in the world goes to heating and cooling cities. While transport, including cars, accounts for only 20%. According to the World Health Organization, 7 million people died as a result of urban pollution in

the past year. Every nation and energy companies in the world together must decide how to provide cooling and heating to cities in the 21st century while preserving the environment.»

«There is a solution that is based on an already existing technological model that Iceland developed at the end of the World War II. Despite the fact that many people are familiar with solar and wind energy, they do not suspect that there is a huge energy resource under our feet. If we can utilize 1% of the heat inside the planet, this will be enough to meet the demand and need for electricity for thousands of years,» the speaker concluded.

As the Chairman of the Board of NWF Samruk-Kazyna JSC Akhmetzhan Yessimov noted during the Plenary Session, the development of energy is very important for any state, as it affects national security.

Kazakhstan has significant reserves of hydrocarbons and uranium, occupies leading positions along with other world leaders in these indicators. At the same time, there are different possible scenarios for the

world energy development. Global trends include decarbonization of economies, active introduction of smart technologies, and digital transformation. Data analysis, information technology, and predictive analytics are becoming an integral part of the activities of energy enterprises.

The Samruk-Kazyna National Welfare Fund plays a significant role in the development of energy in Kazakhstan. Sharing responsibility for the future of the country, innovative solutions are actively introduced, additional costs are created, and production efficiency is increased. The Fund implements a large-scale privatization program approved by the Government, which aims to replenish the National Fund, introduce best practices of corporate governance, ensure international standards of transparency and accountability. In recent years, in accordance with the principles of «Yellow Pages», 89 enterprises have been transferred to the competitive environment and 192 bln KZT has been gained. It is planned to conduct IPO for 8 companies of the Fund, which are national operators in energy, telecommunications and infrastructure.

«THE FUTURE OF OIL: REALITY AND FORECASTS»

The interactive discussion which was attended by Minister of Energy of Kazakhstan **Kanat Bozumbayev**, OPEC Secretary General **Mohammad Barkindo**, Chairman of the Board of NC KazMunayGas JSC **Alik Aidarbayev**, Senior Vice President of ExxonMobil Upstream Oil&Gas **Tom Schuessler**, Chief Upstream Officer of ENI SpA **Alessandro Puliti**, Vice President for Caspian and Southern Europe at Total Exploration and Production **Bernard Clement**, Senior Vice President of Argus **William Harwood**, as well as Vice President of Wood Mackenzie **Malcolm Forbes-Cable**, aroused great interest among the Forum participants. The discussion was moderated by TV host and PBS NewsHour Special Correspondent Ryan Chilcote.

The key discussion questions included the formation of oil supply and demand in the coming years, the cost of a barrel, further cooperation within OPEC, and others.

At present, the security of oil supplies to the world market is coming to the fore, and producing countries are not interested in very high prices.

Kazakhstan will comply with the OPEC+ Agreement on Limiting Oil Production, but in the future, against the background of the development of mega-projects in the petroleum industry, it will continue to increase volumes.



KANAT BOZUMBAYEV,
Minister of Energy of the
Republic of Kazakhstan

«As a responsible partner, we will fulfill our obligations. In the medium term, we will continue to implement our major projects. This is, first of all, the expansion of Tengiz, the extension of production in Karachaganak, the increase in production in Kashagan. We assume that within the framework of OPEC+ we will fulfill our obligations, but in the medium term we will increase the volume of oil production by 2023-2025. Until then, we will be in the corridor of 1.8-1.9 million barrels per day».

As is known, the petroleum industry in Kazakhstan has traditionally provided strong support to the economy in 2018: the volume of oil and gas condensate production, reaching a record level in the history of the industry, amounted to 90.3 million tons. The lion's share of oil production last year fell on the three largest projects - Tengiz, Kashagan and Karachaganak, which together produced 53.9 million

tons. The three giants are set for further impressive growth today: through the implementation of large-scale expansion projects, their contribution to country-wide production will increase this figure to more than 100 million tons per year.

The issues discussed align with the conclusions of the KAZENERGY National Energy Report presented at the Forum, which states that despite the fact that Kazakhstan has exceeded its obligations for the intended decline in production under the OPEC+ agreements, the crucial factor in the structure of oil production in the country is still the projected schedules for implementation of «mega-projects» (Kashagan, Tengiz and Karachaganak), which together account for a significant (and increasing) share in the total production volume of the country (in 2018, it was about 60%).

According to the National Energy Report 2019, given that the implementation of the OPEC+ initiative and price increases in general have brought obvious benefits to Kazakhstan in a form of increased revenues from oil exports, in the near future, the country's tactical cooperation with other parties to the Vienna Agreement is likely to continue. At the same time, there is no good reason to participate in more restrictive initiatives than the current OPEC+ free coalition, because the theoretically possible expansion of the production reduction program in support of the OPEC+ initiative by Kazakhstan can hinder development of the country's oil industry, according to experts who worked on the document.

Noting the importance of OPEC+ initiatives, Mohammad Barkindo emphasized that the Organization of Petroleum Exporting Countries is focused on the stability of oil prices and will continue to adhere to this strategy.

«As a result of the events in Saudi Arabia, we have noticed that this has significantly affected volatility and is not beneficial for both producing and consuming countries. Both are interested in stability. Without stability, it will be difficult to plan something and attract funding for projects. Therefore, we are now focused on this goal. We will continue to work to isolate oil from politics,» he said.

According to IHS Markit, until 2040, the world price of oil (Dated Brent) will average only about \$116 per barrel (at nominal value), and, under such conditions, new projects are likely to attract less interest among investors than fields already explored. Such changes in the international competitive environment will have a direct impact on resource-rich countries, including Kazakhstan, according to the authors of the National Energy Report.



ALIK AIDARBAYEV,
Chairman of the Board
of NC KazMunayGas JSC
«Today, the issues and problems relevant to KazMunayGas have been discussed – the price of oil, and instability in the world energy markets. In general, I would like to note that the current corridor of oil prices in the range of \$60-70 is quite acceptable for KazMunayGas.»

It should be noted that, according to the conclusions of the National Energy Report, the oil price at the level of \$60-70 per barrel provides sufficient supply in the long term.

In continuation of the theme of development of oil and gas mega-projects in Kazakhstan, representatives of foreign companies noted the potential for their further fruitful work in the country



ALESSANDRO PULITI,
Chief Upstream Officer
of Eni S.p.A.

«The world has seen a significant increase in oil and gas production over the past five years. The focus shifts to liquefied gas - this shift between oil and gas is very important.»

«We have already invested about USD 12 bln in Kazakhstan - mainly in the Kashagan field. We are grateful and pleased with our work with partners, as well as that there is a potential to further increase this work. We have come to an agreement with the Kazakhstan Government to expand the field in the Caspian Sea and decided to invest in this project.»

Tom Schuessler, Senior Vice President of ExxonMobil Upstream Oil&Gas, noted that Kazakhstan with its large resources is very attractive for foreign investors. «For many years, investing in Kazakhstan, we have had great success with partners of Kashagan and Tengiz fields. As in any other country in which we develop projects, the most important thing for us is stability. Kazakhstan is a very attractive country for investment,» he said.

At the same time, K. Bozumbayev, speaking about the investment attractiveness of the oil and gas

industry of Kazakhstan, stressed that from year to year the regulatory regime for foreign investors in Kazakhstan is becoming softer and softer. Recalling that the entry of new investors into the market was greatly facilitated after the adoption of new versions of the Code on Subsoil and Subsoil Use and the Tax Code in 2017, the Minister promised that the Environmental Code currently being under development will also take into account the proposals of energy operators working in the country.

«You know that many world financiers said that after a while they will refuse to finance hydrocarbon projects. Some countries have

stated that in the coming decades they may completely abandon cars that consume gasoline or diesel fuel. This is the reality that may come soon enough,» K. Bozumbayev said. - «Today, of course, there are numerous and contradictory forecasts regarding the future of oil and reserves. Many forecasts agree that the volume of world oil output will soon reach a maximum, after which it will begin to decline, and this threatens the world economy. Other studies have concluded that oil reserves are not running out, but are becoming less affordable. The future is uncertain, it is impossible to plan it accurately. But we shall take into account the existing trends, and we shall develop in accordance with new trends.»

NATIONAL ENERGY REPORT - 2019



DANIEL YERGIN,
Vice-Chairman of IHS
Markit

«The high level of competition for international investments in the fuel and energy sector should not only remain,

but also increase in the foreseeable future. In this regard, Kazakhstan needs to redouble its efforts to create an attractive environment for investment in new fields, which will help add the production volumes coming from existing mega-projects. At the same time, ensuring competitiveness depends both on the conditions provided and on the decision-making procedures.»

The presentation of the National Energy Report (NER, Report) - 2019 was one of the KEW's culminations along with the Plenary Session and Interactive Discussion of the Forum. The international company IHS Markit and Kazakhstan's Avantgarde Group were the main experts while working on this voluminous and detailed document, which presented the strategic view of the KAZENERGY Association on sustainable development of the petroleum and energy industries of Kazakhstan as a single system. The document was a continuation of a series of review reports on the current state and prospects of development of the fuel and energy sector of the country.

The National Energy Report focuses on investment, pricing and tariff setting issues. The State's

environmental policy, gasification of the central regions of the country, active development of renewable energy sources, as well as the launch of the capacity market and integration processes within the EAEU - all this determines the need for fundamental changes in tariff and price policies.

As in previous reports, the NER-2019 assesses the prospects for development of the fuel and energy sector on the basis of the latest data, targets, forecasts and plans in the field of energy.

One of the key themes of the Report is the need to review the existing regulatory framework in Kazakhstan in order to establish a system that promotes overall growth in activity and provides incentives for all participants in the energy supply cycle, including exploration and development of fields, extractive activities, oil and gas processing, as well as generation and distribution of electricity. The solution of these problems is inextricably linked with pricing, tariff and tax policies.



TIMUR KULIBAYEV,
Chairman of KAZENERGY
Association

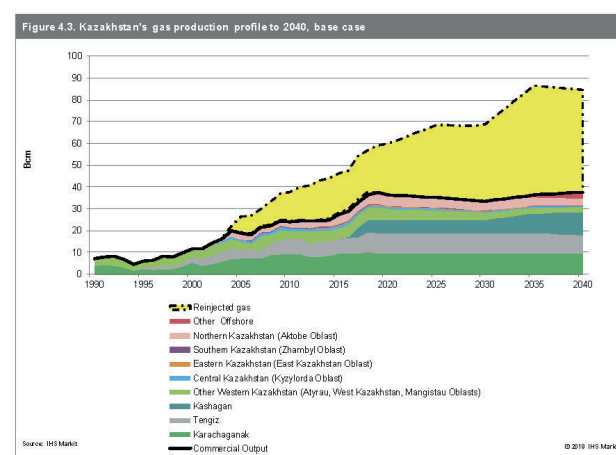
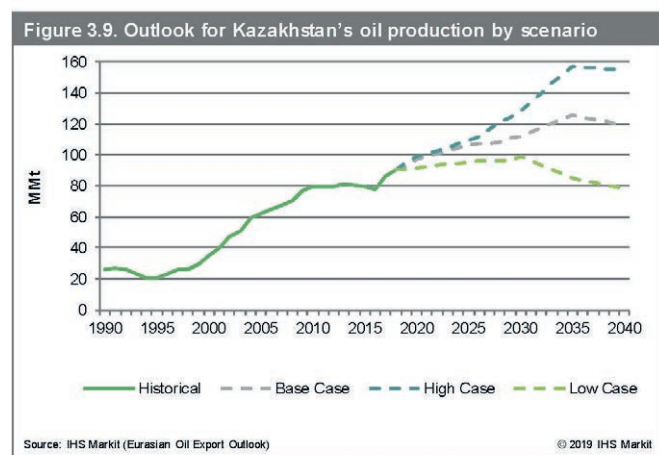
«The National Energy Report stressed that today energy, and primarily the petroleum sector, plays an important role in Kazakhstan's economy.

The share of oil production and refining segment in the country's GDP in 2019 is projected at 15%,

and the share of the petroleum-related sectors is 21%. In context of improving petroleum market conditions, these indicators will continue to grow in the foreseeable future».

According to the NER, «despite the active progress of Kazakhstan on the path of diversification, energy resources will remain of paramount importance to its economy. At the moment, the petroleum sector provides 1/5 of GDP (21.3% in 2018), about 2/3 of total export revenues

(70% in 2018) and almost half of the country's state budget revenues (44% in 2018). The fuel and energy complex also occupies a leading position in attracting foreign direct investment to Kazakhstan. At the same time, in order to ensure the rational use of rich energy resources and sustainable development of the country in the long term, today – as always – it is extremely important to have a solid, coherent and carefully thought-out regulatory framework, combined with effective mechanisms for implementation of its requirements.



Oil and Gas Production Forecasts till 2040

Adhering to the substantive approach to the coverage of certain areas of energy and existing problems, the Report reveals new global trends that are most significant for Kazakhstan:

- the OPEC+ Agreement has had a positive impact on oil prices, but the oil market remains unstable. In this regard, it is extremely important to reduce production costs and ensure favorable conditions for attracting external investment;
- expected growth in global demand for natural gas – and, above all, liquefied natural gas (LNG) – as well as further growth in investment in renewable energy;
- despite concerns about climate change, greenhouse gas emissions (as well as global coal production) will rise substantially.

Taking into account global trends, the Report highlights the main achievements of the fuel and energy complex of Kazakhstan, including:

- expansion of three mega-projects (Tengiz, Kashagan and Karachaganak) will lead to further growth in oil production, which by 2040 will increase by 1.7 times compared to the current level (90.4 million tons per year);
- completion of modernization at three main oil refineries allowed reducing dependence on

import of light oil products from Russia, increasing quality of our own gasoline;

- completion of the Beyneu-Bozoy-Shymkent (BBSH) gas pipeline in 2015 and the current growth project laid the groundwork for increasing gas exports to China and for supplies via the Saryarka trunk pipeline under construction to previously unsecured regions (in 2021).

Thus, this year the Report retained recommendations in favor of investments in exploration, production and export of hydrocarbon energy resources – «when it is economically justified in the current conditions and taking into account the expected development of the situation in the future, including the investment environment». «With regard to the extractive industry, this recommendation applies equally to the planned growth of mega-projects implemented in Kazakhstan, the development of new promising subsoil areas, as well as measures to intensify production at mature fields. Successful increase in production and removal of production limitations at the Kashagan field, the start of the Future Growth Project at the Tengiz field and full settlement of longstanding litigation in the Karachaganak project, allowed the oil industry in Kazakhstan to reach new levels, laying the

foundation for further development of not only three major fields but also other projects. The recovery of world oil prices, achieved largely thanks to the initiative of OPEC+, changes the position of Kazakhstan in the global oil markets.»

During the presentation of the Report, other broader issues of sustainable energy development, including the climate problem and renewable energy sources, were also touched upon.

«When we make long-term plans, we see that hydrocarbons play an important role. Oil still occupies the first place. Despite the development of RES, gas remains a key element of energy,» said Matthew Sagers, Head of Energy Research at IHS Markit for Russia and the Caspian region, adding that Asia and China will be the main consumers of oil. Touching upon the issues related to the introduction of RES and the capacity market, he considered it appropriate to recall that energy is a very important sector for Kazakhstan, it is a large proportion of the economy. Energy accounts for 25% of the country's GDP, it is mainly the petroleum sector.

In addition, the NER noted the need for liberalization of energy markets and the gradual harmonization of the level of prices within the EAEU:

- expanding gas exports, increasing domestic gas consumption due to the gasification of regions and the development of gas chemical clusters, can lead to a gas shortage in Kazakhstan, with about 40% of 55 billion m³ of produced gas pumped back into the reservoir due to extremely low purchase prices;

- regulation of domestic prices for light oil products leads to significantly lower prices, however, within the framework of the EAEU integration, there will be a need to harmonize the markets of oil products;
- tariff policy in the electric power sector is not consistent with the real financial capacity of power plants to cover the ever-increasing renewable energy support costs;
- despite the adopted regulatory framework, the determination of tariffs in the electric power sector for regulated services is in practice carried out by using the «cost plus» method, which does not stimulate investment and introduction of new technologies;
- revenues from the capacity market do not cover most of the fixed costs of power plants, and the issue of the objectives of the capacity market mechanism can be expanded taking into account the environmental agenda

The Report also provided an analysis of a number of provisions of the draft Environmental Code related to the transition to the OECD standards and requirements for introduction of best available technologies (BAT), as well as recommendations for development of the environmental legislation taking into account economic and social factors.

The KAZENERGY Association hopes that the information and recommendations presented in the KAZENERGY National Energy Report 2019 will contribute to decision-making and development of effective policy measures necessary to accelerate development of the fuel and energy sector and improve the social welfare of Kazakhstan.

GAS AS A KEY TREND IN GLOBAL ENERGY

Within the framework of the KAZENERGY Forum, a lot has been said about the fact that gas in the foreseeable future will play a decisive role in formation of the energy balance in the world among other – alternative to oil – energy sources. According to the National Energy Report 2019, global demand for natural gas – and, above all, LNG – is expected to grow. In 2018, natural gas accounted for 40% of global energy demand growth. At the same time, within the gas industry (globally – and especially in Asia), LNG consumption is expected to grow faster than gas in general.

Due to the overall growth of liquid hydrocarbon production in Kazakhstan, IHS Markit predicts that by

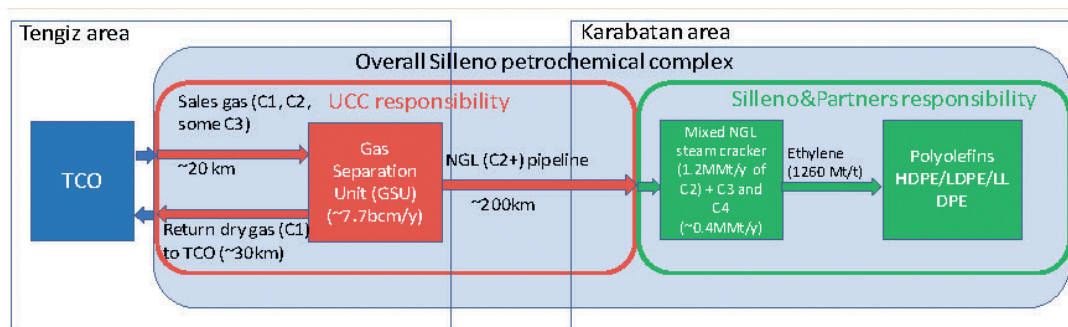
2040, gross gas production in the country will grow by 52%, to the level of 84.4 billion cubic meters per year, but commercial volumes will increase only slightly – by about 3.6% – to the level of about 38 billion cubic meters per year, due to the consistently high demand for reinjection and problems of commercial use.

According to Vice Minister of Energy Murat Zhurebekov, Kazakhstan is currently purposefully pursuing the path of increasing its gas potential, including production and export capacities. At the same time, gas supplies to the domestic market are the main priority in this area. The dynamic development of the gas industry is extremely important for the entire economy of Kazakhstan.

The Atyrau region is now implementing a major project for construction of an integrated gas chemical complex that will enable production of polypropylene and polyethylene.

Taking into account the high potential of the application of gas in the petrochemical industry, a

draft law providing for effective regulation of relations in terms of setting gas prices for new investment projects has been submitted to the Parliament of Kazakhstan. In particular, we are talking about the production of petrochemical products, new power plants, as well as the expansion of the use of natural gas, including motor transport.



Scheme of supply of gas and final products under the project of Gas Chemical complex of the United Chemical Company (UCC)

According to the Ministry of Energy of Kazakhstan, in 2018, gas production in the Republic amounted to 55.5 billion cubic meters, which exceeded the level of production in 1991 by more than 7 times. About 30% of this volume is used for domestic needs of the population and business, about 35% is exported, and the remaining volume is reinjected to maintain reservoir pressure, as well as used for other needs of subsoil users.

The development of gas transportation infrastructure is of strategic importance for the economy and energy security of our country.

Based on the multi-vector policy, Kazakhstan seeks to develop all export and transit directions. In particular, a number of projects have been successfully implemented in recent years, including the construction of the Beyneu-Bozoy-Shymkent gas pipeline, thanks to which it became possible to export Kazakh gas to China. In 2017-2018, Kazakhstan exported more than 5 billion cubic meters of gas to China. There is an agreement with the Chinese side to increase exports in this direction to 10 billion cubic meters. Work is underway to expand the capacity of the pipeline to 15 billion cubic meters per year. At the same time, as, for example, it is noted in the National Energy Report 2019, due to low purchase prices, it is more profitable for fields to pump associated gas into the reservoir, rather than deliver processed gas to the market. Due to the limited supply of gas in the country, Kazakhstan will have a difficult choice between increasing exports and expanding the use of gas in the domestic market.

Developing the transit potential of the country, Kazakhstan contributed to increasing the capacity of the transnational gas pipeline Turkmenistan-Uzbekistan-Kazakhstan-China to 55 billion cubic meters per year. According to the results of 2018, it transported about 50 billion cubic meters of gas, including 43 billion cubic meters - this is the transit of Central Asian gas towards China.

Besides, systematic work is conducted for gasification of regions. According to the general scheme of gasification of the country, it is planned to increase the level of gasification from the current 49.7% to 56% in the medium term. Currently, 10 out of 14 regions and 2 out of 3 cities of national importance - Almaty and Shymkent - have access to natural gas in Kazakhstan.

Today, the project of construction of the Saryarka gas pipeline on the Kyzylorda-Zhezkazgan-Karaganda-Temirtau-Nur-Sultan route is being implemented. The construction of the linear part will be completed in 2019, and the construction of gas distribution networks in Nur-Sultan, Karaganda will be carried out next year. After the completion of the Saryarka main gas pipeline (as well as other gas pipelines, including distribution), the population of 14 of the above regions and one more city of the republican status - Nur-Sultan - will be gasified by 2030.

During the discussions on prospects of the gas market, the participants touched upon the problem of developing sour gas reserves and sulfur utilization, in which Tengizchevroil LLP has accumulated considerable experience.

Regarding the development of gas markets, Andrei Gaidamaka, representing Investa Group, Member of the Expert Council for Corporate Governance of the Central Bank of the Russian Federation, recalled that, «of course, shale gas, which is associated with the development of LNG, contributed to significant technological success. But so far it has been subsidized.» He added that, in the foreseeable future, China will remain the largest consumer of gas, both LNG and pipeline gas.

According to him, energy consumption in China today exceeds that in the United States by 1.5 times. In 2012, various forecasts were made regarding the growth of China's demand for gas. They came down to the fact that until 2030, gas consumption in China would be 230-250 billion cubic meters per year. Meanwhile, according to Lukoil's forecast made 6-7 years ago China's demand for gas was 700-900 billion cubic meters. «It changes the whole infrastructure and attitude to key or non-key aspects in the development of energy.»

Russia has large underutilized gas reserves - more than 100 billion cubic meters, which can be extracted today. «I believe that Kazakhstan also has such opportunities,» he said. According to him, the Power of Siberia gas pipeline is expected to be

commissioned in 2019, which will be the largest event of the year in the world energy sector.

«Demand, which, as we see, is being accelerated in China, this is the main issue on which we need to work in Russia and Kazakhstan. Secondly, we need to do our research on this issue, using the vast experience of our Western colleagues.»

The key issue in development of the gas industry is that natural gas is a green energy source that needs to be actively developed.

Valerie Ducrot, Executive Director of the Global Gas Center, also noted that natural gas is «a solution among other solutions» to reduce CO₂ emissions. The gas industry is a key factor in decarbonization. «To the outside world, we present ourselves as fossil fuels in the first place.

Wood Mackenzie experts noted the role of Kazakhstan in natural gas supplies to China. «It is important to develop the gas industry in terms of the strategic future, that is, to increase the role of gas in the production mix. Indeed, the share of gas is growing. Exploration is increasingly facing discoveries of gas fields. And we must create a new energy balance.»

ENERGY FOR SUSTAINABLE DEVELOPMENT

The theme of Sustainable Development is reflected in the United Nations conceptual documents, such as «The Future We Want», «The 2030 Agenda for Sustainable Development» and the Paris Agreement, which define the prospects for the world's population in the twenty first century. Kazakhstan, where, taking into account the raw-material orientation of the economy, fossil fuels will remain part of the energy for a long time, adopted the Concept of Transition to «Green Economy», ratified the Paris Agreement, initiated and is implementing the Green Bridge Partnership Program, and established the International Green Technologies Center under the UN auspices. All sustainable development concepts and programs developed and adopted in the country are aimed at achieving a new quality of life, innovative development, modernization of the economy, ensuring national security, balanced regional development and building an effective state. Kazakhstan actively participates in the international dialogue on the development of technologies, strengthening of energy policy, as

well as on the study of experience in order to share best practices.

During the discussions on this topic, Kire Ilioski, Director of the Office of the Executive Secretary of the United Nations Economic Commission for Europe (UNECE), stated that energy policy could not develop in a vacuum. The UN Economic Commission for Europe is committed to transforming the energy system in a way that improves the quality of life of each state. «We work with communities and organizations on an individual basis, regionally and internationally.»

According to Heru Setiawan, Director of Investment Planning and Risk Management at PT Pertamina, at present, amid «quite a lot of pressure from the society», renewable energy can become the main source of energy. «We expect a 6-fold increase in the share of RES by 2030,» he said. Speaking about the prospects of transferring vehicles to the use of «green» energy, the speaker noted that in the future motorcycles will be much easier to adapt

to electricity than cars. «We believe that when we bring electric motorcycles to the market, many people will most likely transfer their vehicles to electricity. We will significantly increase the growth of the share of electric vehicles.»

Baurzhan Smagulov, Chairman of the Board of the Electric Power and Energy Saving Development Institute, said: «As many of you, I personally recognize that the global agenda for sustainable energy development is associated with the technological integration of RES into the energy system, and this practice is gradually gaining relevance in Kazakhstan. I think that another global trend, the most relevant for our country, is digitalization of energy. However, the most important and cost-effective direction for Kazakhstan, taking into account the current situation, is energy saving.»

«If you ask whether there is a formula for the development of energy saving in Kazakhstan, I will definitely answer that there is. On the one hand, it is expressed in a competent and efficient state geopolitics of energy saving, implemented by our Ministry of Industry and Infrastructure Development. At the end of 2017, the energy intensity of the country's GDP was reduced by 18-20.8%. On the other hand, we have much more to develop – the energy intensity of Kazakhstan's GDP is 2 times higher than the global average, 4 times higher than that in the OECD countries, and we are ranked 4th among the CIS countries. An indicator of the modernization that has begun in recent years is the boom of night street lamps. Today, about one-third of street lights in Kazakhstan are switched to led lamps. Annual savings in this segment alone amounted to more than KZT 500 mln».

One of the important points is that this year the Energy Saving Day is included in the list of professional and other holidays of Kazakhstan.

Giovanni Capanelli, Country Director of the Asian Development Bank in Kazakhstan, noted that ADB is a strong partner in the development of RES: «ADB not only promotes sustainable development, but also provides long-term financing to sustainable development projects. In addition to financial projects, we provide a lot of technical support and grants for technical projects. These grants are provided in different ways for different areas.»

The new strategy of the Asian Development Bank began in August this year and will last until 2030 in relation to the Sustainable Development Goals. The first goal is that at least 75% of all Bank

operations from 2019 to 2030 should include various climate mitigation activities. The Bank has funded USD 80 bln to fight climate change.

Kazakhstan has an important responsibility in setting high ambitious goals in Central Asia, and it is also responsible for leadership in the implementation of RES.

In addition, ADB works very closely with the Astana International Financial Centre in implementation of “green financing” projects.

Speaking at the session, Igor Korotetskiy, Partner and Head of KPMG's Operational Risk and Sustainability Group, noted the need to increase the share of alternative sources and reduce the share of fossil fuel-based generation sources. «Now, we are talking about a carbon tax... Let's imagine a futuristic scenario that can be quite real. Let's imagine that in 15 years the politicians of the world's leading developed countries will come to an idea that it is necessary to impose a tariff on products that were produced in countries that are making insufficient efforts in terms of climate change initiatives or regulations... which means, in fact, that all markets of developed Western countries will be closed.»

The session participants agreed that the work on transition of energy to sustainable development requires considerable efforts. However, good government policies are essential for greater effectiveness.

By the way, the need for alignment and coordination of actions and plans of state bodies in the environmental, social and economic spheres is also noted in the new National Energy Report presented at the Forum. According to it, in particular, «it is necessary, first of all, to legally stimulate energy saving by companies associated with the transmission of electricity, heat and gas (whose share accounts for the bulk of losses) by including the costs of energy-saving projects in their investment programs». Experts recommend to develop a Strategy for Sustainable Development of Kazakhstan, where the goals and objectives of environmental, social and economic development of the country will be interrelated and coordinated with long-term plans for the development of electric power and related industries.

NEW ENERGY SECURITY CONFIGURATION: ENERGY ACCESS AND BALANCE OF INTERESTS

The agenda of this discussion included an issue of forming a new configuration of energy security and such a balance of interests of producers and consumers of energy resources, which would ensure the stability of investment processes now and in the future. The keynote of the session is the idea that the energy world has entered a new period of development, in which transport and affordability are important components of ensuring energy security – it is still based on taking into account the mutual interests of suppliers and consumers and building an effective oil and gas transportation infrastructure. The main energy corridors of Eurasia have already been established. Promising ones have yet to be formed to meet the growing energy needs of countries. The balance of interests of suppliers and consumers – what is it like today?

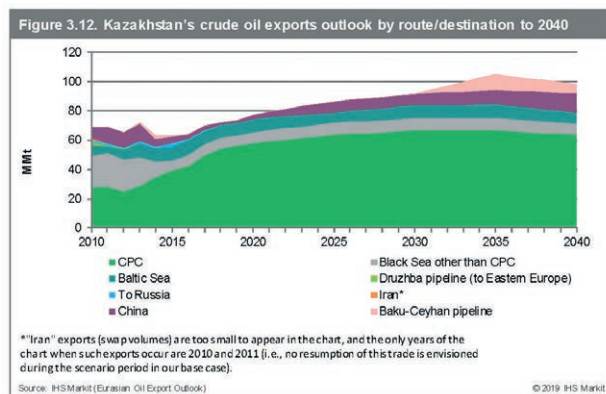
If we turn again to the National Energy Report presented at the KAZENERGY Forum, it notes that oil transportation is a serious issue for landlocked Kazakhstan – especially given the huge role of oil exports in the country's economy. According to the Report, in 2017-2018, the export of crude oil from Kazakhstan returned to the growth trajectory, and in the long term, the export dynamics, as experts expect, is likely to repeat the trends of oil production in the country (given that the increase in demand in the domestic market will be limited). Analyzing the current trends, experts come to the conclusion that the Tengiz-Novorossiysk oil pipeline of the Caspian Pipeline Consortium (CPC), through which Kazakhstan is increasing its exports, thanks to the investments of shareholders in its expansion, will remain the main route for oil exports from the country until 2040.

A similar position was expressed during the session by the CPC-K Deputy Director General Kayrgeldy Kabyldin. According to him, the CPC pipeline system today represents one of the largest investment projects in the energy sector with the participation of foreign capital in the CIS. In 2018, over 61 million tons of oil were shipped through the CPC system, including 54.3 million tons of oil from Kazakhstan and 6.8 million tons from Russia. 558 vessels were processed. In January-September 2019, the CPC Marine Terminal on the Black Sea processed 437 oil vessels, which took 46 million 467.1 thousand tons of gross oil on board. Of the 4 million 949.4 thousand tons of oil shipped in September 2019, 2 million 202.3 thousand tons of oil are from the Tengiz field, 484.8 thousand tons of oil are from the Karachaganak

field, 1 million 502.7 thousand tons of oil are from the Kashagan field, as well as 202.2 thousand tons of oil are from other Kazakhstan producers. Another 557.5 thousand tons of oil entered the system from Russia. The increase in shipment volumes was due to the implementation of the Capacity Expansion Project.

Regarding the Debottlenecking Program in 2019-2023, it is assumed that the main construction and installation works will be completed in 2022. With an investment cost of USD 599.9 mln, the capacity of CPC's export system is expected to increase to 80 million tons of oil per year.

Meanwhile, experts believe that the multi-vector strategy, which Kazakhstan adheres to, involves the use of a variety of export routes for oil transportation. In other words, an increasingly significant share of the total export volume from 2019 to 2040 will go along alternative routes, bypassing the territory of Russia. In 2040, according to their forecast, this share in total can reach 20%. In particular, we are talking about the Kazakhstan-China Pipeline (KCP), as well as the resumption of Kazakhstan's supplies through the Baku-Tbilisi-Ceyhan oil pipeline. The 2019 NER states that the resumption of Kazakhstan's exports via BTC appears to be delayed: these supplies may resume after about 2030 – primarily due to the limited capacity of other routes (in particular, CPC).



The general conclusion of the session participants is that Kazakhstan oil occupies a favorable competitive position in the growing oil markets of Asia, and the demand for it in the European market should also remain.

Łukasz Hołubowski, Chief Executive Officer of ORLEN Paliwa Sp. z o. o., also touching upon the topic of ensuring an adequate level of energy security, noted

that Poland managed to achieve this by diversifying the directions of crude oil supplies. In 2018, more than 40% of oil supplies to ORLEN Group refineries came from the United Arab Emirates, Saudi Arabia, Kazakhstan,

the United States, Nigeria, Algeria, Iran, Norway, Azerbaijan and Lebanon. The remaining volume today comes from Russia via the Druzhba pipeline.

ENERGY INVESTMENT RISK ASSESSMENT (EIRA)

In the Energy Investment Risk Assessment (EIRA) presented on the sidelines of the KAZENERGY Forum, the Secretariat of the International Energy Charter (IEC) identified specific risks affecting energy investments that can be mitigated by adjusting the policy, legal and regulatory framework. The document aims to identify policy gaps, provide training opportunities and stimulate reforms that make the investment climate in countries more sustainable and reduce the risk of disputes between investors and states.

The results for the countries mentioned in the review were presented as separate country risk profiles. Other types of investment risk, such as commercial, technical and geopolitical, are not included in the scope of the publication. Today, more than 60 countries participate in EIRA.

The International Energy Charter, presenting the publication, stated that the aim of EIRA is to identify and address specific risks in the regulatory environment. According to EIRA, in 2016, 3 countries joined the organization, in 2017 – 9 countries, in 2018 – 30 countries, including Kazakhstan, and in 2019 – 34 countries. Today, there is a growth not only in the number of participants, but also in the goals and objectives of the organization.

EIRA helps governments identify and address specific risks in the regulatory environment that hinder investment flows. The Charter assesses the

risks to investment in the energy sector, which countries can control and limit through their actions. This information is very important because it allows governments to take the necessary steps to strengthen their regulatory frameworks, which is beneficial for stimulating investment in the energy sector. The second aim of EIRA is to provide a reliable source of useful information to energy companies, investors and the financial sector on various aspects of the regulatory environment in countries considered for investment.

According to IEC Secretary General Urban Rusnak, over the past 5-10 years, the global energy landscape has had more changes than over 30-50 years. According to the UN, today every seventh trial in the world is held on issues which fall under the Charter's authority.



URBAN RUSNAK,
IEC Secretary General
«Kazakhstan is currently actively working to improve the investment climate in the energy sector, as well as to avoid specific risks in the regulatory environment that may hinder the inflow of investments».

INVESTMENTS IN THE ENERGY SECTOR: OPPORTUNITIES AND PARTNERSHIPS

Global changes in the economy are transforming the modern perception of investment attractiveness and its assessment parameters. From now on, the investment priority is given to the fourth industrial revolution. This component was included in the annual report on the Global Competitiveness Index released by the World Economic Forum a year ago. In last year's report, Kazakhstan ranked 59th among 140 countries.

Meanwhile, the participants of the session devoted to investment cooperation in the energy sector pointed

out that Kazakhstan ranked 61st among 131 countries in the E&P Attractiveness Rating recently compiled by IHS Markit specialists using the Petroleum Economics and Policy Solutions (PEPS).

The final indicator consisted of assessments of such aspects as the risks of exploration and production activities, the risks of the fiscal sphere and the risks of the petroleum industry. The experts of the Report explained such a modest level in the rating by the fact that for the majority of international investors Kazakhstan is not among the most

attractive destinations, noting that in the conditions of extremely high level of competition in the world market, attracting new investments, of course, requires additional changes to the regulatory acts. Despite this, the amendments made to the Tax Code in 2017, as well as the Code on Subsoil and Subsoil Use, which came into force in 2018, provided new tax incentives for investment in individual mining projects and optimized some aspects of auctions in respect of subsoil plots.

Yerlan Ramazanov, Associate Director and Senior Banker for Energy Eurasia of the Sustainable Infrastructure Group of the European Bank for

Reconstruction and Development, said that sustainability is the key in the energy sector. It helps to achieve macroeconomic, social and political stability of Kazakhstan, improve the investment climate and attract foreign direct investment in priority sectors of the economy.

During the session, Cassandra Colbert, IFC Regional Manager for Central Asia, said that this organization was established for venture financing of energy projects, except for coal generation. «Wherever we work, we have a successful result. As part of the development of investments in the energy sector, we would like to see projects with simple financing.»

«SMART ELECTRIC POWER»

Today, the electric power industry is not just a means of comfortable life, but a tool to develop all types of human activities. The active implementation of smart technologies, bringing together information technology and power electronics, which make generation, transmission and distribution of electric power “intelligent”, ensure a significant reduction of energy losses, environmental friendliness, a multifold increase in the reliability of energy supply, and more efficient use of energy resources – the challenges facing the modern industry. Thus, smart grids are becoming a part of our life. This is an international trend and a goal to which we are all committed today. The participants discussed “success stories”, international experience, best practices, and creation of smart grids.

As stated by EDF Vice-President Abbas Jalali Jafari: «Without energy, society will face poverty and decline. We choose electricity without emissions and CO₂. We get 74% of our energy from the nuclear sector, the rest is RES. Our energy is fully adapted to seasonality and demand. We play a big role in developing solutions for smart grids. Smart grids are not progressing fast enough and, above all, a political solution is needed to promote innovation in this market.»

Chairman of the Board of KEGOC Kazakhstan Electricity Grid Operating Company Bakytzhan Kazhiyev said that the further development of Smart Grids (smart energy) in the country will require the development of a concept of intelligent innovation.

In this regard, it should be noted that the development of solar and wind energy due to unstable nature of production requires a new approach to the creation of electric grid infrastructure.

Siemens Kazakhstan believes that energy is a type of commodity that is produced and consumed at once. Smart Grid – an intelligent energy system, which implies a flexible response of each subject to changes in internal and external energy – was brought to the attention of the session participants.

The National Energy Report states that a number of aspects require special attention. In particular, the sector is missing a strategic planning document for long-term development of the electric power industry, taking into account the medium economic realities of Kazakhstan, the situation and the interests of related industries, opportunities for technological and innovative development, and tasks within environmental policy and energy security.

ROLE OF RENEWABLES IN THE ENERGY SYSTEMS OF TOMORROW

Increased use of renewable energy, combined with increased electrification, could be crucial if the world's countries are to meet key climate change targets by 2050. A study by the International Renewable Energy Agency IRENA highlights

the potential for immediate implementation of cost-effective options for countries to meet climate commitments and limit the rise in global temperatures.

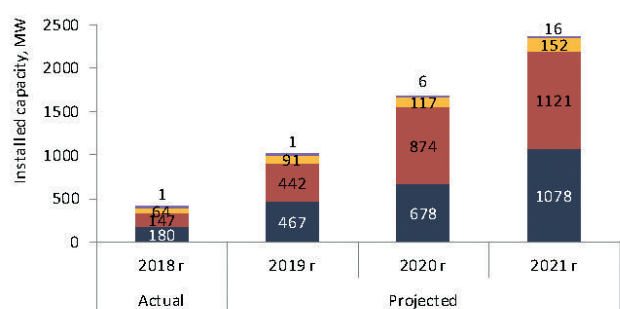
During the discussions on the sidelines of the

KAZENERGY Forum, the participants discussed innovative solutions for acceleration of energy conversion. Speakers from leading countries/companies shared their experiences and discussed pressing issues in various sectors related to the transition to sustainable energy. According to IRENA, over the past 10 years, electricity consumption in the world has increased by 2%, and this growth indicates the need to involve alternative, including renewable, sources in the energy balance.

As noted by the participants of this discussion and as indicated in the new issue of the National Energy Report, the change in global paradigm of energy development towards renewable energy sources (mainly wind and solar power generation) is primarily due to the international climate agenda. Countries that do not experience shortages in the supply of fuel resources, however, are actively developing RES to replace, first of all, coal generation characterized by the highest greenhouse gas emissions.

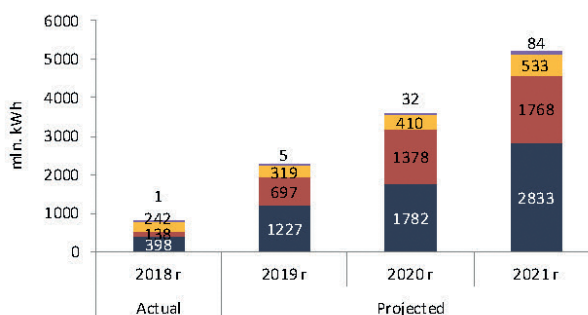
For example, according to the National Energy Report 2019, today, Kazakhstan's contribution to global greenhouse gas emissions does not exceed 1%, but the country is one of the ten countries with the highest carbon intensity of GDP. The RES development was chosen as a priority to achieve the international commitments and domestic goals for the transition to a «green» economy. As a result, over the past five years, the country's renewable energy sector has developed at an impressive pace.

According to the Ministry of Energy of the Republic of Kazakhstan, 40 MW of electricity in Kazakhstan is currently generated from solar energy, another 250 MW is accounted for by wind farms. It is planned that by 2020 the country will generate 1 GW of electricity from renewable energy sources. In the future, renewable energy will be actively developed in the country at the level of households and small and medium-sized businesses. This should be encouraged at the legislative level.



Source: FSC for RES

■ WPP ■ SPP ■ Small HPP ■ Bio CHPP



Source: FSC for RES

■ WPP ■ SPP ■ Small HPP ■ Bio CHPP

The speeches by the participants of the discussion on the role of RES in the energy systems of tomorrow are generally consistent with the conclusions of the National Energy Report – all parties in this case note that the legislative framework established in Kazakhstan to support renewable energy provides for the most favorable level of regulated stability and predictability for investors.

The current version of the auction mechanism for selection of renewable energy projects in Kazakhstan, proposed by the KAZENERGY Association, is a global trend. The results of the first auction held in 2018 demonstrated the effectiveness and transparency of the new selection mechanism, which led to a significant reduction in tariffs to support renewable energy. Thus, for solar power plants, the average reduction in the cost of kWh was 34%, for low-power wind and hydroelectric power plants – about 13%.

From 2013 to date, the EBRD has funded renewable energy projects in Kazakhstan with a total capacity of more than 600 MW. «This also contributes to lower prices for RES.»

Sigsteinn Gretarsson, CEO of Arctic Green Energy Corporation, spoke about Iceland's experience in renewable energy. Iceland has changed the way the world thinks about energy. It is the only country where 100% of electricity generation comes from renewable energy: 25% from geothermal energy and 75% from hydropower. Iceland has been developing renewable energy for 115 years – since 1904, when the first hydroelectric power station was built here. Iceland's experience in this regard is very valuable to the world. In the World Bank report, Kazakhstan is listed among the countries well placed to use thermal energy sources. Commenting on this topic on the sidelines of the event, the representatives of Kazakhstan, in turn,

admitted that the development of geothermal energy is limited by the availability of effective geothermal sources.

Overall, based on the IRENA's forecasts of capital cost reduction for renewable energy sources, it is recommended to slow down by 2025 the commissioning of wind and solar power plants with the transfer of commissioning of main facilities for the subsequent period, to review the RES support mechanism through the traditional generation towards the internationally accepted non-discriminatory mechanisms, to

envisage changes to tariff regulation by power grid companies, stimulating the development of the network and services for integration of RES capacities, as well as and the transition to market mechanisms of payment for RES generated power with their participation in the wholesale market through the Contract for Difference mechanism after 2025. The Kazakhstan RES market players promised to study these recommendations, which were made during the discussion of this topic at the KAZENERGY Forum and mentioned in the National Energy Report.

DIGITAL ENERGY OF THE FUTURE. TRANSITION PERIOD

The participants of the round table devoted to digitalization in the industry discussed how the latest digital technologies and artificial intelligence will affect the future of energy.

Speaking at the round table session, Vice Minister of Energy of the Republic of Kazakhstan Asset Magauov said that to develop digitalization in Kazakhstan it is necessary to reduce costs and increase productivity. Digitalization today offers an endless array of new investment opportunities. Labour efficiency, business competence, quality of products, services and people's lives are being improved thanks to high technologies. He said that, in this regard, Kazakhstan is ready to listen to recommendations for further development of digital demand, to adopt international experience and best practices in digital energy.

In particular, the National Energy Report released in 2019 states that there has recently been an expansion of partnerships between international oil companies and large technology firms (both in Silicon Valley and beyond) to apply high-performance innovations (such as «big data», cloud computing, artificial intelligence) to reduce industry costs, improve security and increase production. In terms of electric power, there is a KEGOC project for construction of the Ortalyk first digital substation in the Turkestan region in Kazakhstan.

The «Digital Field» project is being implemented at some producing fields in Kazakhstan, and, as a result of its pilot implementation at the UAZ field (Embamunaigas JSC), electricity consumption has decreased by 33%, specific costs for well repair have decreased by 25%, oil production has increased. Currently, it is planned to replicate this project at all fields of NC KazMunayGas JSC. Within the framework of digitalization, work is also underway in the areas of oil transportation and refining. Thus, KazTransOil JSC has put into operation a system with the possibility of remote control of oil cargo flows in 11 regions of Kazakhstan. The processes of oil acceptance, delivery and loading in Aktau port and at railway overpasses are carried out online.

On the KAZENERGY Forum sidelines, the participants were also informed about the implementation of digital projects in Kazakhstan in 2019-2021 on establishment of an oil accounting information system, a unified state subsoil use management system with a subsystem capable of predicting the balance of liquefied petroleum gas, a unified state subsoil use management system with an online auction of fields and others. By investing more than KZT 34 bln in them, Kazakhstan will be able to get a benefit amounting to KZT 119 bln.

ENVIRONMENTAL SOLUTIONS FOR SUSTAINABLE ENERGY. LEGISLATIVE BREAKTHROUGH

In Kazakhstan, the most significant recent event in terms of environmental protection has been the development of a new Environmental Code, which is expected to be adopted in 2020. The document is developed in accordance with the

basic environmental principles of the OECD countries.

The idea of improving the relevant legislation provides for the implementation of the well-

known Polluter Pays Principle. A number of conceptual issues set out in the previous code have been modified and modernized in its current version. Environmental solutions shall be based on the best advanced technologies. It is necessary to create clear mechanisms of relations between a state and a subsoil user. The state should encourage subsoil users to obtain the best results. If the state wants to introduce certain punishment mechanisms for subsoil users, they should be worked out to the fullest extent.

The Republican Association of Mining and Metallurgical Enterprises believes that putting pressure on the economic sector today does not solve the environmental problem, it is necessary to reach a general consensus on environmental and economic issues with the state agencies.

In turn, as noted in the National Energy Report 2019, «the adoption of the Environmental Code in its current form will not only increase the financial burden on the energy sector, but also, most likely, will not contribute to the achievement of Kazakhstan's goals under the Paris Agreement.» In this regard, the experts made general recommendations on the draft Environmental Code in their study.

The main summary of the participants corresponds to the findings of the National Energy Report – «the ambitious goals have been set by the leadership of Kazakhstan in the Concept of Transition towards Green Economy, however, the possibility of achieving them now depends on whether it is possible to create conditions for attracting and returning investments without significant damage to economic and social development».

GEOLOGY OF THE FUTURE: FROM ENVIRONMENTAL SAFETY TO INNOVATIONS

Exploration is a strategic industry on which the economic development of resource countries depends. Against the background of the ending period of easily recoverable oil for development of resource potential and rational development of subsoil, fundamentally new technological approaches come to the fore. According to research by the International Energy Agency, a significant deterioration is currently observed in the dynamics of discoveries of traditional energy resources - oil and gas. If in the first decade of the 21st century, the average annual volume of discoveries of oil reserves was about 15 billion barrels, the current figure of the second decade is less than 5 billion barrels. Deep-water offshore fields, low permeability reservoirs, tar sands, etc. are becoming a general focus of attention. Westwood Energy estimates that more than USD 130 bln will be invested globally in 107 deep-water oil and gas projects over the next five years. Wood Mackenzie predicts that by 2040, more than half of the world's oil output will come from fields that have yet to be developed or discovered. Moreover, the share of undiscovered fields is about 14%. Given this, geologists are facing a colossal task. This was discussed during the round table session, which was devoted to the geology of the future.

According to the President of the Kazakhstan Society of Petroleum Geologists Baltabek Kuandykov, «the technologies that are currently offered not only imply, but guarantee 100% discovery of fields.» «At the same time, according to the forecast of the International Energy Agency, by 2050 the demand for oil and gas

resources will increase, but not decrease – i.e., we must look for new methods of searching for oil and gas.»

An issue related to the search for new hydrocarbon deposits becomes even more urgent for Kazakhstan in the light of the aspects specified in the National Energy Report 2019. Thus, according to it, although Kazakhstan has rich oil reserves, a number of large fields have been discovered in the country, and there are prospects for discovery of significant oil reserves in the future – especially on the Kazakh shelf of the Caspian Sea, yet the latest data indicate a downward trend in the balance reserves of raw materials. According to the State Commission on Mineral Reserves of the Republic of Kazakhstan (SCMR), as of January 1, 2019, the reserves of liquid hydrocarbons (oil and gas condensate) on the state balance sheet amounted to 4.95 billion tons (37.6 billion barrels). Of this volume, 4.5 billion tons are accounted for by crude oil, and the rest (420 million tons) – by gas condensate. Comparing these figures with the total reserves as of January 1, 2016, indicated in the National Energy Report 2017, experts conclude that the volume of balance reserves in the country decreased by 342.6 million tons.

BP Caspian Exploration Vice President Greg Riley said: «When we start onshore development, we don't just make a request. We need to mobilize a whole large-scale program to arrange any activity at any location and then to drill some field and to mobilize the work at the level at which we do it – it is very difficult. The way in which 3D technology has advanced is unthinkable.

That is, we already have the tools – now the question is how to use them as effectively as we do it offshore.» Wang Jun, Deputy Director General of the Department of Mining Rights Management of the Ministry of Natural Resources of China, supported his colleagues. According to him, «the world has entered the stage of stable production of traditional oil and gas resources and rapid development of non-traditional oil and gas sources.»

«China ranks 3rd in the world in shale gas production. (...) We have now made progress in

electric power through scientific and technical research. (...) China's Government actively supports large companies and at the same time takes measures to remove restrictions for foreign investors,» he said.

Yevgeniy Kiselev, Deputy Minister of Natural Resources and Environment of the Russian Federation, said: «When we talk about climate change, we forget about other sources of greenhouse gases. In terms of the future of energy ... we say that this energy must be successful and rational. The focus is on energy saving.»

CLEAN COAL: INNOVATIONS AND ENVIRONMENTAL FRIENDLINESS

Coal industry and coal power generation have historically been and remain an important source of economic development in many countries of the world. The use of coal is characterized by its cheapness, accessibility and storage possibility. According to some reports, to date, the world's 13 largest countries, including China, the United States, India, South Africa and others, account for up to 90% of global electricity generated from coal. In Kazakhstan, the coal industry is one of the most important resource industries, and its contribution to GDP today is about 1.5%. In 2018, the country produced 113.7 million tons of coal, which is 6.5% more than in 2017.

Despite the role of coal that is still significant in the energy sector, global challenges reduce the share of coal generation in the global energy mix. Environmental friendliness of energy sources becomes one of the priorities for ensuring sustainable energy development. This is not about the immediate and complete abandonment of the use of coal, of course. The latest technological solutions allow making coal mining and operation of coal plants more environmentally friendly and maneuverable. Thanks to them, the development of coal seams becomes «green» and the operation of modern coal plants becomes almost as clean as gas ones: carbon dioxide emissions at such facilities can be either reduced, captured or usefully utilized.

As noted in the National Energy Report, the new Environmental Code basically still envisages the use of penalties as a means of controlling emissions (including associated gas flaring, even in emergency circumstances), which are primarily aimed at the petroleum companies, while relatively less stringent measures are provided for emissions from the use of coal. The authors of the Report have already stressed that the large-scale transition from coal to gas in

the economy, as well as improving energy efficiency and further increase in the use of renewable energy sources are the most important factors that allow Kazakhstan to fully meet the unconditional target of reducing emissions (15% of the 1990 level by 2030) under the Paris Agreement.

The high share of coal is due to the Kazakhstan's end-consumer orientation on inexpensive coal-fired power generation, while gas in the country is more expensive than coal, although its cost is still low relative to global prices. This makes it difficult for power plants to switch to gas while maintaining competitiveness. For example, the Nur-Sultan TPP's coal-to-gas switching will increase the cost of electricity generation by about 50%.

In Kazakhstan, coal-fired generation, which accounts for about 70% of electricity generation, continues to make its negative contribution to air pollution. During the round table session, Candidate of Chemical Sciences, Professor, Director of the Al-Farabi Kazakh National University Center of Physical Chemical Methods of Research and Analysis, Bulat Kenessov, in particular, gave an example of Almaty city. According to the data voiced by him, more than 100 volatile organic compounds were found in the air of the city, most of the substances are contained in the exhaust gases of vehicles and gasoline. Among the main pollutants are benzene and alkylbenzenes; PAHs; phenols; benzaldehyde. He called the heating and energy systems, transport and gas stations, industrial enterprises, construction companies and landfills, natural fires, etc. as the sources of air pollution in Almaty. The environmental situation in Almaty, which worsens from year to year, leads to serious consequences, including various diseases and reduced working capacity and economic losses.

Another area of development of the coal industry is the production of liquid fuel and a variety of chemical products by coal hydrogenation, liquefaction and extraction. This is one of the important directions in the coal chemical industry of the future. In a number of countries, public and private companies conduct intensive research into the production of synthetic liquid fuels from coal.

In addition, it is currently essential to study the issues of producing synthetic liquid fuel and humic products from Kazakhstan's coals, which will make it possible to bring the processing of local solid hydrocarbon raw materials to a comprehensive one in the future.

The round table participants including representatives of science shared their vision

of problems solving. Indira Jeldybayeva, Senior Researcher of the Scientific Research Institute for New Chemical Technologies and Materials of the RSE Al-Farabi Kazakh National University, spoke about the project of «Creation of a Pilot High-Tech Coal-Petrochemical Complex with a Capacity of 65 Thousand Tons of Coal per Year.» The project involves the processing of coal into gaseous and liquid fuels; production of bitumen from the «coal oil» sludge; processing of primary tar of coal semi-coking; extraction of coal with organic solvents; processing of unconditioned brown coal of Kazakhstan; production of plant growth stimulant from brown coal, as well as coal-alkali reagents from brown coal; oil shale processing technology.

EXPLOSION SAFETY IN THE OIL AND GAS, OIL REFINING, PETROCHEMICAL AND MINING SECTORS IN KAZAKHSTAN AND EAEU

For Kazakhstan, the issues of explosion safety in the oil and gas, oil refining and petrochemical sectors, as well as in the mining industries in Kazakhstan and the EAEU countries are of key importance. In particular, the world's largest international projects requiring investment, labor, as well as carrying risks for the civilian population and the environment, are implemented in the extractive sector of Kazakhstan. Participants of the round table organized by the KAZENERGY Association together with Edil-Oral.kz LLP, shared experience in the development and application of national and international standards on explosion safety, in particular, those of the International Electrotechnical Commission.

Sebastiaan Glazer, Managing Director of Eurasia Business Partners BV and an International Expert in Explosion Safety (Kingdom of the Netherlands), said: «At the thought of explosions, we always think of experiments and gases. However, in 2008, an incident occurred at a sugar factory in the United States. Sugar seems to us to be a fairly safe product, but if the manufacturing process is not properly implemented, then powdered sugar becomes the source of a big explosion. After this incident, the law on protection against the use of similar explosive substances, such as explosive powder, was introduced in the USA. In Europe, we often see companies and governments working closely together to prevent such actions. The government should not put up barriers, but should help companies.»

Mirzhan Asrepov, Deputy Director of the Department of Electric Power Development of the Ministry of Energy of Kazakhstan, assured the audience that «the issues of explosion are under the control of the state, in particular the Ministry of Energy».

According to the Committee for Atomic and Energy Supervision and Control of the Republic of Kazakhstan, in order to establish uniform requirements for electrical equipment in explosive atmospheres, the Customs Union Commission adopted Regulation No. 825 dated October 18, 2011 «On Safety of Equipment for Operation in Explosive Atmospheres» (TR CU 012/2011). The document establishes uniform mandatory requirements for application and execution of equipment for operation in explosive atmospheres in order to ensure free movement of the specified equipment released into circulation in the unified customs territory of the Customs Union. It is aimed at protecting the life and health of people, property, preventing actions that mislead consumers.

Equipment for operation in explosive atmospheres shall be put into circulation in the unified customs territory of the Customs Union provided that it has passed the necessary conformity assessment (confirmation) procedures established by this Regulation. Assessment of equipment conformity is mandatory and is carried out in a form of certification. Equipment for operation in

explosive atmospheres, whose conformity with the requirements of this technical regulation of the Customs Union is not confirmed, should not be labeled with the Customs Union conformity mark and is not allowed to be released into circulation in the market.

The participants of the round table agreed that a lot of work in this area has already been done, however, further joint actions should be taken by all stakeholders to implement these advanced

standards and approaches for domestic market participants. In this regard, the experience and practice of such countries as the Netherlands, the United Kingdom, the United States, Norway, etc. are outstanding. They stated that for protection of equipment, maintenance staff and the environment, precautions should be taken to create conditions under which the probability of an explosion in explosive environments is reduced to zero.

SPECIAL CONFERENCE DEDICATED TO THE 120TH ANNIVERSARY OF KAZAKHSTAN OIL

A special conference dedicated to the 120th anniversary of production of the first Kazakhstan oil was held within the framework of the KEW and completed the series of festive anniversary events organized in Kazakhstan in 2019.

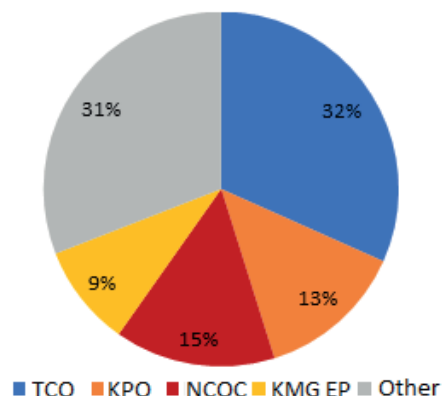
As is known, the history of Kazakhstan oil began in November 1899, when the first fountain gushed out of a 40-meter well in the Karashungul tract. It was the first oil obtained by the mechanical method of drilling. Today, Kazakhstan oil workers proudly recall the history of establishment and development of the oil and gas industry: over the years, the country has passed a difficult path in development, and, as a result, the oil and gas complex has become the foundation of its success and prosperity. Today, oil and gas are one of the main natural resources of Kazakhstan, the guarantor of the country's energy security for many decades to come. Dozens of the oil and gas fields are being developed in the Republic, and the oil and gas sector is one of the most attractive investment areas for foreign investors.

Vice Chairman of the KAZENERGY Association Uzakbai Karabalin noted that oil has become a guarantor of energy security of Kazakhstan for many years to come.

«The current legislative framework on subsoil use in the country serves as a basis for attracting billions of foreign investments and improving relations between state authorities and investors. Undoubtedly, the central role in these processes belongs to the Government of the Republic of Kazakhstan». «Today, more than half of the total oil production is provided by the three super-giants that invest billions of dollars not only in production but also in the social sphere. The share of the three

giant fields will increase with the implementation of growth projects.»

Oil Production Structure (2018)



According to Deputy Prime Minister of Kazakhstan Roman Sklyar, over the past period Kazakhstan has travelled a difficult path in its political and economic development, taking a worthy place in the international arena. «The oil and gas industry has always been favored in our economy, representing one of the most attractive areas for investment. Celebrating this significant date, today we stand on the threshold of new achievements that will create a brand new oil and gas industry.» «Last year was marked by another record in the oil and gas industry of Kazakhstan. We reached the 90-million-ton milestone in oil production. And this is not the limit. Thanks to the ongoing growth projects in the Tengiz, Kashagan and Karachaganak fields, which are the mainstays of the industry, oil production in the country will soon be increased to 110 million tons per year. Currently, the oil and gas

industry of Kazakhstan sets new goals. We will not only build production and export potential, but we will also develop the latest technologies to be strong and competitive in international markets. Through innovation, we can achieve even greater success.»

Deputy Minister of Energy of Azerbaijan Gulmammad Javadov noted that his country, like Kazakhstan, began the implementation of major oil and gas projects in the mid-1990s, which stimulated the attraction of investments in the economy of Azerbaijan.

«The development of relations between Azerbaijan and Kazakhstan is historically associated with linguistic, religious and cultural roots. On June 6, 2006, an agreement was signed to promote and support oil moving from Kazakhstan through the Caspian Sea and the Republic of Azerbaijan to international markets through the Baku-Tbilisi-Ceyhan system.» «Azerbaijan and Kazakhstan are strategic partners. Both countries work together in the international arena. The result of such cooperation is that no problems have arisen between the two countries over the years.» He also noted the role of Kazakhstan in determining the legal status of the Caspian Sea: «For many years there were disputes between the Caspian countries on dividing the bottom of this closed water reservoir. Kazakhstan was the first to support Azerbaijan, and we were the first to come to an agreement. In addition, a working group was established on the issues of transit of Kazakhstan oil and petroleum products through Azerbaijan and delivery of LNG to Azerbaijan through the Caspian Sea. The cooperation between the parties in this area is a priority.»

Eimear Bonner, General Director of Tengizchevroil LLP, emphasized that over 120 years the oil and gas industry of Kazakhstan has achieved phenomenal growth, becoming an engine of economic progress and contributing to the prosperity and well-being of the population of Kazakhstan. «Our production increased from 1 to 28.6 million tons of oil per year (approx. over the years since the beginning of operation) in 2018, which is approximately 35% of the total oil production in Kazakhstan. We would not have been able to achieve such amazing results if it were not for the contribution of oil pioneers who drilled the first wells and built the first plants in Tengiz, « she said. Since 1993, TCO has made financial payments to

Kazakhstan in the amount of USD 142 bln., USD 30 bln. were spent on the purchase of goods and services, USD 1.8 bln. were included in the program of social investments. Since 1999, 95 social projects have been implemented. Schools, gardens, colleges, water treatment plant, medical centers and clinics were built. Thousands of jobs have been created.

According to General Director of Karachaganak Petroleum Operating B. V. Edwin Ronald Blom, during the years of independence, new facilities were built as part of the development of the Karachaganak field. «At our company, we respect the memory of our ancestors, predecessors who laid the platform for today's success.»

As Deputy Managing Director of North Caspian Operating Company Yermek Marabayev said, over 120 years, Kazakhstan has gone through «a historical stage that has changed all of us». And the North Caspian project has become an organic continuation of this story. «For a quarter of a century, we have developed the first oil and gas field on the Caspian shelf. We have built technologically complex facilities. Today, our plant is brought to full capacity. Now, after the first major overhaul at the Kashagan field, we produce 400 thousand barrels of oil per day (about 50 thousand tons per day), standing on a par with the leaders of the oil industry. This August, the total oil output at the field reached 30 million tons since the beginning of operation. At the same time, a high level of operational reliability is maintained. Work is underway to increase local content. The total cost of purchased goods, works and services under the Kashagan project since 2004 amounted to USD 14.4 bln. For the first half of this year – USD 290 mln. or more than 48% of the total amount of procurements». «More than 200 social projects totaling USD 660 mln. were implemented in Atyrau and Mangistau regions, where our projects are concentrated.»

During the conference, the speakers told about the history of development of the oil and gas industry of Kazakhstan, including that in the conditions of independence, when a long-term strategy for the growth of the industry was first developed and an independent system for its management was established. All this was highly appreciated by all participants of the anniversary event.

KAZAKHSTAN PARTNERS DAY. KAZAKHSTAN-JAPAN

The organizers of the Kazakhstan-Japan dialogue were the Japan Association for Trade with Russia

and New Independent States (ROTOBO) and the KAZENERGY Association.

At the session, representatives of state authorities and business circles, as well as specialists of both countries discussed issues related to cooperation in the area of communication systems for Industrial Internet of Things (IIoT) for the oil and gas industry, as well as the prospects for creating new business between Kazakhstan that has oil and gas reserves and Japan that has certain advantages in this area.

The participants talked about the fact that in the modern, ever-changing and unstable market, the introduction of IIoT technology will help companies make the right decisions to improve profitability and at the same time minimize the risks, and, as a result, to increase revenues and promote business expansion. The Industrial Internet of Things is changing usual understanding of interaction between people and machines, combining data collection through the Internet and analytics, and allows us to take a fresh look at the methods of increasing efficiency and optimizing business processes.

Kayrat Balykbayev, Advisor to the KAZENERGY Association, informed that today the inflow of investments from Japan to Kazakhstan is estimated at USD 6 bln.

Yuhei Nagai, Head of Business Development in Eastern Europe and Central Asia of Terra Drone Corporation, spoke about the work of his company. In particular, Terra Drone provides various services with the help of industrial drones. The unmanned mapping system is now the focus of attention; drones make it possible to detect dangerous substances around the equipment, as well as detect oil and gas leaks.

Tsutomu Sasaki, Downstream Sales Leader at Yokogawa Electric Corporation, informed

the audience about the implementation of a 3-dimensional system of modeling digital twins by his company. «Customers face a problem when old veterans who are competent in their work leave their workplaces, and the process of transferring experience to new young employees can be quite difficult. Therefore, 3-dimensional modeling of twins is extremely effective – we use this to improve the training process of new employees at the workplace.» (...) «We create a 3-dimensional virtual space – an exact copy of the plant itself and its technical equipment – which helps to train new employees, for example, to install and dismantle equipment, without touching the real equipment.»

Timur Tazabekov from NC KazMunayGas JSC noted that the next step in the policy of the national company is digitalization of production and an emergence of smart plants. «Digitalization also contributes to improving the quality of occupational safety at refineries,» he added.

Takuya Ono, Associate Executive Officer of the Technology Innovation Center of JGC Corporation, presented the projects of his company. «Providing our services, we build «turnkey» plants. Thanks to the digitization and implementation of our sensors at refineries, we can track the emergency processes – from causes to development,» he said. - «The life cycle of equipment is under control thanks to digital technology – they immediately warn of possible malfunctions.»

The dialogue participants expect that IIoT technology will be used to effectively address various challenges facing the oil and gas industry amid low oil prices, i.e. to ensure and improve project profitability, optimize resource efficiency, environmental protection, etc.

SPE SYMPOSIUM: CASPIAN HEALTH, SAFETY, SECURITY, ENVIRONMENT AND SOCIAL RESPONSIBILITY

The first SPE Symposium held at the KEW platform was dedicated to the issues of occupational safety, industrial security, environmental protection and social responsibility in the Caspian region.

The Symposium brought together local, regional

and global experts and practitioners from the upstream, midstream and downstream sectors. The participants discussed the problems of rational use of natural resources, the transition to digital format and artificial intelligence technologies, the human factor and risk

assessment. In addition, they exchanged experience in implementing the industrial safety innovations.

The event was attended by SPE Technical Director Johana Dunlop, Vice Minister of Environment, Geology and Natural Resources of the Republic of Kazakhstan Akhmetzhan Primkulov, Chairman of the Board of NC KazMunayGas JSC Alik Aidarbayev, Managing Director of North Caspian Operating Company Richard Howe, General Director of KAZENERGY Bolat Akchulakov, Safety Director of the International Association of Oil & Gas Producers Olav Skår.

KazMunayGas strives to meet high standards of industrial safety, we do everything to ensure that this culture grows and becomes stronger. And these efforts are already yielding results – over the past 5 years, we have made progress in HSSE. We will keep working continuously to achieve our goal - 100% safety», - said, in turn, Chairman of the Board of NC KazMunayGas JSC Alik Aidarbayev.

«The oil and gas industry is developing at an unprecedented pace. But at the same time, the task is to conduct business carefully and responsibly, creating innovative ways to solve problems and constantly concentrating efforts on improving occupational safety and health. And our industry has already succeeded in making manufacturing operations more economical, efficient and safer thanks to the fact that we: firstly, focus on the talent and competence of employees; secondly, work on introduction of the latest digital technologies; thirdly, ensure reliability and integrity in combination with strict industrial safety solutions, eliminating most

of the risks from the equation of interaction between «man and machine», - Deputy Chairman of the Board of NC KazMunayGas JSC Zhakyp Marabayev said speaking at the Symposium.

It is no coincidence that KazMunayGas became the organizer of the event, as today the company focuses on proactive actions that contribute to the prevention of injuries, accidents and negative impact on the environment. Since the beginning of 2019, the cases of industrial injuries have been reduced by a quarter. However, the company continues to improve and is permanently looking for new techniques to achieve zero injury rates.

The problem of water shortages in the near future is already worrying the whole world, but there is a risk that countries like ours will be among the first to face the consequences of this shortage. In addition, all production processes in oil production and refining are directly dependent on water. A few months ago, KazMunayGas made commitments to preserve water resources, adhering to strict principles in the use of water resources, building long-term plans to reduce consumption throughout the group of companies, and introducing new water-saving technologies. At present, several large-scale projects are being implemented to treat wastewater and salt water for industrial needs in order to release volumes of fresh water for the benefit of the population.

The Symposium participants expressed hope that it would become an effective platform for exchange of experience and would help to develop solutions to improve the HSSE level in our region in the future.

X NATIONAL EITI CONFERENCE «TRANSITION TO A NEW LEVEL OF EITI IMPLEMENTATION IN INTEGRATED OPEN DATA SYSTEMS»

The X National Extractive Industries Transparency Initiative (EITI) Conference was organized by the KAZENERGY Association jointly with the Ministry of Industry and Infrastructure Development of the Republic of Kazakhstan, with the participation of representatives of the Kazakhstan Government, deputies of the Kazakhstan Parliament, the local administrative authorities, the EITI Board and International Secretariat, the AMME Association, large companies in the field of subsoil

use, non-governmental sector, international organizations, observers and other stakeholders. The event was held in an interactive mode and included two panel sessions and discussions.

The conference participants talked about the fact that the EITI has a positive effect on the Kazakhstan image, investment attractiveness of the energy sector, many sectors of the economy, and becomes an example for other projects implemented in the

country. In 2018, in Oslo, Norway, during the 39th Meeting, the EITI International Board decided that Kazakhstan had made significant progress in implementing the EITI, while a number of recommendations were made to improve the further implementation of the Initiative.

Maria Lobacheva, Member of the EITI International Board and «Oil Revenues – Under Public Oversight!» Coalition, reminded that Kazakhstan's accession to the Initiative was preceded by almost a year-long NGO campaign. Initially, the essence of the EITI was the disclosure of payments made by subsoil users to the State by both payers and recipients and carrying out an independent verification of the results. Today, a few years later, the Initiative requires the disclosure of much more information, including state revenues from transportation of minerals, dividends from the state on the share of ownership in companies, social and quasi-fiscal expenditures, contribution of the mining sector to the state economy, etc. In June 2019, at the EITI Global Conference in Paris, a new EITI standard was approved, according to which participating countries (including Kazakhstan) are obliged to fully disclose the provisions of subsoil use contracts concluded since January 1, 2021.

Kazakhstan's Code on Subsoil and Subsoil Use requires companies to submit reports provided

by the EITI standard and confirmed by an auditor. The data of recipients – state authorities – must be confirmed by an audit conducted in the Ministry of Finance of the Republic of Kazakhstan by the Accounts Committee for each payer. However, as noted by the EITI Board, this audit is currently irregular, which is a problem.

Kazakhstan is currently in the process of re-validation - an assessment of the progress of fulfilling the EITI obligations, as the fulfillment of some requirements by the country was found to be «not sufficient», and one - quite «unsatisfactory». In this regard, Kazakhstan was given corrective recommendations, which are now being evaluated.

The participants also spoke about functionality of the National Data Bank (NDB) that consolidates digital geological and geophysical information, which will enable provision of up-to-date and accessible geological information, as well as online issue of licenses for exploration and production. In addition, the reports on subsoil use, submitted by companies to the NDB, are integrated with other reports of the existing monitoring systems (USMS). According to the conference participants, all this will contribute to the progress in implementing the EITI in Kazakhstan.

IV KAZENERGY WOMEN'S ENERGY CLUB FORUM «THE MODERN FEMALE LEADERSHIP PATTERN IN ENERGY»

The Forum was dedicated to the promotion of women in various fields – career, education and family. During the panel discussions, sessions and master class, the participants discussed topical issues, important insights and real examples of female leadership in the oil and gas and energy sectors, as well as new international and Kazakhstan studies on gender diversity.

The general theme of the Forum was set by the EY master class «Emotional Intelligence of a Female Leader». Natalia Kopylenko, Head of the Academy of Business in Central Asia, Ukraine, Georgia and Azerbaijan, said: «A high level of emotional intelligence helps to better understand your colleagues and navigate your tasks faster, while meeting the deadlines.»

Speaking on «Best Practices in the Corporate Sector to Ensure Women's Equality in the Workplace», David Szollosi, International Expert in Gender Inequality at PwC (Switzerland), presented the PwC

studies showing that the wage gap between men and women is the result of many factors, including occupational segregation, bias against working mothers and direct pay discrimination. Moreover, such things as racial prejudice, access to education, and age affect remuneration as well. Ensuring equality of women in the workplace and gender balance requires compliance with the principle of diversity and inclusion of the workforce, which will ensure rapid and sustainable economic growth of companies, and increase the welfare of the wider population. The speaker presented the best practices of companies applying these principles: BEST BAY, BARKLAYS, HP and BASF.

A separate platform of the Forum was devoted to EBRD's ongoing projects in Kazakhstan aimed at the development of gender policy. Within the framework of this platform, the interim results of the joint study of KAZENERGY and EBRD on «Women's Role in the Energy Sector of the Republic of Kazakhstan» were presented by the KAZENERGY Association and Ergon

Associates. The European Bank for Reconstruction and Development noted the importance of gender diversity in the company, modern personnel policy of energy companies to support and empower women, development of women's leadership at enterprises and many other things.

Samruk-Energy JSC presented the Action Plan for promotion of equal opportunities: priorities and activities in the company, and talked about the joint project with the EBRD «Strengthening Equal Opportunities» for 2018-2019.

In the afternoon, the Plenary Session with the same name «The Modern Female Leadership Pattern in Energy» was held in the format of a Talk Show. The agenda included significant issues of gender equality in the industry.

The Plenary Session was opened with welcome addresses delivered by the Member of the Senate of the Parliament of the Republic of Kazakhstan, Deputy Chairperson of the National Commission for Women, Family and Demographic Policy under

the President of the Republic of Kazakhstan Lyazzat Zhanylyskzy, Vice Minister of Energy of the Republic of Kazakhstan Aset Magauov, General Director of the KAZENERGY Association Bolat Akchulakov, Chairperson of KAZENERGY Women's Energy Club and Financial Director of KAZMORTANSFLOT UK Ltd Aizada Akkaissiyeva.

The discussion was moderated by Daniya Yespayeva, Member of the Mazhilis of the Parliament of the Republic of Kazakhstan: «The empowerment of women is one of the goals of the state gender development policy. Ensuring equal gender opportunities today plays a key role in increasing the economic growth of any state. The topic of women's leadership has been on the business agenda for many years, and today we focus on the key aspects of women's leadership in the energy sector.»

At the end, to mark the 175th anniversary of Abay, the participants of the IV KAZENERGY Women's Energy Club Forum, passed the «Kozimnin Karasy» challenge to the Council of Business Women of Atameken NCE RK.

XI KAZENERGY YOUTH FORUM

«THE YOUTH VS MODERN CHALLENGES»

The main topic of the Panel Discussion of the XI KAZENERGY Youth Forum «The Youth vs. Modern Challenges» was based on a survey of students enrolled in the KAZENERGY Educational Program.

The Youth Forum events were held in a format of expert, panel discussions, special sessions dedicated to the 110th anniversary of Safi Utebayev and the 120th anniversary of Kazakhstan's oil production. In addition, the events also included awards ceremonies for the best young specialists of oil and gas and energy companies, as well as the finals of the Student Energy Challenge intellectual team competition, which has been implemented in partnership with Shell Kazakhstan since 2017.

Chairman of the Youth and Family Affairs Committee of the Ministry of Information and Social Development of the Republic of Kazakhstan Madiyar Kozhakhmet, Vice Chairmen of the KAZENERGY Association Uzakbai Karabalin and Jambulat Sarsenov made welcoming remarks to the participants of the Forum.

Within the framework of the discussion that was held in the "face to face" format, the experts and participants answered key questions: «What is quality education, where can it be received, what

new formats of qualification are offered by the educational services market?» «What skills are most important for personal growth and development in the digital age?» «How not to lose yourself in the world of big data, new technologies and information boom?». In general, the topic of the plenary session touched upon various aspects of life, especially education, career, employment, study abroad, youth movements, including volunteer organizations.

The finals of the Student Energy Challenge intellectual team competition included the "elevator pitch" style performances of team captains, after which the jury determined the winners who received cash prizes.

The Wind of Change Team (Nazarbayev University) took the 1st place with a cash prize in the amount of USD 10,000, the FEOGI Team (Kazakh-British Technical University) took the 2nd place and USD 5,000, and the Innovation WKATU Team (West Kazakhstan Agrarian and Technical University named after Zhangir Khan) took the 3rd place and a cash prize of USD 3,000.

At the same time, within the framework of the Forum, the organizers announced a new competition of the KAZENERGY Association, "Student Digital Fest", that will be held with the

financial support of Karachaganak Petroleum Operating B.V. Another novelty of the Forum was EdTour on the New Professions Atlas of Kazakhstan. In addition, the participants were told about the opportunities to develop IT skills at the Alem programming school. The young people also attended the workshop organized by the Ernst & Young Academy of Business, where they talked about the 10 most important qualities for human development, training and performance, as well as the ways to stay relevant in the labor market today and in the future.

The participants of the XI KAZENERGY Youth Forum, in honor of the 175th anniversary of the birth of the Great Abai, passed the «Kozimnin Karasy» challenge

to the Youth Council of NC KazMunayGas JSC, and the challenge was accepted by Yerzatkhan Ablaikhanov, the representative of the Managing Committee of the Youth Council of the National Company.

The participants also took part in a quiz that was held to celebrate the 110th anniversary of Safi Utebayev and the 120th anniversary of Kazakhstan oil, and its winners were awarded prizes.

The highlights of the Forum also included the ceremony of awarding young specialists of the oil, gas and energy sector with diplomas and letters of appreciation on behalf of the KAZENERGY Association.

EQUIPMENT MANUFACTURER'S FORUM. LOCALIZATION OPPORTUNITIES AND LOCAL CONTENT DEVELOPMENT

The main purpose of the Equipment Manufacturers Forum was to stimulate the development of the market of equipment manufacturers in the oil and gas industry of Kazakhstan, to localize the production of commodities by establishing joint ventures with foreign manufacturers. The event was attended by representatives of the world's leading equipment manufacturers, such as Emerson, Honeywell, General Electric, Sulzer, Cameron, Siemens, Atlas Copco, Aggreko, Schneider Electric and others. In addition, the Forum was attended by representatives of the Ministry of Energy of Kazakhstan, NC KazMunayGas JSC, the Association of Kazakhstan Machinery Industry, the Oil and Gas Strategic Partnership Development Council (Petrocouncil), Tengizchevroil, North Caspian Operating Company, and Karachaganak Petroleum Operating.

They shared their experience, talked about their work and successes in localizing the equipment production, as well as about the factors constraining the development of this segment and ways to solve problems.

Dastan Abishev, Director of the Local Content Development Department of PSA LLP, said that «the state pays great attention to the development of local content in the ongoing oil and gas projects of the Republic of Kazakhstan, together with contractors actively supports the further development of local suppliers, attracting the necessary investments in infrastructure, local personnel development and

job creation, including by encouraging international companies to establish joint ventures, consortia or other types of partnerships with Kazakhstan companies».

«The goal is clear – we need to obtain the fruits of the results, and then we will work together and take further actions together,» he said. According to him, to date, «a lot of work has been done, we have the results.»

«As for the issues of the Northern Caspian, the share of local content has increased from 27% to 40%. The result is obvious! I have said this many times, and I always say this, the most important thing in production is design. Local content shall be at the design stage,» D. Abishev added. – «We mean that, using local content, we introduce domestic products into production and increase their competitiveness.»

Kuanysh Baltabayev, Executive Secretary of Atameken NCE, noted: «We ask operators not to interrupt the work: let's keep the momentum going! For us, as for NCE, equality is important in the dialogue. This is taken into account in the dialogue between operators and local manufacturers.»

The Equipment Manufacturers Forum has become a single platform for oil and gas operators and Kazakhstan manufacturing companies to identify opportunities and discuss problems for the development of equipment manufacturing in Kazakhstan.

6TH INTERNATIONAL CONFERENCE «DOWNSTREAM CASPIAN AND CENTRAL ASIA»

In 2019, this conference, which has been covering for 6 years the topics of oil and gas processing and petrochemistry in Kazakhstan, Uzbekistan, Azerbaijan, Turkmenistan, Tajikistan and Kyrgyzstan, was organized by Globus at the KAZAKHSTAN ENERGY WEEK in partnership with the KAZENERGY Association and with the support of the Ministry of Energy of Kazakhstan. The key topics of the event included: Overview of Global and Regional Markets; Focus on Kazakhstan, Uzbekistan, Turkmenistan, Azerbaijan; Projects, Technologies, Licenses; Improvement of Operational Efficiency;

Project Management; Digital Transformation; and Establishment of Strategic Partnerships. The conference was attended by Vice Minister of Energy of the Republic of Kazakhstan Murat Zhurebekov, Advisor to the Chairman of the Board of Kazakhstan Petrochemical Industries Murat Dosmurov, Chief Technologist and Head of SOCAR Azerkhiymiya Production and Technical Department Teymur Akhundov, Operations Director of Rompetrol Rafinare Kuanysh Dosmurov, Deputy Director General for Overseas Operations of Kazgiproneftetrans Tadeoz Mandariya and others.

III INTERNATIONAL RENEWABLE ENERGY SUMMIT

The tagline of the event organized by the Foundation of the First President of the Republic of Kazakhstan – Elbasy, is «RES development is a condition for the implementation of the «Future Economy» initiative proposed by Elbasy. The purpose of the Summit was to discuss the pros and cons of the use of renewable energy sources, as well as the implementation of the best ideas and effective solutions designed to contribute to building a «green» future for Kazakhstan and the entire world community.

The event program covered the following topics: «Future of Renewable Energy: Global Trends and

Challenges»; «Green» Finance and «Green» Economy: Financial Instruments and Investment Opportunities for RES Development; «New RES Policy: Development Prospects»; Success Stories: Successful RES Projects in Kazakhstan and Around the World.

The Summit concluded with the adoption of a resolution that reflected the key areas, aspects and recommendations for the development of the RES industry in Kazakhstan

WORKSHOP FOR MEDIA REPRESENTATIVES «SECTORAL JOURNALISM: OIL AND GAS RELATED TOPICS IN THE KAZAKH MEDIA»

The event held for the first time by the KAZENERGY Association together with Business Media Group LLP and Chevron gathered representatives of about 25 mass media working in the Kazakh language. The workshop was conducted by journalists with extensive experience and media coaches specializing in oil and gas and business topics – Asiya Akisheva and Yelena Butyrina.

During the workshop, journalists were informed about the main trends of the world oil and gas market, about the largest projects in the field of

oil and gas exploration, production, processing and transportation in Kazakhstan. In addition, the workshop participants received answers to questions related to oil and gas trade, oil pricing, Kazakhstan's support for the OPEC and OPEC+ initiative and many others. In addition, during the Case Studies conducted by the organizers, the participants were trained to work with sources of information, to structure and analyze data, to prepare information and analytical materials, as well as to develop competencies for interviewing on oil and gas-related topics.

KEW
2 0 1 9
KAZAKHSTAN
ENERGY
WEEK

XII
KAZENERGY
EURASIAN
FORUM
NUR-SULTAN

KAZAKHSTAN
ENERGY WEEK

XII KAZENERGY
EURASIAN FORUM

 [KAZENERGYFORUM.COM](https://kazenergyforum.com)

 23-29 September 2019
Nur-Sultan, Kazakhstan

KEW OUTCOMES

The KAZAKHSTAN ENERGY WEEK and the XII KAZENERGY Eurasian Forum managed to unite for the first time all previously disparate events of the fuel and energy sector on a single platform in Nur-Sultan, Kazakhstan. The KEW participants noted the scale of the event that was attended by over 2,500 people.

The project has become a real contribution to strengthening the potential of the Eurasian countries in the field of rational use of natural resources, exploration, production and processing of hydrocarbons, access to energy resources, energy efficiency and expansion of clean energy production.

The initiatives and agreements voiced here generally reflected the assessment of the prospects for development of the oil and gas and energy industries of Kazakhstan, as noted in the KAZENERGY National Energy Report 2019.

The KEW and KAZENERGY Forum participants noted the particular importance of the following aspects for the fuel and energy complex of Kazakhstan:

- Energy resources will remain of paramount importance in the economy of Kazakhstan, and the fuel and energy complex will continue to occupy a leading position in attracting foreign direct investment to the country. The innovation growth will become the driver for the development of the industry. Technological modernization in the oil and gas sector will be accelerated;
- The OPEC+ Agreement, which has a positive effect on oil prices and helps to attract funds for the implementation of oil and gas growth projects particularly important for the economy, is significant for Kazakhstan. In this regard, our country will adhere to the agreements reached within the framework of the deal;
- The expansion of three mega-projects (Tengiz, Kashagan and Karachaganak) will lead to further growth in oil production, which will increase by 1.7 times by 2040 compared to the current level of 90.3 million tons per year. In these conditions, it is necessary to responsibly develop these oil and gas projects, taking into account their capital intensity, technological features and instability in the global oil market;
- With the improvement of environmental requirements, natural gas as the most environmentally friendly fossil fuel will retain its most long-term competitiveness. The development of export and transit capacities and gasification projects will contribute to strengthening the country's energy security;

- Government support measures stimulate investments in the renewable energy sector, which will increase the share of RES in the energy balance of Kazakhstan;
- Maintaining the reliability of the existing pipeline system will ensure stable and long-term supply of oil and gas to consumers;
- Active exploration activities in cooperation with the international oil and gas corporations and research institutes will contribute to providing the oil and gas industry with a stable resource base and will help avoid production decline in the future;
- Amid concerns about climate change, tough regulatory measures are needed to reduce greenhouse gas emissions from energy facilities. They shall be based both on the development of renewable energy sources and on the implementation of projects to save energy and reduce energy losses.
- «Smart» projects in the electric power sector shall be implemented with the mandatory use of «clean» technologies aimed at minimizing their impact on the environment, saving resources and improving energy efficiency;
- The National Energy Report which is regularly prepared by the KAZENERGY Association will remain as a fundamental document on future energy indicators in Kazakhstan and the Eurasian region.

The KAZENERGY Association expresses the hope that the information and recommendations presented on the sidelines of KEW and KAZENERGY Forum will contribute to decision-making and development of effective measures for further predictable and stable development of the fuel and energy industry and improvement of the economy of Kazakhstan.



➤ KAZENERGYFORUM.COM

